

**COURSE
GUIDE**

**LIS320
RESOURCES SHARING AND NETWORKING**

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INTRODUCTION

Welcome to **LIS320: Resource Sharing and Networking**. This is a two-unit credit course, it is compulsory for all the undergraduate students in the Department of Library and Information Science. The course is designed to assist undergraduate you to discover, understand and apply certain strategies of the use of digital technologies and management principles will enable you to gain insights and improve their understandings of resource sharing and networking application. The concept of ‘resource sharing and networking’ is not a new phenomenon across the globe. It has become a central focus for libraries, such that, the growth, transformation and uniformity of service delivery are affirmed. The reason that necessitates resource sharing in libraries is due to limited financial strength of the libraries, technical know-how of the use of networking tools such as network cable tester, crmping tool, punch down and coaxial compression, inadequate storage devices for materials required in work operations and high cost of material resources. Resource sharing and networking in libraries rely on the support which digital technologies offers in transmitting/transporting the information resources to other libraries. The digital technologies that enable easy transportation and access to resources in other libraries are computers, laptops, digital tablets/telephones, learning management systems among others (Olofsson, Franco & Lindberg, 2020). These make the transmission of resources of information, data and knowledge feasible and also suggest ways on how librarians share their knowledge to manage the library operations. Therefore, when libraries are involved in resource sharing and networking, there is interconnection between library organisations and individuals, irrespective of geographical location. This will help ease the tension that many libraries face in terms of the challenges of having access to the right resources they need to support their job operations and users. This course will equip you in your professionals to possess exceptional skills, for personal development, attitude, knowledge and practices of how best to share information and knowledge resources through different platforms of instant messaging, Facebook and Twitter, emails among others.

COURSE OBJECTIVES

By the end of this course, you will be able to:

- i. Identify the different types of resources in organisations.
- ii. Identify the different types of networking techniques.
- iii. Discuss the typologies of information resources.
- iv. Discuss the typologies of “networking.

- v. Understand resource sharing and networking and its implication in the 21st century libraries and information centres and associated organisations
- vi. Discover and know how resource sharing and networking approach, could fulfilment your academic pursuit
- vii. Ascertain the effectiveness and efficiency of resources sharing and networking in library and information centres and related organisations
- viii. Develop the skills and knowledge required in resource sharing through the use of networking tools among libraries and information centres
- ix. Determine the factors associated with resource sharing and networking approaches in libraries and information centres
- x. Articulate values of procedural approach that could strengthen resource sharing and networking in libraries and information centres
- xi. Develop the principles/framework and practices of practical application of resource sharing and networking in libraries and information centres and associated institutions

WORKING THROUGH THIS COURSE

In order to complete this course, you are expected to partake in both the theoretical and practical parts of the course. You are required to read the study units very well, listen to all of the videos links provided that indicate what each segment entails, undertake, read and understand all recommended and required text, recommended books and other related materials that would boost your knowledge and skills in the course unit provided and prepare for your assignment and examination when the comes.

The course is structured, each study unit is classified into the following sub-headings: introduction, intended learning outcomes, main content, summary, conclusion, references and further readings. The introduction part of this module indicate a summary of learning objectives and expectation meant to be covered in the study unit, before it is further broadened or broken down into segment of analysis, detailing highlights enclosed in the study unit. It is expected that, you should read and familiarise themselves with the intended learning outcomes (ILOs) which gives a synopsis of what you are expected to complete at each study unit. This will help you to appraise their learning processes at the end of each unit, to ascertain whether they have accomplished the intended objectives of the study unit. To complete the intended learning outcomes, the content of each segment is presented in modules and units with LIS320: Resource Sharing and Networking.

The videos and links provided in this course unit is to support and strengthen your study of the course LIS 320: Resource Sharing and Networking, such that, you will not have to struggle with areas of the course unit that are not clear to you. Kindly copy and paste the link address as indicated in each study/course unit into a browser and follow the directive as shown on the Youtube. There are portions of the video where you might have to click skip in order to avoid adverts, to get to the main content, please listen attentively as the video plays. There are segments where you will have to read offline, make notes and jot down points that could re-direct you back to what you have already studied and extent covered in the entire course unit. If possible, it would be better you download the videos to view or watch it offline, as that will save you data.

You can also download and print the entire manuscripts for the LIS320 course study for easy readability whenever you want to study. This will give you relaxed mind where you will not have to open your computer all the time. Otherwise, if you are good at reading digitally, save it in your computer or external drive in order not to download always. What is discussed in each unit outlines essential recap of the points that needs to be considered, thus leading as guide to other parts of units in the entire journey of the study. The conclusion takes you to the pinnacle of the study and salient points or lessons that need to be taken into consideration in the unit being discussed.

In each study unit, two key form of assessments are required– the formative and the summative. The formative assessments indicate how you will evaluate their learning processes. These are presented in the form of text questions, discussion forums and self-assessment exercises. The summative assessments are based on your academic performance of as required by the National Open University of Nigeria (NOUN), whether you have met the minimum requirements stipulated on the course being studied. This are summarised in Computer-Based Test (CBT), serving as continuous assessment and final degree examinations for the course being studied. A minimum of three computer-based tests are given to you, with one final examination at the end of each semester. It is mandatory for all students registered for this course to take and pass all computer base tests and the final examination before they could graduate from the National Open University of Nigeria (NOUN).

STUDY UNITS

There are 15 study units in this course divided into five modules. The modules and units are presented as follows:

MODULE 1 NETWORK AND RESOURCE SHARING IN THE DIGITAL TECHNOLOGICAL CONTEXT

- Unit 1 Concept of Network, Basics digital networking, advantages and disadvantages of networks, Peer-to-Peer & client/server LAN, Common Network Types used for Resources Sharing, Objectives, Methods and History of Resource Sharing in Libraries
- Unit 2 Levels, Factors, Tools and Policy of Resource Sharing in Libraries
- Unit 3 Benefits, Barriers and Preparedness of Libraries in Resource Sharing

MODULE 2 NETWORKING IN LIBRARIES AND INFORMATION CENTRES

- Unit 1 Concept of Networking and Types of Networking
- Unit 2 Benefits and Barriers of Networking
- Unit 3 Applications of Networking in Libraries

MODULE 3 STRUCTURE OF NETWORK

- Unit 1 Concept of Social and Information Network
- Overview of network, social network and Information network
 - Types of network, e.g. PAN, LAN WAN, MAN
- Unit 2 Types of social network in libraries e.g. WWW, blogging, Facebook, instant messaging, and Twitter etc.
- Unit 3 Social Network Analysis, implications and Network service providers in Libraries
- Social Network Analysis with emphasis on:
 - (i) Large scale network data
 - (ii) Models for network structure
 - (iii) Methods for link analysis

MODULE 4 NETWORK COMMUNITY DETECTION AND VIRUS OUTBREAK IN LIBRARIES

- Unit 1 Overview and techniques of Network Community Detection
- Unit 2 Overview and causes of Virus Outbreak Detention in Network
- Unit 3 Strategies to Curb Virus Outbreak Detention in Network

MODULE 5 Diffusion and Information Propagation on the Web

- Unit 1 Overview and implications of diffusion and information propagation on the Web
 - (i) Diffusion of information
 - (ii) Information propagation
 - (iii) Web Unit 2 Application of Social Network Sites for Information Propagation on the Web
 - (i) Concept of social network sites
 - (ii) Types of Social Network Sites
 - (iii) Application of social networks for information propagation on the Web
 - (iv) Relevance of Social Network Sites for Information Propagation on the Web
- Unit 3 Connections with Work in the Social Sciences and Economics

PRESENTATION SCHEDULE

In order to have a clear understanding of what the course study entails, a presentation schedule is provided. The presentation schedule directs you on essential dates to take note of, especially in the completion of computer-based tests, assignments, participation forum or discussions, if any and every other materials and videos that needs to be examined. Remember that the submission of all your assignments must be timely and appropriate as stated in the course study. Please, there is need to guide against delay or postponement and plagiarisms while attending to your class work/assignment given to you to do. Please bear in mind that, plagiarism is a criminal offence in academics, as such, it should be avoided at all cost because it is amount to weighty or serious punishment.

Note: You will earn 10% score if he/she meets a minimum of 75% participation in the course study, forum discussions and portfolios, or else you will lose the 10% in your total score. You are expected to upload your portfolio through Google Doc. Your expectation in your

portfolio consists of the notes or jotting made during their time of study of each of the course unit and modules made available to you. This comprises of all activities and time spent from the beginning to the end of the course of study in the entire duration of this course.

ASSESSMENT

Two core forms of assessment are required in this course in order for you to pass. The first assessments consist of Tutor-Marked Assignment (TMAs), which are included in each study unit. You are strongly advised to attend to them without delay, so that they do not pile up, otherwise it could discourage them from advancing to the next stage of another study unit. The TMAs is part of the continuous evaluation module that are marked and recorded on a continuous basis. It amounts to 30% of the total scores from the cumulative. Therefore, you are instructed to be serious with it, because it will assist and support them to pass the course. The TMAs will be schedule according to the University calendar, you do not need to panic. The second assessment will be the final examination, which will cover everything that was taught in the course LIS 320. You are encouraged and advised to adhere to all slated calendar in the University such that, they do not miss the examination.

FINAL EXAMINATION AND GRADING

After the completion of this course, you will be required to seat for the examination of the course LIS 320' Resource sharing and networking'. The duration of the examination will last for 2-hours and the grade point of the course is 70%. Most of the questions that will be given to you are what they you already have in your self-assessment of the TMAs, as such, they need to familiarise themselves more with continuous practices of the questions and serious reading of their course/study materials. This will enable them have good grades after finishing the course. You are also advised to use your time judiciously so that, you do not miss any of the study unit and assessment. It is expected that, the Tutor-Marked Assignment or activities would enable you to study very well as everything in the course is covered, even before your final examination.

COURSE MARKING SCHEME

This table represent the layout of total course marks

Assessment	30% (Undergraduate) 40% (Postgraduate)
Final Examination	70% (Undergraduate) 60% (Postgraduate)
Total	100% course work

HOW TO GET THE MOST FROM THE COURSE

In order to get the best from the course, you need an efficient personal laptop and access to the Internet. This will enhance the study, such that, learning becomes stress-free and the course materials can also be accessed without geographical boundaries (wherever and anytime). You will be able to use the Intended Learning Outcomes (ILOs) to guide themselves through self-study approach in this course LIS320. It is expected that, at the close of each unit, you should be able to evaluate yourselves whether you have inculcated the ILOs, such that, the purpose of that unit course is achieved.

This could be strengthened through your thorough hard work of preparedness based on the notes and jotting taken at the discussion forum and personal study time in each unit course. It is expected of you to join the online actual time facilitation planned at schedule. Any time you missed an actual time facilitation planned schedule, without wasting time, you should create time to go over the recorded facilitation session, in order not to lag behind others. The missed time facilitation session of any study unit will be a video recorded, that will be dispatched on the online platform. Apart from the actual time facilitation session, it is expected at all times that, you should watch the video and audio recorded, if any in each unit course. The video/audio helps to review salient points that you could have missed in the online facilitation session in each unit course. You can access the audio or videos by clicking on the links provided in the text of each unit course/study concluded at the end of the course page.

It is expected that, you should work round all self-assessment exercises, such that you leave nothing behind regarding the course content of this

study. Lastly, adhere to all instructions given in the class regarding each unit course.

FACILITATION

Bear in mind that, as a student, you will be given an online facilitation. The online facilitation is an interactive beginner's centre, where you learn. The style of facilitation can be asynchronous and synchronous. For the asynchronous facilitation, your organiser or facilitator will:

- Present the theme of the study unit to you for the week;
- Lead you through a summary forum discussion on what needs to be covered;
- Manage all the activities in the online platform;
- Score and grade all activities when they are needed;
- Upload your scores into the university recommended platform;
- Support and help you to learn in whatever regards provided the whole course is covered. This might include sending personal mails for communications purposes and following up with extent you are doing in their studies.
- Send videos and audio lectures on WhatsApp, emails, Facebook, LinkedIn, among other social media sites to you, apart from the normal upload on online facilitation platform.

For the synchronous:

- You are expected to spend minimum of eight hours of online actual time contacts in the course contents. This implies watching video conferencing in the Learning Management System. The eight hours consists of one-hour contact for eight times.
- It is expected that, after spending one-hour each watching the video conferencing, the video will be uploaded for possible viewing at your own time and speed.
- The tutor or facilitator is expected to focus more on key themes that are most important and known to you in the course.
- The facilitator is the person to present the online actual time video facilitation timetable before the start of the course unit.
- It is the responsibility of the facilitator to take you through the course guide at the beginning of the first lecture even before the facilitation begins.

Note: Please do not fail to contact your facilitator; in case of anything you are not clear with. You can do so based on the following:

- When you do not comprehend any part of the study units or the assignments given.
- Have challenges following the self-assessment exercises.
- Have any questions or issues with an assignment or your tutor's comments on an assignment that was given.
- Please use the contact provided for technical support as well.

You are expected to read all recommended reading materials, comments and notes provided by their facilitator specifically on those relating to assignments; participation in the forums and discussions. This provides you the privilege to socialise with others in the course of the programme. You are encouraged to discuss any problem encountered during their course study. This would help them improve tremendously and learn better while they prepare for course facilitation. It is also advisable for you to have outlined list of questions before the discussion session, so as to gain more knowledge from other folks and their facilitator. This will make you to learn broadly while partaking actively in the debates forum.

Lastly, facilitator or course lecturer should respond to questionnaire posed. This will help the university to know areas of weakness and how best to advance on them for possible future review of the course materials and lectures.

**MAIN
COURSE**

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MODULE 1 NETWORKS AND RESOURCE SHARING IN THE DIGITAL TECHNOLOGICAL CONTEXT

UNIT 1 DEFINITION OF NETWORKS AND RESOURCE SHARING

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- 3.0 Main Content
 - 3.1 Concept of Network and Resource Sharing
 - 3.1.1 Basics of Digital Networking
 - 3.1.2 Advantages and Disadvantages of Networks
 - 3.1.3 Peer-to-Peer & Client/Server LAN
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 - 3.4 Methods of Resource Sharing
 - 3.5 History of Resource Sharing
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In present day information and knowledge economy, resource sharing is very crucial in libraries and information centres. There are four (4) reasons, why resource sharing is crucial and these consists of: (i) enhance sharing of information and documents among libraries which were difficult for those libraries to acquire, (ii) reduces financial burden among libraries, (iii) leads to cooperation and collaboration among librarians and their institutional libraries and (v) strengthen professional bodies of librarianship within and across the globe based on established policy that guide them. Resource sharing is not applicable to only materials, rather, it cut across people, financial, organisations and nations. There is no individual that could stand on their own without needing any material or financial support from any one. There is a slogan that says ‘information is power’ and the difference between the poor and the rich today is having access to the right information at the right time. For example, if you have access to the right person or diligently serve under a rich man and become more humble in service

and upright, you will be shocked that, one day, based on your services to him, the rich man will be moved to show you the right access on how you might become rich. This is an example of rendering services and having access to the right person and information required.

Resource sharing is important in present Nigerian economy where libraries and information centres are faced with scarcity of resources and financial constraint. It is only on this basis that each library could share their material resources through digital technology perspective. There is no library that is self-sufficient and sustainable with requiring or seeking help from other libraries hence it is important that libraries and information centres should practice resource sharing. For this to happen, a mutual understanding and policy are initiated to guide the practice in the library environment.

As a student, it is expected that, you get prepared for your academic activities but there are times, where you could not meet up with your classes or submission of assignment. In that regard, you might need your fellow student support or assistance, where they will have to share with you the reading materials of the course unit. The essence is to enable you attend to the obligation expected of you as a student in submitting your assignment. There could be some instances, especially students from poor background, will have to depend on their friends for survival through sharing of some food items or stuff while in school. This is another form of resource sharing. You could see that, no one has it all. There is a slogan that says all fingers are not equal; therefore, for students to pursue their studies successfully, the need to share resources among themselves becomes imperative. Resource sharing among students will help to alleviate weakness and strengthen cooperation between intelligent and weak students. This act or practices could be regarded as cross fertilisation of idea between, within and outside your environment.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- identify and discuss network and its related components used in resource sharing in libraries
- identify and discuss resource sharing in the context of digital technologies
- discuss resource sharing in libraries and other related institution
- discuss how resource sharing could be used to support any workplace learning and society at large.

It is also expected that, the objectives and methods which resource sharing is meant to address will be ascertain at the end of the course unit. This would help support students understanding, especially on when and how best to apply it in their different endeavours.

3.0 MAIN CONTENT

3.1 Concept of Network and Resource Sharing

A. Network

A network has to do with interconnectivity among cluster of persons or things that are skilled in sharing vital information with another (Keracheva, 2021). When two or more people decided to come together for a certain reason that will benefit them, it could be termed a network (Keracheva, 2021). The reason could be to share information or data, analyse data, transmit and process documents based on the goal of pursuance. The accomplishment of this goal could necessitate the use of people, computer and methodological procedures (Meyers, n.d). Another point of emphasis as stipulated by Winkelman (2013) notes that, network consists of two or more variables that are linked together, such that, sharing of resources of different kinds becomes easy. The resources could be files, books, computers, CDs, printer, electronic gadgets, cables, telephones, radio, and satellites, among others (Winkelman, 2013). These become significant as they are used for the purposes of communications, sharing, interacting and sustaining organisational work performance (Winkelman, 2013).

3.1.1 Basics digital networking

Basics of digital networking have to do with connectivity of different connect integrated or linked together through computer interface. When a group of computers are linked together using Wi-Fi connection, it is termed digital networking. The digital is not physical but online platform. For example, when you switch on your mobile application and you try to connect with someone in Abuja or overseas without not necessarily traveling to meet the person, you are digitally networking. The essence is for interchange of information and digital data. In digital networking different languages are used to interconnect or transfer data or information. Digital networking requires different strategies in order to share vital information and other resources. In digital networking, the use of digital computers, like tablets or iPhone and laptops are essential because they have the features for networking to be efficient (Winkelman, 2013).

During digital networking, individual could connect their personal computers to other local computers in order to access information and documents in those computers based on the instruction that has been given in the networking platform. In order words, resource sharing could function better under the digital technological environment because all the devices are connected together and sending the information or resources would not be a problem at all. Unlike the manual phase where the individual or library have to post the documents or travel to the actual place where the materials are required and this would take ages for the materials or documents to be delivered to the users or libraries.

3.1.2 Advantages and disadvantages of networks

The advantages and disadvantages of networks in relation to resource sharing are:

- It upturns quickness: A network offers fast means of distribution and transferring information or documents
- It protects the security of information stored in the network
- It affords a relaxed and secured environment to carry out your job performance
- There is affluence to buy the one with low cost considering the dominance of many versions of network software
- It could serve millions of communicators at a time without geographical boundaries
- Sharing of information is easy and accommodating even if they are much
- There is co-operation among users of networks

Some reason that could affect the use of networks consists of the following:

- When the networks is affected with heavy rain storm
- inadequate funding to acquire the necessary gadgets and software for its maintenance
- Unreliable IT experts to teach the library organisation or individual on how to use the network
- Other networking infrastructure required for the sustainability of the network
- absence of skilled personnel in the library profession
- erratic power generation or supply required for non-interruption of the networks.

There are other networks that enhance and facilitate resource sharing in libraries and information centres as indicated below:

3.1.3 Peer-to-Peer & Client/Server LAN

Peer-to-Peer: In this type of network, documents are stored on separate computers rather than on a central server. This implies that each of the connected computers work together to keep the network running through sharing information and contents in their separate hard drive. Peer to peer architecture treats all computers similarly in their operations. It does not cost much to set up because it has the suitability for lesser or middle land area network (LAN).

Client/Server Network: In this regards, records are deposited in a server rather than on individual computers. This implies that every operations of work performed are saved in the file server.

3.1.4 Common Network Types in Digital Technology for Resource Sharing in Libraries

- (i) **Local Area Network (LAN):** The local area network is one of the communal, innovative, simplest and often used type of network by different group of people. It permits people to connect together through close building of proximity to share information and resources. Through the use of routers, the LAN connects to a wider area network for enhanced data transfer and networking.
- (ii) **Wireless Local Area Network (WLAN):** The wireless local area network is of close associate in terms of functions and features with local area network. It uses a wireless networking technologies of the Wi-Fi. Although works more with physical cables for its connection. It permits users to interchange from place to place, in the coverage area, even while sustaining the network connection.
- (iii) **Campus Area Network (CAN):** The campus area network is another type of local area network that is bigger than LAN. The networks are interconnected to each other across the entire environment. Although, less significant to the metropolitan area networks (MAN). The CAN is common in places like the university or bigger district school or business environment. They are developed such that they could spread round the entire environment and buildings such that, it becomes easy in sharing

networks and resources at the same time. See diagram below for assessment.

- (iv) **Metropolitan Area Network (MAN):** The metropolitan area network is another type of network that is superior to the LANs but much slighter than WANs. Although it has all the elements of both types of networks. MANs could be connected to each other through the telephone lines. MAN has wide ranges that cover an entire town or city. Due to its large nature, it is mostly maintained and cultured by a big organisation or company. The MAN is mostly used by government agencies to support citizens and private organisations.
- (v) **Wide Area Network (WAN):** The wide area network consists of a network over a large geographical region, like a province, State, or Countries. It is considerably further composite than LAN. The WAN is able to connect different computers together transversely much elongated in any physical distances. The essence is to enable computers and low-voltage devices connect remotely to each other, for easy communication. This enabler of this connectivity is the Internet. It is mostly used by big organisations like government and other educational institutions.

B. Resource Sharing

Resource sharing' in the context of digital technologies has to do with the application of different types of digital technologies such computers, laptops, digital tablets/ telephones, learning management systems among others (Olofsson, Fransson & Lindberg, 2020) in transmitting or transporting information, documents and other library materials to different libraries who are in partnership with the libraries sharing the materials. In this era of digital technologies, there is no library that could perform the practice of resource sharing without the use of digital technologies; hence digital technologies are panacea in all library activities. The concept of resource sharing is not a new term globally, although still finding its foot in some Africa context, especially library organisations. The reason for this assertion was based on paucity of existing literature on resources sharing that seems not to appear on google scholar and Web of Science databases, written by African scholars, in the areas of librarianship in Africa and specifically Nigeria to be precise. But most of the literature found while searches for literature was ongoing were those by foreign scholars in developed world. This implies that, some of the literature written by African scholars are few, and should therefore be given adequate considerations. Before going further to substantiate what resource sharing is all about, it is imperative we understand the term 'resource' and 'sharing'. It

therefore implies these entity, person or action could be used to accomplish a task. While in the case of 'sharing' it signifies distributing, allocating, assigning, or donating something that is owned to assist or help others (Venkatachalam, 2011). Odini (1991) posits that, before resource sharing could take place there must be a mutual agreement or understanding between two parties. In other words, the mutual agreement or understanding is what bonds the two parties together.

Resource sharing could be seen from different perspectives, such as locally, regionally, and internationally. Some individuals think that in this manner, libraries are in cooperation, while others felt they are carrying out a range of activities that involves mutual understanding of sharing each other's burden through available resources in their libraries. Resource sharing has to do with collaboration with different types of information providers and not applicable to only conventional libraries (Muthu, 2013; Kennington, 1985). It is the act of sharing information materials, documents, manpower, equipment's/offices, and facilities with one another (Prakash & Janardhana, 2017). The resources shared cut across books, office facilities, space and manpower. Another emphasis made by Mubofu and Chaula (2020) indicate that, resource sharing has to do with the act of having a communal arrangement among libraries such that, they would be able to share their information resources together, for better quality service delivery to their users, staff members and anticipated users. Mubofu and Chaula (2020) note that, the resources which many libraries share together, includes documents, staff members, and technological tools. The sharing of resources varies in context, purpose and needs of the library (Mubofu and Chaula, 2020).

To support the point or argument made above, Chiparasha and Chisita (2020), note that, present economic situation of many nations, make entails libraries to enter into partnership programme with other several libraries, such that, they come together to support each other with the aim of sharing their resources. This has helped to reduce economic capability of library subscriptions, publication, library space and use of information and communication technologies required to strengthen work operations in libraries. Heidari and Khakpour (2013) made reference to the use of digital technologies being panacea to facilitate the medium of sharing resources among libraries and related information institutes. The introduction of digital technologies used in most organisations has made it possible and even much easier in networking the information resources and its associated ones through online platform (Heidari & Khakpour, 2013). The digital technologies of computers, laptops, digital tablets/ telephones, learning management systems are now used to facilitate resources sharing. The digital technologies cannot function on their own except through the effort of commonly used networks of local area network (LAN), wireless local

area network (WLAN), campus area network (CAN), metropolitan area network (MAN) and wide area network (WAN).

Yao and Zhu (2015) note that, the libraries irrespective of their type, come together based on mutual understanding, such that, variety of information resources which users could not find in one library are borrowed for them from another library simply because the library where the information materials are borrowed or loaned has a well-stocked library system (Mubofu & Malekani, 2019). Resource sharing is not associated with only the discipline of Library and Information Science, rather to other fields of studies, because every field of study requires the use of information, knowledge, tools and human beings (use of their brain or knowledge) and these can be borrowed or shared among organisations who do not have sufficient ones. Resource sharing has become the panacea to present day organisational problems irrespective of their type, such as libraries, health system, higher education institutions, prisons, museums, etc. Therefore, considering the growing needs of quality education for citizens of every nation, libraries have no choice but to enter into partnership with other libraries and information centres, such that, determined hard work is made concerning the delivery of the right materials to support other libraries who are unable to meet their users' information needs (Mubofu, 2019). No matter how rich or wealthy an institution could be, their library unit might not have all the required information resources, especially in this dwindling economy. There could be a time when some of the materials possessed by a library are on loan to users and here comes a specific need to attend to a user, the only and best possible option was the resource sharing being discussed. So if it happens that, such libraries and information centres are not in the practices of resource sharing, there is no way such user information needs could be met, hence the need for resource sharing among libraries discussed in this course unit. The reason that necessitates the teaching of this module 'resource sharing and networking' was the overarching issues which surround the high cost of books and digital technologies, inadequate storage facilities among others. Presently, most libraries today in Nigeria are faced with diverse and complex challenges, which ordinary would be difficult to handle. But resource sharing has taken away such a burden especially if they are ready to apply its principles and practices.

Resource sharing applies different approaches as earlier mentioned, in order to identify users' information in the various libraries. Besides, some align with their set goals and policy that guides resource sharing, before such assistance could be rendered. Resource sharing is a two-way thing, that is, both libraries have to agree on the terms of condition before the act is carried out (Mubofu, 2019). This is in accordance with the objectivity of establishing libraries and information centres.

Resource sharing cannot be actualised without the application and support of digital technologies of computers/telephones, laptops, digital tablets, and WhatsApp application (Olofsson, Fransson & Lindberg, 2020), enabled through networking. The digital technologies mentioned worked in hand with networks through interconnectivity of network such that, when the documents are sent via online platform, they are able to transmit to the designated place or libraries. The activities which take place in this regards are behind the scene activities to the naked eye of the individual except the person is involved. The digital technologies enabled through networking helps to facilitate the processes involved, where the resources to be shared are routed through online platform, otherwise, it will take ages before libraries and information centres could travel by road or land in collection of the items or resources to be shared among libraries to users. The process and procedure where information and communication technologies come in to play are referred to networking in library.

Digital information resources and networking now gave new look to how libraries generate and operates. For example, millions of document or materials could be sent via email or google drive to the designated libraries within a second, provided there is network connectivity among the libraries involved. The current library could also send mails or search to find if specific library material is required by a user and do a central search whether the library at the other end has the materials before making such request. This could be seen under different platform where they work without geographical boundaries in order to reach all libraries and information centres across the world. This was to serve and maintain quality services delivery among libraries and users. The process and areas in which resource sharing in libraries and information centres occur comprises of the following as shown in figs 1 and 2.

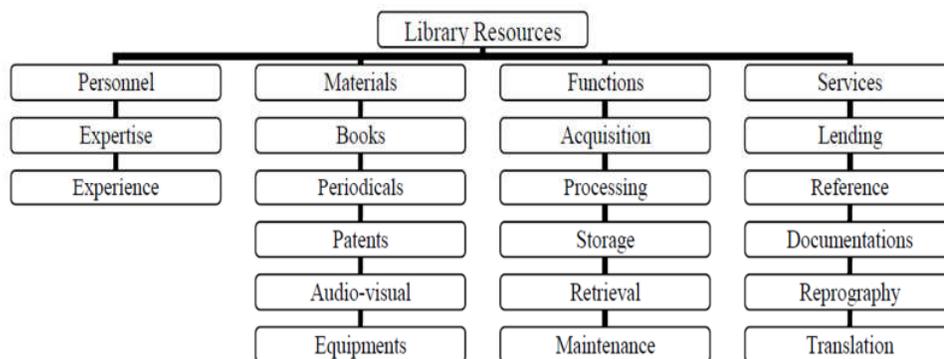


Figure 1: Areas and scope of resource sharing in libraries

Source: Jahan, Mannan and Kabir (2013)

In figure 1, it can be established that resources shared among libraries and information centres comprises of personnel, materials, functions and services (Jahan, Mannan & Kabir, 2013). Although these can be further broken into sub-units analysis of:

- Collections of the library
- Reference services
- Human resources
- Inter-library loan
- Expertise
- Facilities
- Union catalogue
- Training
- Software
- Services
- Office space

Based on the highlights above, Muthu (2013) made reference to some other forms of resource sharing as significant which libraries and information centres cannot do without. Muthu (2013) further stressed on other areas of cooperative procurement, collaboration in practical handling of books, Inter-library loan at all levels (local, regional, state, national, and international), supportive storage centres, union catalogue, centres for documentation, consolidated procurement of periodicals and allocation of staff to different regions of libraries and information centres where necessary.



Figure 2: Partnership between libraries and others in resource sharing

Source: <https://www.slideshare.net/CTLes/zhao-xing-national-library-of-china-cooperate-and-development>, 2017

Figure 2 above indicate the various libraries and others, such as, information provider centres, resource centres, institutions etc having mutual understanding and agreement that resulted in resource sharing in libraries.

Watch videos on how resource sharing entails and practiced among libraries

Please, create time to watch video 1, 2 and 3 below, as it contains what resources sharing entails and how it is being practiced in libraries and information centres. Take note of some salient issues as it vary across libraries considering the limited resources, users information needs that needs to be catered for in the libraries.

-  1. [https://www.youtube.com/watch?v= oCqvFf3F0w](https://www.youtube.com/watch?v=oCqvFf3F0w)
-  2. <https://www.youtube.com/watch?v=shP4ROqzMOK>
-  3. <https://www.youtube.com/watch?v=QYkTUWUz0bw>

3.2 OBJECTIVES OF RESOURCE SHARING

Based on the analogy made in the previous unit, while conceptualising resource sharing, it was emphasised that, libraries and information centres or related organisation cannot be self-sufficient with adequate resources of human (manpower), office space, documents, materials (books and non-books), equipment's and services. This made Muthu (2013) refers to objectives of resource sharing in libraries as scenario to create a better setting where libraries could offer quality service delivery through available and enhance related resources to meet users' information needs. The objectives of resource sharing according to Muthu (2013) are:

- (i) support staff member libraries in the selection, acquisition and handling of library books and other related documents
- (ii) organise the procedures of acquisition of library materials
- (iii) make the most of users' fulfilment/contentment regarding their needs
- (iv) expedite communal catalogue service delivery with other libraries
- (v) collaborate with other staff members in self-development
- (vi) attain the purchase of low-cost and use of resources for both staff and materials

Posner (2017) notes that, the objectives of resource sharing help to increase, obtainability and accessibility of different, in order to promote utilisation of resources. Another emphasis made by Heidari and Khakpour (2013) regarding resource sharing in libraries are:

- (i) enable users to become self-sufficient with adequate access to library materials services
- (ii) affirmative library financial plan
- (iii) increase of library collections, in order to support users information needs
- (iv) allow users to know resources available and those not available
- (v) promote and sustain inventive use of library resources
- (vi) cultivate the idea of making the policies accessible to other libraries
- (vii) consolidate the services of inter library loan and special collections within the library domain through staff support (Heidari & Khakpour 2013).

It is imperative to note the point raised by Posner (2017) regarding resource sharing and they include:

- (i) staff members find fulfilment that they were able to assist users and other libraries too
- (ii) The sharing procedures allow both libraries and users to have a feel of services rendered to them
- (iii) The adoption strategy becomes very good since there is scarcity of some information resources in some specific areas of specialisation
- (iv) permit library promotion strategies that could be used to sustain libraries and information centres operations
- (v) convey and give confidence on the content which users found based on available library materials

To buttress this further, Bhargava (1986) delineate the objectives of resource sharing as:

- (i) users of library have access to multiple information resources at no cost
- (ii) services rendered in libraries and information centres are less
- (iii) less burden of purchasing different resources for libraries and information centres
- (iv) less burden of transporting the materials through digital technological means
- (v) expertise experiences are helpful irrespective of their locations
- (vi) it reduces exploitation among publishers and vendors in case of acquisition needs, since there is no need to always purchase
- (vii) facilitate the promotion of accessibility and utilisation of resources especially among growing and established libraries and information centres

Another point made by Fujit (2015) is that, the functionality of library services depends largely on adequacy of library resources amidst qualified staff to carry out the responsibility. Therefore, aligning this to the objectives of resource sharing, it could be affirmed that there must be appropriation of the followings with least time and cost:

- (i) expedite effort of time and space of brining the resources from where it is being borrowed.
- (ii) encourage users to bring in their request on time considering other operations they are occupied with
- (iii) sustain imaginative use of the available information resources
- (iv) avoid excessive replication of information resources, and repair costs
- (v) delivery of better information resources of broader category of users.
- (vi) expansion of specialised collections of library materials with diversities.

In another dimension, Sujatah (1999) indicates the following as some of the objectives that could result to resource sharing in libraries and they are:

- (i) each participating library has a way of contributing to the need of users
- (ii) there is a continuous unrestricted stream of information among libraries
- (iii) there is decrease of cost liability
- (iv) there is a spread of comprehensive gathering of information

- (v) promotion of supportive library activities such as locating, exchanging, storing, records, preparation among others
- (vi) there is integrated catalogue of all resources among partaking libraries
- (vii) successful bibliographic control
- (viii) proficient exchange arrangement between the libraries
- (ix) regulate document conveyance system
- (x) Interweaving of available resources.

3.3 METHODS OF RESOURCE SHARING IN LIBRARIES

There are different approaches or methods through which resources are shared in libraries and information centres. Muthu (2013) point out several methods by which resource can be shared among libraries and information centres that enter mutual agreement and they includes: Interlibrary Loan (ILL), cooperative acquisition, centralized cataloguing and classification, co-operative storage, co-operative Reference /information services, co-operative reprographic service, documentation centres, union list of serials and bibliographies, union catalogues:

1. Interlibrary loan: Interlibrary loan is the act where one library borrows library materials from other libraries in order to meet or satisfy their users information needs. It would be difficult to borrow from other libraries when there was so such agreement or arrangement made. Interlibrary loan (ILL) is one of the major ways through which resource sharing is practiced in libraries and information centres globally. The information resources are shared in the form of loan, where the library in need of the materials comes out seeking assistance based on the understanding of agreement made on how best to support each other. In this approach of library loan, the libraries work together in partnership through sharing their manuscripts (electronic and or printed materials), graphic records, among others. It is pertinent to note that, with this approach, users of different libraries have the permission to use materials from other libraries even though it does not belong to their own library. With regards to some of the materials that are not available, such as electronic articles and books, they could also be sourced for and made through photocopying before sent to users, all in the bid to satisfying users' information needs. It is imperative to note that, interlibrary loan services cannot be undermined in libraries and information centre. The reason is that, technology has even advanced its practices, such that, many academic, research and public libraries depend on it for survival due to limited financial resources from their parent bodies. Besides, many of the information resources are of high request considering the proliferation of information and knowledge on the internet. Consultancy services have also increased, thus requiring the

need to consult books and journals broaden ones knowledge and scope (Bangoni, Chizwara & Moyo, 2018).

2. **Co-operative Acquisition:** The cooperative acquisition pattern is where two or more libraries and information centres put financial resources together to acquire certain library materials that are of high cost and demand, considering the inadequacy of financial capability to acquire such materials. This method of use refers to cooperative use. When there is high demand of library materials by some users in one particular library, the other library could opt for either photocopying or making arrangement with their users on when best they could have access to the borrowed materials by the other libraries. In this pattern method of resource sharing, wasteful expenditure, duplication and storage problem are avoided. It is expected that, better selection of library materials is ensured in this process of cooperative acquisition. This approach of acquisition is normally practiced by national or regional level (Bangoni, Chizwara & Moyo, 2018).
3. **Centralized Cataloguing and Classification:** Centralised cataloguing and classification has to do with having all processed materials put together in a centralised manner such that it becomes easy to access. This is another method of resource sharing in the library organisation. The centralized cataloguing and classification could be carried out by one individual library such that it will serve large populations of other libraries and information centres. The materials acquired are catalogued and classified and made centralised in order for other libraries to have access to them (Bangoni, Chizwara & Moyo, 2018).
4. **Cooperative Storage:** Cooperative storage implies when libraries worked together to store materials processed and owed by both libraries that are into resource sharing. This method of resource sharing is usually practiced by several libraries. Predominantly those in the metropolitan zones and university libraries environment due to limited space problem. In the midst of the digital technologies in place across several libraries, there are still many printed library materials in most libraries especially in African university libraries context and this posed a challenge with storage space. It is believed that, such huge space problem could cost a lot of money for the library organisation to tackle, such that, creating space for printed materials becomes stressful for them. Besides many university libraries in Africa has not grown to where they want to have a paperless environment unlike what is practiced in most

developed world. Regrettably, not many libraries in Africa could prioritise spending money for such expensive project due to corruption that has invaded the continent and library organisation. Consequently, it would be cost-effective for libraries to partake in a centralized storage facility since most of their materials in the borders (Bangoni, Chizwara & Moyo, 2018).

5. **Cooperative Reference /Information Services:** a cooperative reference/information centre is when libraries into resource sharing cooperatively refers information materials which users need to other libraries since they do not have such materials, thus meeting users' information needs irrespective of their locations. This method relates to where most libraries have co-operation with other libraries by referring their users' information needs to other libraries to handle. This is on the basis that the big library has all the collection of materials to cater for the users. The bigger libraries routinely grow into the forum of scholarly magnitude of education and research for the rest libraries (Bangoni, Chizwara & Moyo, 2018).
6. **Cooperative Reprographic Service:** When a library has a well furnished collection of different materials, photographic machine and services, they could enter into partnership with other libraries such that, they support them through photographic copying materials, since there is enormous work that needs to be attended to in their libraries and those with partnership with. This service is mostly common internationally, nationally as well as in local library environment but not sure if any library in Africa has started practicing such services of late (Bangoni, Chizwara & Moyo, 2018).
7. **Documentation Centres:** The documentation centre implies a well-established databases or repository where many documents could be stored which resulted from research activities but there are so many libraries and information centres that cannot afford to cater for large documents due to limited space and financial implications. Besides, not all libraries and information centres could also venture into such practices, hence the needs for resource sharing and cooperation among different libraries who could not have and practice documentation. This act is tied to responsibility of national or regional libraries services (Bangoni, Chizwara & Moyo, 2018).
8. **Union List of Serials and Bibliographies:** The union list comprises of the joining together of list of serials of periodicals of all subject materials. This method might not be easy for only

one library to tackle, rather, combination of effort by several libraries, such that, they might be able to produce a comprehensive list of periodicals and distribute them among other libraries (Bangoni, Chizwara & Moyo, 2018).

9. **Union Catalogues:** The purpose of union catalogues is to trace periodicals. It is known as tool finder for the purpose of explaining interlibrary loan. It offers organisation and classification of data and other materials in the libraries and information centres. Similarly, it avoids replication of slight used library materials (Bangoni, Chizwara & Moyo, 2018).
10. **Accommodating access to Online Resources:** Based on the agreement made by different libraries and information centres, collaboration becomes promising in order to stretch out most of the materials available through resource sharing. Creating access to online resources is another form of agreement considering those libraries that could not subscribe to online resources due to financial implications. Accesses to online resources are very crucial in present day library services, in order to have current/latest information published in diverse disciplines (Bangoni, Chizwara & Moyo, 2018).

3.4 HISTORY OF RESOURCE SHARING IN LIBRARIES

Drawing analogy from previous comments above in this unit 1, it was established that, resource shaing is a form of networking because you are connected to different people for one reason or the other and there are interaction in the process. It is the interactions that keeps you active and going and what is obtain in the interaction is reaching out to meet individual users information needs of those individual involved in the act. Resource sharing could also be know as library networking (that is, connectivity between two or more people and organisations), started in the early 1960 in Chicago, USA, when a centre for research libraries was constructed (Ali, Owoeye & Anasi, 2010). The essence of the centre was to cater for cooperation among 162 institutions, such that, library materials are acquired, stored and preserved for the institution needs. In 1970s when the cost of library materials rose, the need to strengthen resource sharing became imperative (Ali, Owoeye & Anasi, 2010).). Although as at that time, library budget remained stagnant.

The stagnation of library budget then made the Columbia, Harvard, and Yale research libraries, inclusive of the New York Public Library, decided to establish Research Libraries Group (RLG) in 1974 (Ali, Owoeye & Anasi, 2010). This resulted from the understanding that, there is no library and information centres that could be independent to

fulfil the information needs of all their users based on available library materials and services rendered. The newly RLG then delivered a catalogues comprising of different library assets that was generated supportively by members of the various libraries (Martey, 2002). As at that time, Canada has the most Information Network for Ontario (Edwards, 1999). Then, about 300 public libraries were attached to South Ontario library service. The Ontario library services had a better access to Internet with separate computer and CD-ROM. In the year 1996, in order to spread the propagation of resource sharing, University of Pittsburgh Library System and that of University of China substituted different digital complete text of journal articles over the Internet among themselves and to other libraries (Edwards, 1999).

Coming home to Africa and specifically Nigeria, John Harris, a librarian, resident at the University College, Ibadan, presently known as University of Ibadan, initiated the move behind resource sharing in Nigeria (Ali, Owoeye and Anasi, 2010). Following the conference held by International Federation of Library Association (IFLA) in Grenoble, France, in 1973, the National Library of Nigeria (NLN) was stimulated through the task to become the clearing house of all existing libraries in the country. Some examples of resource sharing in Nigeria are: (i) the cooperative acquisition of library planned by National Library of Nigeria Kaduna branch, (ii) compilation of records of serials titles by library cooperation programme of Nigeria, (iii) working group on interlibrary lending by National library of Nigeria and (iv) Nigerian university libraries consortium instituted staff members to participate in consortium for resource sharing.

In 1973, inter-library lending unit was established within the umbrella of the National Library of Nigeria. In order to adhere to uniformity and consistency in operations in library services, there arose difficulty of standardization, as it become a challenge donating to libraries due to diverse guidelines attributed to bibliographic explanation. This resulted in having altered cards arrangements with unpredictable information with variance of prevailing cataloguing rules (Nwosu, 2004). Based on this, Ubogu, Okoh, Alimole, and Eyitayo (1992) assert that, effort made in ensuring all resources sharing in Nigeria, were devoid of results. The reason being that, utmost all assignments or task given to do were partially accomplished. It could be establish that library collaboration that existed then were merely casual, due to effort of generosity of one individual in one library to another. This resulted to absences of legal support by recognized agreement made within and among the libraries. The union catalogues which was the foundation for utmost supportive efforts were non-existence for collections purposes. Lastly, except a radical effort is made or taken towards the issue of funding of libraries, resources sharing can never be attained (Ali, Owoeye & Anasi, 2010).

4.0 SUMMARY

At the beginning of this study unit, it was established that resource sharing is vital in this information and knowledge economy, because libraries and information centres cannot be self sustainable. Resource sharing consists of people, tools, services, material resources and financial among others, required by organisations and nations.

This unit scrutinized the concept, objectives, methods and histories through which resource sharing are fostered in libraries and information centres. Remember that, resource sharing has to do with sharing available resources with different libraries and other information centres based on mutual understanding and agreement. The shared resources among different libraries and other associated information centres cut across materials and human resources, office space, services and equipment's etc. There are certain principles and policy that guide each of the organisations that come together to affirm this agreement. The rationale that brought this discourse was not particular to library organisation only but across individuals, other related business enterprises and nation as a whole. There are no individual, organisations, or nation that can stand or work independently, rather become engrossed in mutual understanding and agreement in fulfilling their mandate and goals. As a student, there is need for extensive reading in order to cover your course materials, suggested texts, and most specifically, watch and listen to some of the online materials suggested. They will assist you in broadening your knowledge of the course and career journey.

The objectives, methods and histories of resource sharing as indicated above, gave the understanding that, it serves as panacea to library organisation sustainability in present information and knowledge economy. The reason that necessitate resource sharing in libraries was based on the over aching burden of accumulative cost of books, subscription fees, expansion of technological tools required for the processing and networking of the resource sharing among libraries. This brought the idea and agreement made by several libraries as represented in fig 2 above. The libraries and information centres decided to embark on the practice of supporting each other through adoption of mutual agreement of Interlibrary Loan (ILL), cooperative acquisition, among others.

The mutual agreement was to integrate the cautiousness of accountability, principle and spirit of togetherness among libraries. As a student, you need to know and acknowledge the importance of resource sharing, not only because of this course unit but considering the scenario we found ourselves as most African libraries and related organisation.

The world is changing every day and as such, it is imperative to practice resource sharing as an individual, because you never know what tomorrow holds. There is a slogan that says, '*no man is an island*', and therefore, it is crucial we learn to share as those who share never lacks. This was unfolded in the areas of objectives of resource sharing among libraries in the course of this study unit discussion.

5.0 CONCLUSION

The understanding that surrounds resource sharing as mentioned at the introduction of this unit is that, it is the engine oil that lubricates libraries and other related information centres because what library A has might not be available in library B. The reason is due to dwindling economy where library budget are no longer adequate to catered for their operations and users. Resource sharing is a sinequanon in present day library and information centres. The reason is that, no libraries could be self-sufficient. For resource sharing to be well harnessed based on the vitality of mutual agreement with other libraries and information centres, there must be an affirmed and signed documented policies that should guide every party involved. Even though the use of digital technological tools has become a norm in most library organisations across the globe, resource sharing cannot be undermined. Rather become more efficient through the support of digital technological tools, as no individual will have to travel any longer, compared to when digital technological tools was not available. It is expedient that all libraries and information centre whether small or big should inculcate the practices of resource sharing in their organisation as it helps to lubricate and sustain the services and operation of the library. Resource sharing is hybrid no matter what circumstances, as this depends on the approach that suits the individual libraries in question.

6.0 TUTOR-MARKED ASSIGNMENT

Students should be able to attempt the following:

1. Identify three reasons why networks and resource sharing are essential in libraries and information centres
2. Relate why and how common network types are used for resource sharing in other business enterprises and government organisations.
3. What implication does resource sharing have in relation to the objectives, methods and history in libraries in Nigerian economy?

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UNIT 2 TOOLS, LEVELS, FACTORS AND POLICY OF RESOURCE SHARING IN LIBRARIES

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Resource Sharing Tools from Digital Technology Perspectives
 - 3.2 Levels of Resource Sharing
 - 3.3 Factors of Resource Sharing
 - 3.4 Policy of Resource Sharing
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In unit 1, we considered the concept of network and resource sharing which surrounds issues of basics digital networking, advantages and disadvantages of networks, peer to peer and client/server LAN, common networks types used for resources sharing, resource sharing, objectives, methods and the history associated with resource sharing in libraries and information centres. It was established in previous unit that, resource sharing serves as pancea for the sustainability of libraries in present day scenario where financial and human resources has become a challenge in upholding quality service delivery to meets diverse users information needs. In the present unit 2, we shall be considering resource sharing tools from digital perspective, levels, factors and policy that govern its operations in libraries and information centres.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- explain resource sharing tools from digital technology perspectives
- discuss the levels of resource sharing
- explain the factors of resource sharing
- explain the policy that governs resource sharing

3.0 MAIN CONTENT

3.1 Resource Sharing Tools From Digital Technology Perspectives

Resource sharing tools from digital technology perspectives has to do with those digital technologies that could be used for transmitting information resources via online platform. The digital technological tools of email, MARC, digital libraries, Internet and social media among others are crucial and prerequisite in accomplishment of task in any library environment. The digital technological tools used for accomplishment of resource sharing task vary from one specific job to another and they are numerous to mention. However, for the purpose of this study unit, few of them will be discussed. Bakewel (2007) made reference to the following tools required in present day libraries and information centres for an operational resources sharing. These cut across:

- WWW
- Web OPACs
- Variant electronic formats (Hypertext Markup Language (HTML) etc
- Email
- MARC
- Z39.50
- Digital Libraries
- Staff members
- Social media

1. WWW: The WWW also known as the Web is an assemblage of websites stored in web servers being connected to local computers through the Internet. The World Wide Web is a global system of Internet servers that offer access to documents that have been written in script. This access is known as Hypertext Markup Language (HTML). It permits content that require interlink to both local and remote environment. Presently, many libraries and information centres across the globe now uses WWW to share their resources within and among other libraries they have entered into agreement with, such that, their users will not suffer and the library continue to grow.



Fig 3: Image of WWW

2. Web OPACs: The Web OPACs is an online public access catalogues which can be accessed through the World Wide Web. The OPAC takes place through the published catalogues and periodical lists. The Web OPACs enable one to recognize the materials that are available within the library and others as well. The essence of using the Web OPACs is to have a quick response or answer to inquiry made in the library by users.



Fig 4: Image of Web OPACs

3. Variant Electronic Formats: The variant electronic formats comprises of the Hypertext Markup Language (HTML), Portable Document Format (PDF), and Joint Photographic Experts Group (JPEG), etc. These are used to convert data and information into different text and images before they are transmitted or transported through online platform or internet to where they are required. This has become one of the ways through which resources are shared in most libraries today.

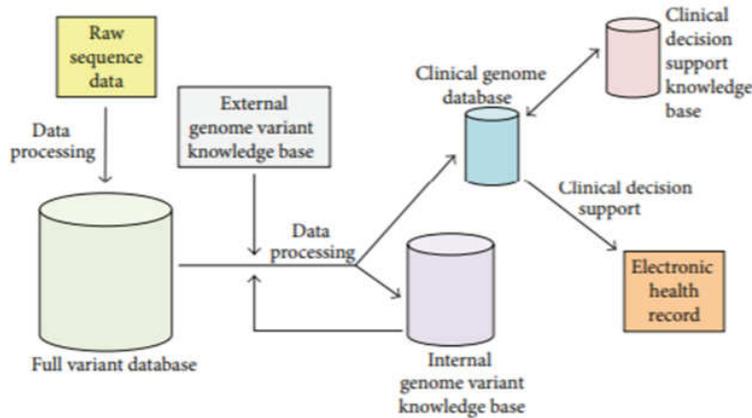


Fig 5: Image of Variant Electronic Formats

4. Email: The email is an Internet protocol which permits communication between individuals through computer usage connected to the internet. The user of the computer makes conversation and sends memos and data/information collections that are of high value to other users and libraries, within local and across different networks. Through this medium, resources can be shared among libraries from one location to another, thus, enhancing efficiency of staff operations.

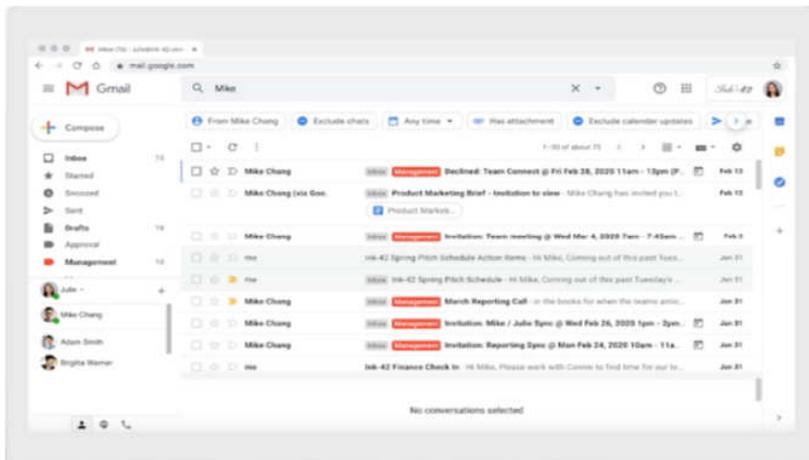


Fig 6: Image of how Email looks

5. MARC: is known and called machine readable cataloging. It is an international standard digital presentation used for the explanation of bibliographic objects. It enables the conception and distribution of computerized cataloging used among libraries in diverse countries. MARC has become a global standard by most libraries used in the sustainability of procuring anticipated and dependable cataloging data. It is used for profitable library automation systems, where bibliographic information resources are shared. It leads to the avoidance of duplicating effort, which ensures bibliographic data in the automated systems.

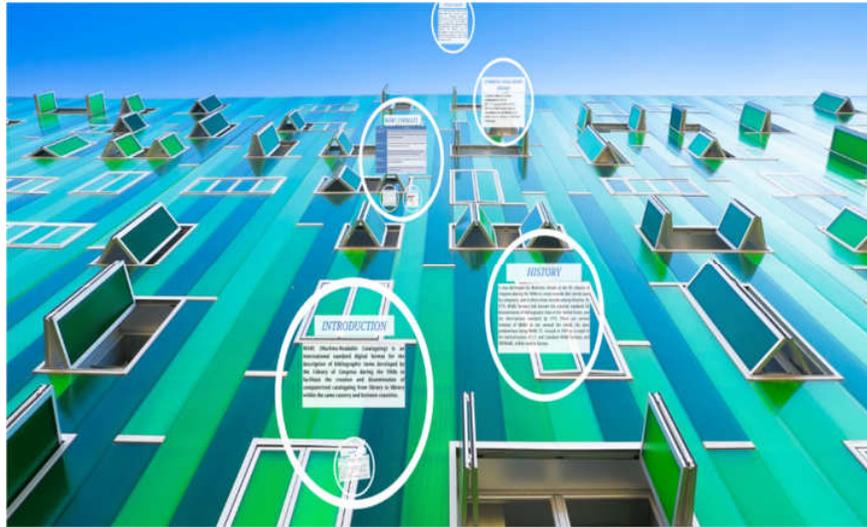


Fig 7: Image of MARC

6. Z39.50: The Z39.50 is a new modern technological tool used for searching and retrieval of information from databases. It is a client-server protocol which permits computer user to make inquiry from unreachable information such that, the information could be retrieved from the system using software of the local system. The protocol certainly avoids waste of time and energy when technically operated. Staff of the library could make use of it to transfer resources or information to other libraries and information centres.

Z39.50 Model of Resource Discovery

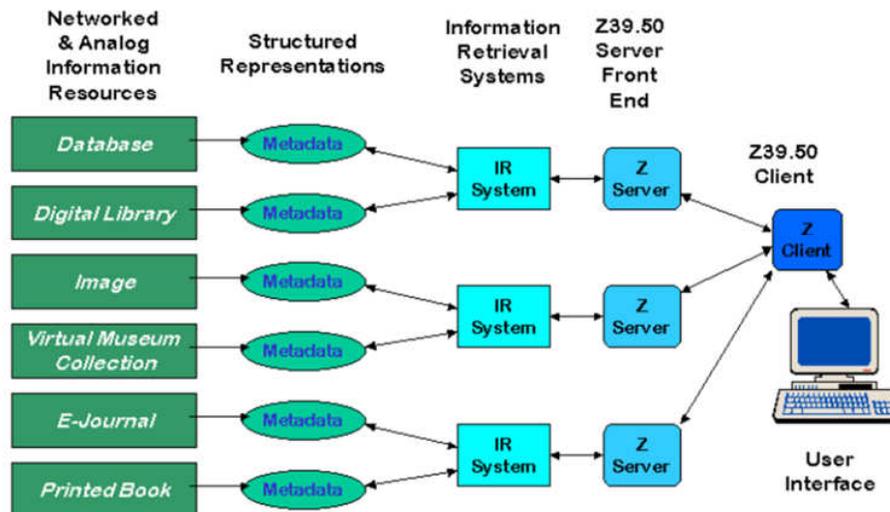


Fig 8: Image of Z39.50

Z39.50 Model of Information Retrieval

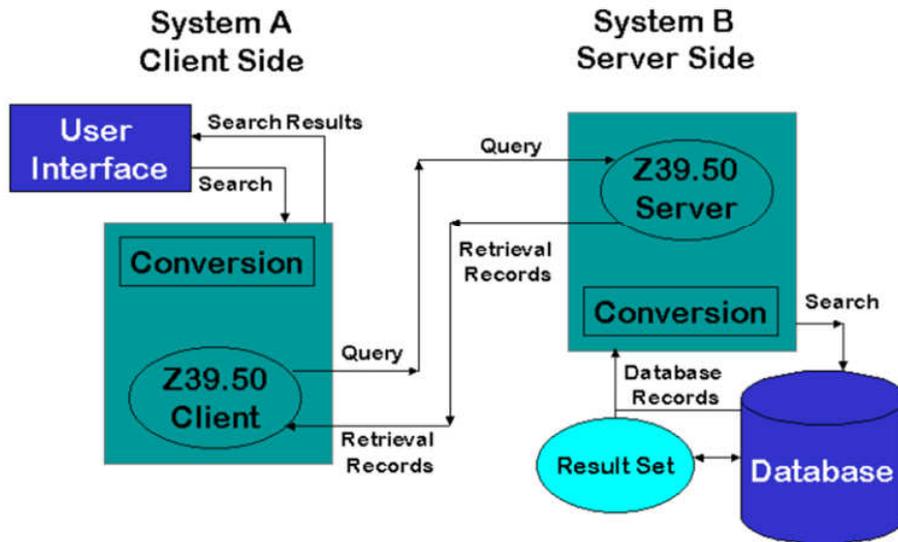


Fig 9: Image of Z39.50

7. Digital Libraries: A digital library is also known as an online library or an internet library which comprises of digital collections of text, images, audio, video, digital documents, media formats stored in an online database. These can only be accessed through the enabler of the internet. Digital libraries are virtual libraries which are connected to the internet. Most of the quantities of resources are accessible in machine-readable format through the aid of the computer. Digital libraries are imperative for the advancement of resource sharing activities. It is much stress-free to direct messages using the electronic documents of text, HTML, PDF, among others. Most libraries that are into resource sharing operate in a virtual platform. In digital libraries, we have different types, typologies of their collections, technologies used.

Types of digital libraries

- Stand-alone digital library
- Federated digital library
- Harvested digital library
- Data warehouses
- Digital library of media and cultural affairs
- E-learning web-based digital library
- Digital library of Tourism
- Children digital library
- Digital library of law and legislation
- Local history digital library

Typologies of digital library collection

The types of digital library collections are:

- digital collections of text
- images
- audio
- videos
- digital documents
- media formats stored in online database
- e-journals
- e-newspapers
- e-books
- reference resources in e-format
- selected websites
- OPAC-online public access catalogue
- E-mails
- Online discussion forums
- Newsgroups
- Web conferencing
- Internet relay chat
- African journals online
- Directory of open access journals

Technologies used in digital libraries

- Social media management system
- Content management system
- Internet of things
- Blockchain technology
- Artificial intelligence
- Big data technologies
- Library bookmark apps
- User-focused interfaces and application
- Augmented reality
- Digital interfaces for printed books
- Drones
- Driverless cars
- Online reputation monitoring device
- iPhone
- Computer

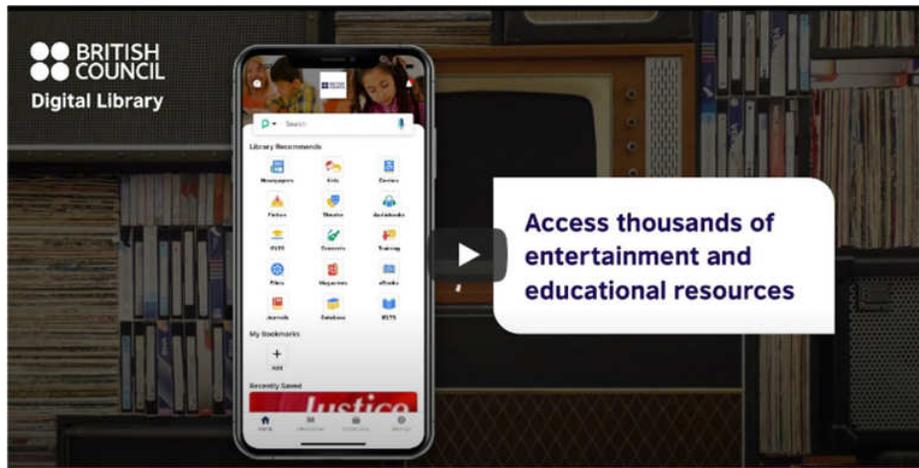


Fig 10: Example of digital library



https://www.youtube.com/watch?v=FKP2KW_x7SI&feature=emb_imp_woyt

8. Staff members: Staff members which comprises of different categories of non-professional, professional and para-professional are also know to be tools used in resource sharing in libraries and information centres (Bakewel, 2007). Without the staff members' cooperation, working tirelessly in ensuring all the whole work and processes are put in place, it is impossible for the operation of resource shsring to be actualised. The staff ensures the computers are connected, documents scanned and sent through to the appropriate place where they are required. Staff members' serves as a most significant tool among all the tools mentioned thus far. Examples of staff position and roels in resource shaing are:

- (i) **The library manager:** The library manager being the head of a particular unit in a specific library could share their resources of copiers, fax machine, computers, office chairs and phone systems to other libraries that do have adequate resourecs which their staff could work with. By this act, you are supporting one another for service delivery to meet users' information needs.
- (ii) **A cataloguer and classifier:** The role of the cataloguer and classifier is to ensure that the library materials acquired are well organised and arranged on the shelf. If it happends that there is no qualified or adequate cataloguer and classifier in a particular library, the assistance of the current library cataloguer and

classifier could be requested to go to another library to render such services to them. This would bring smooth functions or operations of the present in meeting their community needs.

- (iii) **Library resource sharing specialist:** The library resource sharing specialist consists of different work operations that cut across checking the library unified resource management system and seek advice on the configuration process; uses diverse techniques that would be efficient and effective for delivery of library materials to other libraries; assist in areas of difficulty on unresolves clarity regarding how to cope with expenditure of library book purchase, processing, handling and delivery the resources to the designated centres or libraries, among others things to numerous to consider.



Fig 11: Example of Staff members with their roles (Uniqueness-work together as team irrespective of background)

9. **Social media:** Social media are communication technologies that permit the formation, sharing or discussion of material, thoughts, business benefits, and additional procedures of countenance through computer-generated groups and systems (Khan & Bhatti, 2012). The social media affords libraries and information centres the opportunity for larger communities of libraries irrespective of the geographical location. With the aid of the social media tools, for example, facebook, LinkedIn, Twitter, Flickr, YouTube, Blogs among others, libraries are able to send and transfer different information and documents to their counterpart for resource sharing purposes (Roebuck, Siha, & Bell, 2013). This would save the libraries the energy and time which they supposed to have spent using other medium. Below are five (5) examples of social media and how they could be used for resource sharing:

facebook, email, linkedIn, MySpace and the twitter. The mentioned social media could be used for resource sharing in the following ways.

- (i) **Facebook:** The facebook being a predominant social network could be used for trasportating library materials from one library to another via online platform, provide there is connectivity to Internet, Wifi or broadwidth. The materials to be sent are uploaded into the facebook address of the designated library before the materials are sent out. Many people across the world, even outsides libraries are now dorminance using facebook for communication purposes. The communication purposes is essential as it keep both libraries update of what is going on within their different space.
- (ii) **Email:** The email is an Internet protocol that permits communication between individuals through computer usage connected to the internet. The user of the computer makes conversation and sends memos and data/information collections that are of high value to other users and libraries, within local and across different networks. Therefore through this medium, libraries could share resources with one anothr provided they have the right email address of the library where the materials would be sent, provided it was well uploaded in the composed inbox of the email. It email is very efficient in transporting any information or documents, no matter how huge it is. This method enhances efficiency of staff operations.
- (iii) **LinkedIn:** LinkedIn is a professional network site dedicated for experienced, skilled and knowledgeable individuals, where they could share their thoughts and other things associated with disciplines, job search and service delivery (Storrs, n.d). LinkedIn has shown to inspire professionals by connecting with one another such that, real life situations are solved. The linkedIn could be used to share reources among other libraries and professional and from there they can pick the shared materials up, whenever, because the materials are also stored there.
- (iv) **MySpace:** MySpace is another type of social networkk created for interaction purposes, either from one individual to another. The essence of MySpace is for friendship purposes, thus getting involve with one another by way of contributing to individual networking space. Those involved with each other knows that, their main aim is friendship, and is to benefit from each other. In MySpace platform, it is indicated that, the essence of sharing particular information could lead to giving contact to others. Such

contact is expected to bring benefits to the individual library involve in the platform of My Space.

- (v) **The twitter:** The Twitter has become widely used social network across the globe, including libraries and information centres. It is used to share library products, services and other activities like research week and newly arrived books, journals and antifacts happening. With this in mind, users could post, follow and trace certain tweet that was posted in the library and those responsible in managing the tweet in the library could respond back as well.

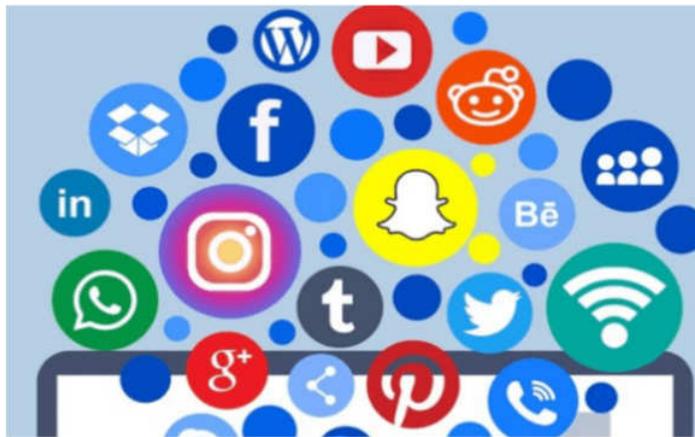


Fig 12: Logos of Social media

3.2 LEVELS OF RESOURCE SHARING

The levels of resource sharing vary in context, practice and organisation. The reason for this analogy is that, there are some libraries that are newly established, others still growing, while some already stable. Therefore, the level at which they will operate and function cannot be the same. In light is this, I would like to bring you to the content under discussion which are categorised into:

- Local
 - Regional
 - National and
 - International
1. **Local** Local is one among other levels of resouce sharing. It has to do with resource sharing at the beginning stage or lower level where libraries do not have to bother on how the resources are shared, rather they sort the available resources with each other especially since they are within the same neighbourng town or city and urban cities (Kaur, n.d). It can be establish that this level

of resource sharing is very easy as it can be monitored through different means of either phone calls or social media.

2. **Regional:** In the regional level of resource sharing, resources shared are not within the main stream of town or cities where things could be monitored easily, but to a far region of the environment where the library is situated. This could be attributed to a province or a whole state in a nation (Kaur, n.d). In this regards, it is believed that the entire state should be able to benefit from the resources being shared among libraries.

3. **National:** When we say national level, we are referring to entire nation or country. At the national level resource sharing could be accomplished between several libraries within the country. At this level, when all the available resources in libraries are adequately utilised through a cooperative medium, then the purpose of inter-library loan is well articulated and achieved. There is no any method far better than this one because the libraries and information centres should be able to cater for all their users and anticipated ones to come. This pattern cut across those in academic, school, public and national libraries, provided through inter library service delivery (Kaur, n.d; Chatterjee, n.d).

4. **International:** This is one of the paramount instances of international cooperation regarding resource sharing programme in library and information science profession. In this level, most of the libraries and information centres are well resourced by their government and other philanthropic organisation. Some of the libraries at this level could extend their hand of fellowship and support to other nation's librarians considering the multiplicity of adequacy of library materials that they have. There are scenario where they might want to also practice paperless libraries, as such, they could give away some of the books and hard copy materials that they have acquired or possibly old materials. A good example of this type is the UNESCO library, OCLC library among others. There are several agencies and bodies such as IFLA and FID that are in this category too (Chatterjee, n.d; Muthu, 2013).

3.2 Factors Associated With Resource Sharing In Libraries

Certain factors is believed to affect resource sharing in libraries and this consists of availability and accessibility to several facilities of computer, telephone, fax, email, satellite communication, reprography and finance, among others (Mannan and Bose,1998). Venkatachalam (2011) believes that, resource sharing became inevitable due to the growing needs of

most library users today and as such, it becomes difficult to quantify what could necessitate resource sharing. This made Venkatachalam (2011) highlight some points and they include:

1. Upsurge in Library Users: As institution continues to grow, students are admitted into different programmes. It is believed and expected that, the users of the library will definitely increase. Therefore, the rise in students' population could lead to upsurge of library users. This implies that, the library organisation should make adequate preparation and plan towards meeting this upsurge in library users. But because many libraries do not have the capability, turn to resource sharing as alternative measure in supporting and strengthening their daily service delivery/operations. The upsurge in library users could also be attributed to rise in educational needs, rise in birth delivery, movement of people from rural to urban, priority for growth and development of the economy among others. All these would lead to the use of libraries and their information resources, which the library organisation must definitely cater for their information needs. The increase in users demand based on different information needs could result to ways which libraries and information centres will start opting for resource sharing strategy, as it offer useful satisfaction to many library problems.

2. Library Services: Library services have become complex and diverse in recent times due to increasing information needs of users being difficult to handle. This vary from one user to another. There are some users whose information need might require the librarian to do a rigorous search before they could be assisted. In that regards, the support of other libraries might become alternative especially when the user is not satisfied with the services offered to him/her. The contiousness regarding current awareness service and selective dissemination of information in libraries has also made many users to be spoon feed, especially with information repacking. This could require assistance and support from other libraries as librarians need to brainstorm with other of their counterpart of best practice and new approaches. There are some interdisciplinary programmes not in the present institution where the users is situated, therefore seeking support from other institution library become alternative especially when that library has the course in question.

3. Web Based Resource Sharing: Web based resources sharing are those information resources that are shared on the web through enabler of digital technologies. The web based resources comprises of collections of text, images, audio, video, digital documents, media formats stored in online database. The integration of computers and other associated telecommunication technologies into library operations has made resource sharing feasible and accessible by most libraries that

are into this mutual agreement and also connected. For Web based resource sharing to become functional, computers and internet connectivity are prerequisite to its operations. Many of the libraries that have this technology would no longer have to struggle on how to share their resources since they are fully automated and connected into Internet. When reflecting on library network, you are making references to interconnectivity among different computers and areas networks. Therefore if libraries are not connected to the internet, Web based resource sharing cannot be attained. The Web based resource sharing become significant especially when libraries want to share large documents that would require google drive doc. It is essential that recent libraries and information centres should opt for internet connectivity for an operational Web based resource sharing. This is because Web based resource sharing helps to advance free flow of information without geographical boundaries. Examples of web based resource sharing provided by libraries are: Web OPAC, library webpage, bulletin board and access to database and electronic selective dissemination of information among others.

4. Increase in Knowledge Growth: As scholars and researchers continue to deepen their thoughts through research article publication in both private and public institution of higher learning, knowledge growth will increase. Therefore, this knowledge growth cannot be kept in isolation, rather be shared among libraries, such that, users of libraries and staff members would be abreast with current trends and practices of diverse field of study. This scenario is what we termed research and development in most institutions. Research and development has become more broaden where its harvest has led to increase knowledge production. There is no way libraries could shy away from knowledge production as it another way of strengthening and supporting resource sharing because without knowledge being produced, there is nothing to share. Most of the materials acquired in libraries today where through this means of knowledge production.

5. Challenges faced during Acquisition Process: It can be observed during acquisition process that several challenges are faced, such as inadequate space to house the materials, finance and the adequate staff members to help with the work processing. Therefore, instead of many libraries to continue with such challenges, it is better few libraries should shoulder such responsibilities as a way of supporting each other. Those whose capability are stronger could stand in for others by creating more space to keep the materials acquired, making provision for the finance required and equip staff members to carry out the task. Supportive acquisition is very beneficial as it reduces much task; eliminate issue of space, balanced building of collections to be acquired

and above all, efficient and effective service delivery to users and balancing of task by staff members.

6. Economic Resources: The floatation in prices of books, electronic and other reading materials meant for libraries and other information centres has caused the need for resource sharing in present day library organisation. The rise and fall of library materials could result to the dwindling economy of many nations. Since many developing nations of the world could no longer cope with their inability to fund libraries as expected, due to the dwindling economy, resource sharing became alternatives. Besides, there are some who could have even try on their part to support their libraries through acquisition of required materials but since resource sharing was introduced, they no longer have the intention to cater for their library organisation at all. The regular budgetary allocation given to libraries from time immemorial has always been small, how mush more now that all nations of the world economy are shaking. It is expected that, library organisation budget will be reduced to the minimal.

7. Language barriers: There are so many books today which were not written in English language and they need to be consulted as well. Besides, some nations/countries whose language are not English also need to support users of libraries in those countries. Therefore, it is expected that, those libraries will have to go extra miles in ensuring that those users are catered for, thus participating in resource sharing approach, such that, materials written in English could be shared from other libraries, in order to attend to their information needs. While in the case of those in other langauges could be translated in other to make provision for all users irrespective of their race and background.

8. Variety in users needs: The information needs of users vary for diverse purposes. Therefore, the expectation is that, as users' information needs continue to grow, libraries and librarians should plan ahead of time in order to attend to these needs. For example, a student in a high school will not have the information need of someone in the university or already in the workplace environment. These categories have different needs and should be approached differently (Prakash, 2017).

3.4 Policy of Resource Sharing In Libraries

Policy is significant in resource sharing in libraries. The reason is that, it would help guide both party of members (libraries) to adhere to rules and principles that would bring about smooth administration of the practices of the materials to be shared. Usually, there are terms of condition that must be followed in order to avoid conflict between the

libraries that have entered into mutual agreement of resource sharing. The A good example of resource sharing policy is the West Virginia library commission (n.d). This policy is tailored towards adhering to rules and regulations that govern an organisation based on their set objectives and goals which they want to accomplish. Therefore, in order for resource sharing to be harnessed or take place in library organisation considering their day to day operations, certain policy has to be enacted such that, both libraries, local, regional, national or international, that are into the mutual agreement of sharing resources will be well guided in their operations and service delivery. It is expected that, the policy should be flexible in order to accommodate each other weakness, in case there are flaw with stipulated law and rules based on the use of the facilities used in carrying out the processes of resource sharing. The two bodies or libraries could also review the policy after a ceratin number of years, in case there are needs for amendment to be made. All these must be documented and signed by both parties, especially how the resource sharing operations should be runned.

The policy of resource sharing should be guided and tailored towards the mission statement and service delivery and the role which each party are supposed to play. It is the responsibility of the head of the library or director to draft the policy and send out to the other party to study and familiarise themselves the terms of condition before it is eventually signed, as the policy that has been signed cannot be altered except otherwise. Policy are essential no matter how small the organisation is, as it shows some terms of commitment by both parties involved. Therefore the growth and practices of resource sharing among libraries and information centres should be anchored on policy affirmation. The policy affirmation in resource sharing will help to offer maximum service to library clientile over suitable and practical prepared resources. The policy will sustain the values of intellectual freedom and fight against censoring library resources (Metropolis Public Library, 2015).

4.0 SUMMARY

This unit examined the resource sharing tools from digital technology perspective admist other isseus of various levels, factors and policy that surrounds resource sharing in libraries and information centres. It was established from this study unit that, different resource sharing tools from digital technological perspective which comprises of WWW, Web OPACs, variant electronic formats (Hypertext Markup Language (HTML), email, MARC, Z39.50, digital libraries, staff members and social media are currently in use. These tools are indispensable considering the enourmous task involved in accomplishing resource sharing processes. The tools serve as backbone to the operatioins of librarians on a daily basis. The various levels of resource sharing which

consist of the local, regional, national and International becomes imperative as no library could be self-sufficient. Recall that, since resource sharing is indispensable in present libraries and information centres, the need to appropriate amendable levels become crucial. On a quick note, certain factors that necessitate resource sharing, such as availability of facilities of computer, telephone, fax, email, satellite communication, reprography and finance, (Mannan and Bose, 1998), and among others were upsurge among library users, library services, web based resource sharing, increase in knowledge growth, challenges faced during acquisition process and economic resources, language barriers and variety in users needs (Venkatachalam, 2011) continue to reinvigorate libraries in practicing resource sharing till date, otherwise, it could have become a nightmare since financial dependence of libraries has become unbearable circumstance.

The inclusiveness of establishing resource sharing is not on the resources itself but largely the tools used to foster and transfer the documents to the various libraries. The affirmation of resource sharing in present library system could not have been possible if there were no proper documented policy that guides the operations, mission and vision statement of the library. The policy according to West Virginia library commission (n.d) connotes the rules and regulations that govern the library from when the set objectives and goals are outlined to the completion of resource sharing. With this at hand, librarians and libraries having the mutual agreement are able to work together without challenges. The policy is expected to regulate every task, from staff behaviour to use of facilities for the resource sharing process.

As a student, it is expected of you to have a quick understanding of how the various tools are used for resource sharing, coupled with the levels, factors and policy that guides resource sharing in libraries and information centres. In order to do this, you are to familiarise yourself with every course materials and other related texts, online materials and video links provided for you in this study unit. This unit has substantiated quantum information that will help you gain insights in your course study. Besides, expedite action to have a quality time to study since most of the materials to covers are much.

5.0 CONCLUSION

In this unit the resource sharing tools from digital technology perspective were considered, followed by the levels, factors and policy of resource sharing in libraries and information centres. These factors are indispensable in present context where many nations of the world are in need of resources for operationability. Although, some libraries especially in African context are yet to see the future goal of resource

sharing even though much has been discussed. As knowledge is indispensable to every human, so also is resource sharing the panacea to sustainability of library transformation and growth. Therefore, libraries irrespective of their types should endeavour to inculcate resource sharing into their operations and practices.

6.0 TUTOR-MARKED ASSIGNMENT

1. What are the various resource sharing tools from the digital technologies perspective and why are they important in present scenario of library system
2. What are the levels of resources sharing in libraries and information centres
3. What factors could necessitate resource sharing among libraries and information centres
4. Why is policy imperative in resource sharing among library organisations

7.0 REFERENCES/FURTHER READING

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UNIT 3 BENEFITS, BARRIERS AND PREPAREDNESS OF RESOURCE SHARING IN LIBRARIES

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Benefits of Resource Sharing in Libraries
 - 3.2 Barriers of Resource Sharing in Libraries
 - 3.3 Preparedness of Resource Sharing in Libraries
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

This unit presents you with the benefits, barriers, and preparedness of resource sharing in libraries and information centres. The justification was how libraries have improved over the years through quality service delivery to users. This has made staff members enforcing magnitude of why it is a must do practice since information and knowledge are prerequisite to sustaining their work force. Although resource sharing varies to users need and can be sustained when the practices are planned ahead of time. Therefore, in order to have adequate benefits, and avoid barriers, preparedness of resource sharing should be planned with stakeholders of the libraries and experienced librarians.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- substantiate the benefits accrued to resource sharing in libraries
- elucidate the barriers that affect resource sharing in libraries
- determine how libraries and information centres should be prepared when it comes to issue of resource sharing.

3.1 Benefits of Resource Sharing In Libraries

The issue of benefits in resource sharing varies from one user and libraries to another. What library A might see as a substantive benefits could differ to library B. Therefore, in light of this, Islam (2012) made reference to the following as accrued benefits which both libraries and users should derive when engage in such practices and they are:

- Fulfil library objectives and goals
- Enable cooperative procurement and distribution of modern e-resources
- Ability to access and download resources remotely by users
- Support the growth of acquisition and avoid duplication of resources
- Apply the use of digital technological tools for enabled resource sharing
- Incorporate the use of multiple databases in many libraries
- Help to create electronic journal focal point that could serve eternal archive of documents.
- Provision of all-embracing services that incorporate full text databases to users
- Provide access to digital resources through instituted mutual borrowing arrangements
- Full participation of libraries to share their resources irrespective of any conditions attached (Islam, 2012).

Borek (2006) point of view is associated with constructive motives and not selfishness. Borek (2006) further refers to control of reduction of budgets by both library organisations. Strategies of learning from each other were also identified; building improved tools that could help serve mutual users to better advantages of their collections (Borek, Dian, et.al 2006).

Another emphasis made by Bailey-Hainer, Beaubien, Posner, and Simpson (2014) regarding the benefits gained when libraries and information centres are involved in resource sharing are:

- Parent institutions share a common purposes of learning, scholarship, teaching and research activities in diverse layouts
- Dependence on each other as source of leverage
- Reduction in budgeting through non-purchasing of materials
- Improved efficiency in service delivery
- Access to bibliography of documents
- Multiple access to unlimited library documentation
- Fulfillment of information centers goals through enhance information needs of users

Martey (2002) also acknowledges several benefits related to resource sharing in librarians and information centres and they are as follows:

- Reinvigorating individual users information needs
- Staff development service
- Access to more information and service delivery
- Access to consortia members
- Access to low-cost document distribution services
- Create/bring selective dissemination of information
- Improved human collaboration skills development
- Cheap library subscription delivery
- Institutional library exposition especially among national and international levels
- Brings parent Institution sustainability services
- Regulation of library services across different nations
- Enable libraries to have access to different available infrastructure
- Opens up different collections and services of many libraries
- Help to advance the future plans of libraries service delivery
- It supports the saving of time and library space

In the same manner, Baich, Zou, Weltin and Yang (2009) gave their points regarding the benefits of resource sharing to include:

- Necessitate the use of diverse types of technology infrastructure to sustain resource sharing
- Workflows of library operations becomes fascinating
- Leads to automation of libraries
- Measure or approach of transferring library materials require continuous updates
- Affords the use of operational integrated library systems
- No stress involved when transferring of documents and information
- Ease of repacking of documents through enabler of modern technological tools
- Less stress in shipping service due to technology involved
- Elimination of human interference or mediator
- Fast and a lesser amount of expenses in transactions of materials

3.2 Barriers of Resource Sharing in Libraries

Barriers are inevitable in any workplace learning, even in life generally. Barriers helps to revitalize every system, as what is not understood could be improved based on the fault made in the past. Barriers to resource sharing in libraries according to Ali, Owoeye and Anasi (2010) consist of the following:

1. Funding. Funding is crucial in the sustainability of any organisation work operations. Without finance many activities in the library organisation is believed to be hindered. Due to the nature of economic instability causing dwindling financial economy, many libraries and information centres are faced with the practices of resource sharing as they could not acquire all the necessary facilities that could foster such practices. Presently, many libraries, academic, school, public and research are poorly funded due to the priority placed on them. Even when adequate budgetary allocation is assigned or approved for library organisation, corruption has infiltrated into diverting such funds into other activities, leaving the library to suffer. In order to have functional practices of resource sharing, funding should be a top priority in all libraries and information centres. Tanvir (2005) made references to economic constraints confronted by almost all libraries and information centers today, as the achievement of outstanding resource sharing is adequacy of finance.

2. Organisation: There are so many libraries and individual librarians not well organised in terms of having a concrete planning and execution process. This is likely going to affect such individual librarian and libraries. Proper organisation starts from having a workplan with time frame. Without proper coordination between libraries, it is difficult to initiate certain ideas that could bring result to the library system. Ojedokun (2005), notes that, some institutions in South Africa, intends to become members of a standing consortia, other libraries wanted to establish a new one. This scenario indicate that library institution lack organisation, otherwise, what is the point of starting a new, when plans are already in place to be part of an existing one. This situation is associated with non-cooperation among some libraries in Africa, due to lack of understanding and the goals they pursue. When there is lack of organisation among libraries and members, resource sharing can never work. Libraries that are mutually fixed must understand themselves and work together as team. Aina (2001) notes that, many libraries have failed due to lack of library cooperation, to implement good strategies. This is one of the problems fronting many academic and resource libraries in Nigeria today.

3. Lack of approved and documented policy: Policy is very important for the smooth running of any library organisation, especially carrying out a functional and active resource sharing practices. It is believed that, based on extant literature search, many libraries and information centres in Nigeria lacks approved and documented policy that guides their operations. If there is well documented policy, according to Dada (2007), many difficulties fronting libraries will not be there. Therefore,

in order to have a functional resource sharing, there must be approved and documented policy.

4. Lack of ICT infrastructure: ICT infrastructures are technological tools used in the transmission of the documents shared among libraries and information centres. Without these facilities, many libraries are likely going to suffer and might not achieve the purpose of resource sharing. The ICT infrastructure work behind the scene even while the library staffs are just sited on their own, because the documents have been programmed to process as required. There is no present day library that could function effectively without modern ICT infrastructures. Nwalo and Ikem (2001) note that, libraries should make plans and preparation towards acquiring the ICT infrastructure, if they want to adhere to the practices of resource sharing in their library organisation.

5. Lack of adequate skills and knowledge to operate ICT infrastructure: Prerequisite skills and knowledge are crucial for the operations and functionality of ICT infrastructure. The reason being that, many of the ICT infrastructures require broaden knowledge of how to use them. Knowledge of operation requires reskilling by librarians since many of the software embedded in them are deep to understand. As such, libraries should send their staff members for acquisition of more knowledge and skills in order to function in their space, as technological tools, such as, Web OPACs, Hypertext Markup Language (HTML), MARC, Z39.50 and social media require broaden knowledge and skills for resource sharing to be effective. What these tools do is transmitting of the documents through onlineplatform (Tanvir, 2005).

6. Maintenance of union catalogue by most libraries: Its is expedite for all the libraries concerned with the resource sharing practices to be fully aware that they need to maintain union catalogue such that, all their documents and resources can be accessed globally, irrespective of geographical location and databases. Unfortunately, many libraries have not been able to adopt this practice. It is expected that, when union catalogue is not maintained, resource sharing might be hindered in some ways.

7. Incapability and refusal for fee payment by some libraries involved in resource sharing: The idea of resource sharing is not tied to one libraries to carry all the work load, rather mutual agreement for both parties. When only one library decide to buy and pay all required fees for purchasing and getting all the process of resource sharing going, it is belived that the other library is cheating in some ways. Therefore for the act or practices to be fruitful and functional, both libraries have to come together in agreement on what they are capable of buying and

sharing. With this in mind, there will not be failure from any parties' involved.

In light of the above, Prakash (2017) made references to other factors that could hinder or affect resource sharing in libraries and information centres and this include:

- Capable manpower
- Damage to self-sufficiency
- Emotional and physical trauma
- No institutional provision
- Struggle with mutual agreement
- Legal and administrative problems

3.3 Preparedness of Resource Sharing In Libraries

Preparedness is very important in anything that one does in life, irrespective of your position, level of education, experiences in workplace and intelligence. It helps you to be more focus and achive much task. Rabiou (2012) notes that, for libraries to be prepared regarding resource sharing there is need to plan ahead and attend to the following things/needs:

- Make sure the goals are spelt out explicitly
- Library user should be the fulcrum of the practices
- Access to relevant materials and services should not be undermined
- Budget allocation should be key element
- Staff be trained in key responsibility
- There must be mutual agreement among libraries involved

In the same vein, made reference to internet, and Information and Communication Technologies as Asamoah-Hassan (2002) and Rajasheker (2000) key factors that will enhance and tramnsit document delivery to stipulated libraries. Sharif (2006) also made reference to certain characteristics that could prepared libraries, fully involved in the process and act of resource sharing and they includes:

- Adequate preparation for funding
- Support from professional association
- Training of staff in different programme
- Support librarians work operations with required tools to work
- Having a reputable structure and standards among the libraries
- Regulate and retain suitable staffing

- Inculcate suitable skill of the use of technologies among staff
- Ascertain and eliminate gaps in staff training through work process
- Afford a good working conditions/stations for each staff member with access
- Implement diverse high-technologies for staff members
- Make sure all staff members are network for individual workstations to share inter-library loan services
- There is need to advance well-organised workflow and workplace preparation.
- Unify all interlibrary lending functions such that, sending/transmitting, recovering, delivery, and photocopying, will not be a problem to librarians and libraries.

4.0 SUMMARY

This unit examined the benefits, barriers and preparedness of libraries towards resources sharing in present day information and knowledge economy. The benefits accrued towards resources sharing gave libraries the impetus of futuristic approach which cannot be avoided since libraries are warehouse of knowledge accessible to all. This approach enforces that resource sharing has come to stay in libraries considering issues with fulfilment of library objectives, enabling cooperative procurement and distribution of modern e-resources among libraries and information centres, collaborative effort with one another in handling of information resources, among many more.

Librarians and libraries involved in the practices of resource sharing believed that, when given a better opportunity to operate through sustain ICTs, the benefits associated with resource sharing cannot be quantified. Nevertheless, while pondering on the sustained benefits of parent institutions realizing the purposes of learning, scholarship, teaching and research activities in diverse layouts through the effort of resource sharing, some elements began to thwart the practices of resource sharing in Africa, specifically Nigerian libraries and information centres. These include funding, lack of organisation, lack of approved and documented policy, lack of ICT infrastructure, lack of adequate skills and knowledge to operate ICT infrastructure, maintenance of union catalogue by most libraries, incapability and refusal for fee payment by some libraries involved in resource sharing among many more. These challenges forced and will continue to propel other libraries involved in resource sharing to consider and reconsider adequacy of preparation for funding, support from professional association, training of staff in different programme, support to librarians work operations with required tools to work, having a reputable structure and standards among the libraries,

regulate and retain suitable staffing, and many more as stipulated by Sharif (2006).

5.0 CONCLUSION

Since resource sharing is dynamic for the sustainability of libraries and information centres, it is imperative we attach value to its benefits. The preparedness by libraries call for this initiatives and processes involved. This would help not only students studying towards this course to develop the initiative of sustaining themselves through appropriate literacy of knowing when and how to apply certain strategies that would bring benefits of sharing to them. Nevertheless, without the preparedness of libraries and information centres whether public, academic, school, media and research towards achieving the goals of resource sharing, its purpose is defeated. It is therefore advisable that students irrespective of their career goals plan towards the goals associated with preparedness, as it helps not to put one off, rather makes you feel well relax and forsse the future of your enterprise.

6.0 TUTOR-MARKED ASSIGNMENT

1. Why is the benefits of resource sharing significant at a time like this in a waving economy of Nigeria?
2. How will libraries and information centres combat the barriers affecting resource sharing?
3. What feasible approach could libraries adopt in having a unified preparedness for resource sharing?

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MODULE 2 NETWORKING IN LIBRARIES AND INFORMATION CENTRES

UNIT 1 CONCEPT OF NETWORKING AND THEIR TYPES

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Concept of Networking
 - 3.2 Types of Networking
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources /Web Resources

1.0 INTRODUCTION

In module one, under unit one, two and three, issues related with concept, objectives, methods, history, levels, factors, tools, policy, benefits, barriers and preparedness of libraries and information centres towards resource sharing were addressed. It is imperative to note that, the lubricant that support resource sharing achievement in present day libraries is networking. This brings us to module two, unit one, under discussion, 'concept and types of networking'. Networking as a concept is not new and does not concern only online connectivity, where wires and cables are fussed together in order to have communications and interaction through gadgets of computers. Rather physical connections or meeting with people in banks, hotels, conferences, workshops, and seminars, among others. The essence of networking has become a global phenomenon which needs a serious approach due to technological divide among people, changes in diverse environment, growth and development, creation of innovation and competitions among enterprises. Without networking, the world would have become a chaotic environment, such that, we might not be able to share ideas, meet people to solve problems and affect lives. In the light of the above analogy, this section explores concept and types of networking.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- define and understand what networking entails
- discuss the various types of networking.

3.0 MAIN CONTENT

3.1 Concept of Networking

Kagan (2020) alludes that networking is the process of connecting people together. In another way, information, concepts between people of common interest are also connected together. The desire to share information among people is also to have relaxed environment. Networking starts with a common goal attached. Another remarks made by Scarpati (2018) has to do with a practice of transferring and replacing data and information among nodes over a collective standard of information systems. Networking is not only associated with library organisation, rather with people and other enterprises due to the benefits associated with it. People network for diverse reasons, such as, professional affiliation, business opportunity, social groups, church gathering and clubbing, among others.

Venkatachalam (2008) alludes that, networking implies intertwined communication among libraries. It is a scenario where several libraries come together for a common purpose, to communicate and share information. The interlinked libraries might be from different regions that cut across cities, states and nations (Venkatachalam, 2008). When two or more libraries decided to cooperate with one another through sharing their resources based on unwavering commitment, it could be termed networking (Venkatachalam, 2008). It can be deduced from the emphasis made above that, when such act occurs, it offers improved access to greater and better resources dignified for quality service delivery.

In present day library system, networking is crucial because it allow library professional to enlarge their loops of connections, such that, it creates better opportunities for them in the future. This opportunity brings consciousness of importance especially in the field of their career, where librarians could explore and also meet people of various backgrounds. It sustain librarians' connections as they continue to deepen their knowlwdge for improve job performance, while staying in online platform, to keep them abreast of recent information (Kagan, 2020). This information comes through chatting, sharing and locating

each other online (Kagan, 2020). In order to broaden students' horizons, some video clips that will enrich their understanding and how to harness its importance in library environment has been provided in this study unit. It is expected that the student should create time to watch the videos.

Watch these Videos on How Networking Functions

Create time to watch some of the videos below, as it will help to broaden and enrich your knowledge of how networking works in the organisation. The information and exposition you will acquire or gain from watching the videos could be applied in the library environment, such that, familiarising yourself will not be a problem at all.



1. <https://www.youtube.com/watch?v=cNwEVYkx2Kk>



2. <https://www.youtube.com/watch?v=t9TmvFvYfWw>

3.2 Types of Networking

Networking varies in operations, nature of applications and the organisation or individuals that use it. There are two primary types of computer networking and they are the wired and wireless networking.

1. **Wired computer networking:** The wired computer networking entails the usage of physical intermediate in order to convey information among nodes. The copper based Ethernet cables are normally used for this purpose due to its small cost and durable nature. The wired computer networking is suitable for digital communications in homes and businesses. In this regards, the optical fibers are used to transport data and information considering long distance and speed that it has to travel, although it has fragile components and much cost of tradeoffs. The wired computer networking deals with much speed, dependability and security is certain equated to wireless computer networking (Scarpati, 2018).
2. **Wireless computer networking:** The wireless computer networking applies to those networking that made use of radio waves for the transportation of data and information over air. This allows the device to be connected to the particular network in question without attaching cables. One of the commonest is the

wireless LANs. Others of such components are found microwave, satellite, cellular, Bluetooth among others. The wireless computer networking offers additional elasticity, movement and scalability during usage. It is imperative to note that, networking are categorized based on how they are built, designed and approaches to what they are met to do, especially with emphasis to their software and measure, and this include the LAN, WAN, etc (Scarpati, 2018). The computer networking uses physical network infrastructure of switches, routers and wireless access. These are being managed by software for enhanced security of the network (Scarpati, 2018).

Most importantly, it would be interesting to note that, prioritising networking is crucial in this time of digital technologies and considering the need to improve on ones self, academically, socially, mentally, and for societal transformation. Therefore, the priority which people place on the types of networking engrossed with could have effect on them, even among librarians due to personal lives and work operations. The types of networking discussed here consist of the following:

1. Business Networking: The business type of networking is those small networking which applies to small business owners. A good example of business networking is pharmaceutical store holders and commsumable stores among others. They get involve due to the benefits assoicted; such that, the associate will connect them to other people that will bring more business ideas to them and help them develop their business ideas further. This type of business networking is good because, it shows starting points with people you know to people you do not know. Relationship and trust are established during this process of networking (Scarpati, 2018).

2. Online Networking: Online networking is associated with social networking where people meet and share information to meet their information needs. Professional librarians are part of this cluster due to the nature of job they in meeting users information needs. Networking site for online networking are those categorised into LinkedIn and Twiteers. This online networking provides information regarding professional careers, locations, engagement with professional bodies such that professional could meet and interact and learn from each other. Information such as the resume are posted in this site, as it would help job seekers and employers looking for information to transform their organisation. LinkedIn is believed to be the largest professional networking site. Although there are still some professionals who still join othe various groups like the blogs, Meetup, online video conferences, LunchMeet, postcards, among others for other relevant information (Scarpati, 2018).

4.0 SUMMARY

This unit examined the understanding of networking being fundamental in life, irrespective of the level of education, position and exposure. In this study unit, we realise that, all forms of networking could be made practical. For example, the network of friends you had while in the university or even growing up could influence your life or career in one way or the other. The essence of networking is for both present and future reference. It is believed that, the networking or association of people you keep or in your groups will be willing, without string attached, to intertwine with you, especially in the areas of giving useful information, teaching you some tricks to business opportunity that could create jobs and other opportunity for you which might not be possible if you are not networking together. This approach is seen in the online and business form of networking.

Relating this to present library system, many libraries have different strategies through which they operate recently and in case, those libraries are not networking together with other libraries, they would be cut up in the wind of best practices and sharing of valuable materials that will enrich and support their users. The interlinked libraries known today in the world have flourished due to sharing resources through the support of the wired and wireless types of computer networking. In achieving this goal, they both use the copper based Ethernet cables and use of waves for the conveyance of data and information among libraries.

5.0 CONCLUSION

Networking is vital generally, especially with the right group of people amidst library and information centres in Nigeria. It shows an indication of advancement in organisational growth because by so doing you learn and unlearn in diverse ways, especially in this world of uncertainty and recent happening in information and knowledge application. The need to move forward becomes essential and this could be possible through the practices of your contacts and that is networking. The libraries should do better when they are consciouce of their network and purpose for which it was establish.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the term 'networking' and discuss the various forms of networking available to libraries today?
2. Of what relevance are the types of networking to libraries today?

7.0 References/Further Reading/Web Resources

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UNIT 2 BENEFITS AND BARRIERS OF NETWORKING

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Benefits of Networking in Libraries
 - 3.2 Barriers associated with Networking in Libraries
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
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1.0 INTRODUCTION

In module 2, unit 1, we discussed issues associated with the concept of networking and their types. Right now, we shall be considering the benefits and barriers of networking in relation to libraries.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, will be able to:

- explain the benefits associated with networking
- discuss the barriers affect networking and how can they be restricted.

3.0 MAIN CONTENT

3.1 Benefits of Networking In Libraries

Seven benefits of networking in libraries are identified, and these are: (i) socialisation, (ii) economic, (iii) problem solving (iv) brainstorming, (v) interaction, (vi) job search, (vii) skills acquisition. The benefits associated with networking in libraires are discussed below:

- (i) **Socialisation:** Socialisation has to do with getting to know each other even though you have not met before. Through networking libraries could afford to know what is happening on other libraries as intereation take place in this platform. Networking is so crucial that librarians could socialise with their fellow colleagues in other libraries considering latest happening in the profession and other issues that relate to their resource sharing practices. By socialisation, librarians get to know much about the class of people they are working with and by so doing think of

possible ways on how to improve the service of resource sharing among one another.

- (ii) **Economic:** Networking helps people to get involved into different business opportunities such as the sales of books, electronics and other reading materials meant for libraries and other information centres. These resources are inevitable when dealing with issue of resource sharing and without it libraries and information centres cannot be sustained. The fluctuation in prices of library materials has resulted in libraries not having adequate information resources. The fluctuation of prices of information resources also lead to the dwindling economy of many nations. Therefore the need for libraries to plan ahead becomes significant thus depending more in online materials since many libraries are now networked.
- (iii) **Problem Solving:** Problem solving has to do with attending to certain issues that are of great concern for the organisation or individual. The way forward for problem solving is when people are willing to apply their knowledge and skills to solve organisational problem. The problem that needs to be solved could only be when colleagues share their intuitive knowledge and skills together. However, since many librarians and libraries are working in different geographical location, the use and support of networking in libraries becomes imperative at this point as it could help to solve the problem libraries are having as libraries could network and share their knowledge and skills of resource sharing together.
- (iv) **Brainstorming:** Brainstorming is when people with the same mindset having core interest with one another put heads together to address certain issues that would benefit them. When people brainstorm they share their ideas, insights and knowledge in order to invent something or use it to solve a particular problem. Through the assistance of networking in libraries, librarians could brainstorm on best practices through which resource sharing to be improved in libraries and information centres.
- (v) **Interaction:** Interaction has to do with when people talk or share what they have in mind. Since many developing nations of the world could no longer cope with their inability to fund libraries as expected, due to the dwindling economy, librarians working in different libraries now interact on the way forward in resource sharing. Through this interaction, librarians are able to prefer solutions that could be beneficial to their resource sharing practices. The medium of interactions is social networking.

Besides, there are some librarians who could have even try on their part to support their libraries through acquisition of required materials, since they have interacted with vendors on how to get information materials to their libraries.

(vi) **Job search:** Job search is when people engage in looking for specific jobs that they want to do. This act could be carried out through the support of networking since librarians or those working in different organisations are connected together. In the job search, you do not need to travel to where the job is located, rather through your networking, the seeker of the job is able to search the internet and other web pages or sites for job opportunities. The reason why job search is important is that, librarians could gain opportunity to get jobs where they are needed most for resource sharing. The resource sharing practices require expertise of knowledgeable individuals in such practices.

Therefore, the job search approach will open opportunity for librarians to get jobs where they are mostly needed through the networking in resource sharing.

(vii) **Skills acquisition:** Skills acquisition is the act of adding value in terms of more knowledge and skills to what an individual already have. It takes the form of reskilling, education, training, exposition, gaining insights required for present needs of an organisation and individual. The essence of skills acquisition is to enhance service delivery. Therefore, when librarians acquire more skills, they should do better in their resource sharing practices, where the use of digital technologies are required and application of know-how is a must in the act of resource sharing. The attributes of skills acquisition could strengthen the support which the use of moveable computers and additional mobile technology brings to the library organisation (Bazillion, 1992). The networking established could be further strengthen through continuous reaching to each other based on identified goals which the libraries hope to pursue.

Ugwuanyi, Nwafor and Onoh (2013) indicate that the benefits of networking in libraries comprises of:

- Social benefits
- Intellectual
- Economic
- Political among others

The benefits of networking is not associated with the use of tools only, to transform the processes but also to affect library staff and librarians, engaged in the practices. Networking has become crucial among libraries such that they no longer struggle as they were when technology was not available. The advent of technology has made networking much easier and better for libraries, especially for those in distant environment. The reason attributes to Internet and other ranges of networks that are coonected together (Wiid, Cant & Nell, 2014). How do you think it could have been possible if libraries were to operate without the use of any technological tools, either to scan, search, retrieve and disseminate large volumes of information to other neighbouring cities libraries (Wiid, Cant & Nell, 2014). It is expected that, since libraries are the warehouse of knowledge housing every information resources, the approach to how they network among themselves should differ considering the consciousness of their position in the information world (Bazillion, 1992).

Importantly, previous study by Gelaw (1998) made reference to online integrated access created through continuous building up of library collections. Other things which Gelaw (1998) mentioned were diverse products of information contractors and facilities, and cut down of library budgets which were to be used for purchase of library materials. Dempsey (1997) refers to appropriate network that was well position in the right environment where libraries could function better based on activities in place. This was further strengthen according to Dempsey (1997) that libraries might not make use of facilities of information format like CD-ROM and print considering networking that has come to stay in libraries. The reason is that, most operations are now carried out on the Internet, where everything could be saved in google doc or cloud. With networking in the library environment, many information resources are now deposited in the institutional repository, where students could harness and download whenever they need them. But what is most significant right now is how librarians could enhance their operations through continuous reskilling, in order to use the Internet and information systems very well (Enakrire, 2019) because locating and reorganising information and knowledge require adequacy of skills for their applications.

Dickson and Holley (2010) emphasise on ability of librarians to connect to users through different social networking sites, especially when the users could not visit the physical building of the library and the information need required is urgent. Most of the social networking sites used to reach libraries consists of Facebook, Myspace, Delicious, Flicker, Twiteer, blogs, wikis among others (Dickson & Holley, 2010). From this analogy, it was established that libraries could also use the same social networking sites to market their products and services, such

that, new and anticipated users could see the available activities which the library has in place. Users and librarians (in vice versa), could leave feedback to either users or libraries (librarians), in areas of clarity (Dickson & Holley, 2010). Another benefits as envision by Dickson and Holley (2010) has to do with a scenario where the library could post some of their books, newly arrived books, journals and other video materials through the youtubes, and possibly discussion forum such that, students could have access to them, without coming to visit the physical building of the library (Dickson & Holley, 2010).

3.2 BARRIERS OF NETWORKING IN LIBRARIES

Barriers are conceptualized as the unforeseen circumstances that militate against the smooth operations of networking in libraries and related institutions where it is applied and this has adverse effect on the library organisation. Barriers of networking associated with libraries are diverse in job operations according to Nok (2006) and Bii and Wanyama (2000). There is no organisation in this world that is not faced with barriers. But what is most important is ability to curb such barriers or challenges being faced with. Barriers are known to strimulate organisation; otherwise, you will not know areas of weakness of the organisation.

There are (for example five) barriers to networking in libraries and these are: (i) inadequate funinds, (ii) unreliable IT and networking infrastructure, (iii) absence of skilled personnel, (iv) maintenance culture among people and institutions, (v) erratic power generation and (vi) lack of proper management of finances or/and corruption. Each of the barriers is discussed below:

- (i). **inadequate funding:** Funding is paramount in the smooth running and future sustainability of library organisation. It can be utilise for different purposes. Prior before now, the budgetaory allocations given to library as a unit or department in most organisations are very minimal. With that in place, libraries and other information centres are left alone with only that small amount, which is not adequate to acquire relevant information resources and ICT facilities which could be used for the networking purposes. The approved budget by either State government or Federal dependent on where the library is situated is only 10%. This has had adverse effect on networking in libraries, especially with consideration to how materials are being transported to other libraries (Nok, 2006). Libraries on their own could have also generated incone to support their operations, but in most cases, they are bounded by policy of parent bodies (Nok, 2006).

- (ii). **Unreliable IT and Networking Infrastructure:** Information technologies (IT) are the bedrock to actualisation or functional networking in libraries. The reason is that, the technologies or infrastructure comprises of different gadgets, cables, software connected together before the operations could work. When these are lacking in most libraries, it becomes a problem on how a feasible networking could take place. Even if the IT is available and the know-how is not available, there is no assurance as to how the operations could work. Presently, most IT are becoming more complex to handle, thus requiring adequate knowledge and skills of the IT specialist or librarians. Therefore, in order for libraries to be fully integrated into networking practices, they should have the right facilities and approach before they could connect. There are some of the network that requires local area network, others require wide area network, so these must be understood and carried out judiciously.
- (iii). **Absence of Skilled Personnel:** In order to network libraries, irrespective of its type and functions, the personnel or library staff which comprises of professionals, para and non professionals, should have prior knowledge of how networking operates. The reason is that, just in case some staff members are not available for service delivery, networking is expected to continue in the library system. This means that, there should be proper training inculcated into staff members, on how to install and network (Bii & Wanyama 2000). Let me give you a practical example of what is meant here. This scenario bring us to a library conference that was organised in Nigeria, specifically Delta State, and in the course of the conference, attendees were given a password to network themselves, in order to have access to the programmes and other activities that is ongoing, funny enough, many librarians who attended the library conference could not network themselves, just because they do not have the knowledge and skills of application. This is funny considering the position of librarians as information professionals or specialist. It is believed that, as a librarian, they are supposed to have adequate knowledge and skills required to function in that platform. What they were suppose to do then were to turn on their wifi in their computer and try to look for available local area network that was available and from there, click on the wifi to connect by inputting the password given to them and then connect right away. The demand for technology literacy among staff is on the rise on daily basis; therefore, libraries should encourage their librarians and other staff members to be fully engrossed in acquisition of ICT knowledge and skills. It is all round the clock demand irrespective of where you are working. Absence of skilled

personnel could cause a lot of frustration and embracement especially when we call ourselves information and knowledge specialist (Bii & Wanyama, 2000).

- (iv). **Maintenance Culture among people and institutions:** Generally, the culture of mantianing facilities is poor among Nigerians. This can be attested having travelled round several States in Nigeria and also visited some few countries abroad. The difference is very clear to what I saw abroad and in Nigeria. Many people wait till when their computer is having one problem or the other before they will take it for servicing. The idea of even using some of the right software is also a challenge since it will involve speeding money to buy software for our own use. This is also applicable to many universities and the library under their givenance. When given the opportunity to travel round most universities in Nigeria, you will be shocked on what you could see in their IT department and environment. Most environments are littered with broken ICT gadgets, charirs and other materials. Even in most libraries, some of the old books, chairs among onther things theye are not using are every where, hence my earlier submission that, it will take Nigeria, as a nation hundred of years before we could become a paperless society.

By and large, it is important, no matter how small the library is, it important for individual to have a maintenance culture. It would help to have a neat environment and sense of belong as we really want to reparir our homes and environment where we work. There is a slogan that says, cleanliness is close to holiness. Therefore to have and maintain the library environment, we need to be clean in our heart too. The size and intricacy that surrounds the task of using the systems should not weigh us down from its maintenance (Jebaro & Devadoss, 2004). When there is poor maintanince culture among library staff, it will not only affect the use of the facilities but entire service delivery the staff will not be able to produce good results when at work.

- (v). **Erratic Power Generation:** Nigeria as a nation is faced with the problem of poor power supplied. This has adverse effect on networking because whenever networking is to take place or function effectively, there is be power cut. These will cnontinue to affect the daily operations and entire system of the library environment. The only alternative is for libraries to plan ahead to purchase hitech power generator that will serve as alternate source of power supply. Power supply is fundamental in networking in libraries; it helps to transmit the operations where necessary.

- (vi) **Lack of proper management of finances or/and corruption:** Finance is a major factor when it comes to the sustainability of networking in libraries. Unfortunately, when funds are allocated for acquisition of networking facilities such as technological tools, considering the nature of people in position, the funds are mismanaged or diverted and spent for unnecessary things not having value to the organisations. By this it means corruption has crept into the library. This act of diverting funds for unnecessary things is the act of corruption. This act has crippled many organisations across the world and especially in Africa. There is need to consider mismanagement of finance and corruption being a drought to libraries and information centres.

4.0 SUMMARY

In this unit, it was established that the benefits of networking in libraries do not apply to the use of tools only. The transformation that takes place from when the materials are sent to the receiver in all the processes involve, rather, with library staff and librarians that are engaged in the practices. The fulfilment is that, their goals and objectives were met. Recall that networking has become so crucial among libraries through the enabler of ICTs. Internet and other varieties of networks connected together will continue to stand out in this scenario even in the years to come. The dependency of staff members on this is an assurance that libraries will continue to be strengthened in all they do. Furthermore, while reflecting on the benefits of networking in libraries, certain barriers were noticed to affect networking in libraries and they comprise of inadequate funding, unreliable IT and Networking infrastructure, absence of skilled personnel, maintenance culture among people and institutions and erratic power generation.

5.0 CONCLUSION

The benefits of networking in libraries are indispensable in present day context of Nigeria economy, even though certain barriers have affected their operations. Nevertheless, networking will continue to stand out irrespective of the geographical boundaries of libraries since Internet and varieties of IT gadgets have come to stay in libraries globally. The vitality of achieving this goal will continue to force libraries to go extra mile in ensuring services of users are met through resource sharing. As long there is life, education of children born become prioritised, and as long education is prioritised, users of libraries will increase, thus resulting to the use of networking to foster resource sharing.

6.0 TUTOR-MARKED ASSIGNMENT

1. Enumerate the benefits that necessitate networking in libraries in Nigeria.
3. How would you eradicate the factors affecting networking in libraries in Nigeria?

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UNIT 3 APPLICATIONS OF NETWORKING IN LIBRARY ORGANISATIONS

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Application of Networking in Library Organisations
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In previous study unit, we discussed the benefits and barriers to networking in libraries. In this unit, we shall consider the application of networking in library organisations, in relation to the changes that have evolved in library operations.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- discuss the application of networking in library organisation and the intricacies that surrounds its application for quality service delivery.

3.0 MAIN CONTENT

3.1 APPLICATION OF NETWORKING IN LIBRARY ORGANISATIONS

The applications of networking in libraries and information centres differ from one environment to another. One of the basic principles that surround the application of networking in library organisation is cooperative partnership based on signed agreement (Jadhav, 2014). When dealing with application of networking in libraries, the need to consider specific context of library becomes imperative. For example, application of networking in acquisition of library resources, application of networking in cataloguing and classification, application of networking in customer services, application of networking in serials, databases, and journals provision etc. these are crucial as they are the core responsibility of librarians task. Therefore through application of networking, libraries are able to acquire their information resources

without much anxiety irrespective of their location, provided they pay their subscription fees. The networking interface has also helped to catalogue and classify library materials without any difficulty since the use of MARC are constantly in use. Librarians have also extended their services into online platform where they support users of libraries due to stored information resources in institutional repositories and different online databases.

The partnership was meant to sustain the nature of service and work operations the library does. Another emphasis made according to Jadhav (2014) is the technological tools that sustain the operations of networking; otherwise it would have been difficult for the processes to be actualised. The support of the technological tools has enabled how librarians sort, repackaged and disseminate the information or documents before they are sent out to the designated place or libraries (Jadhav, 2014). Ramsey (2008) alludes that, the application of networking in library organisation has promoted issues such as:

- Increased information exchange among libraries
- Brings about combined activities of processing and transferring of documents
- Broaden librarians ideas about certain concepts and use of technologies
- Decentralise interlibrary loan practices
- Build collaboration on how to harness collection development struggles with other libraries
- Stimulate sharing of responsibilities among staff in their bid to enhance services
- Less effort are used among librarians and between libraries
- Transformative continuity between vendors and libraries across nations
- Maintaining standardize practices among libraries
- Creativeness among staff on unified classification instructions on networking practice

To this end, Pradhan and Pradhan (2016) note that, in recent times, many libraries and information centres have adopted the use of social network sites in the application of networking in their libraries. The essence is to move along the current trends of research innovation of the use of social networking sites, as mostly used in libraries across the world today. This could enhance visibility of their products and services as a marketing strategy (Pradhan & Pradhan, 2016). It was further affirmed that the use of social networking sites as strategy in application of networking was to create and reach users of libraries with their information needs.

Other relative form of association as it applies to networking in libraries, stipulated by Pradhan and Pradhan (2016) consist of:

- Creation of the consciousness to users regardless of their geographical locations
- Updating library collections
- Offer collaborative work among staff members
- Affords libraries to have interlink with their counterpart
- Offer entrance to users such that, feedback are given instantly
- Create opportunity for users to link, communicate and share information
- Close contact with users and other libraries are ensured
- Collective networking are strengthened
- Library resources could be recognized easily
- Sharing of information and knowledge become easily
- Gives broaden spectrum of the holding in the libraries and their sister information centres
- The need of distance learning could be promoted as access to required information resources are no longer stressful
- Students/users do not need to stress to budget for required books and reading materials since other sister libraries do support their institution with resources of all types
- It has made librarians to have other close counterpart in other environment where they could share some of the thought with
- Application of networking attract users to libraries easily as they see that the library is fully equipped with a lot of gadgets
- Faculty members need not panic since they could get every material needed for their teaching and learning processes when required.

4.0 SUMMARY

This unit examined the application of networking in library organisations, with specification to acquisition of library resources, cataloguing and classification, customer services, in serials, databases, and journal provision. It was establish that, based on the operations of resource sharing which differ from one environment to another, certain social networking sites has been inculcated in order to enhance their effectiveness. The most interesting influences which the application of networking has over library organisation is accommodating spirit to work together as team members. This they do through the partnership of signed agreement. It was further noted that, technological tools is the bedrock of its sustianbility. This has helped to acquire process, repackage, store and disseminate information and other related documents to their designated places. The application of networking has

strengthened enlarged information exchange among libraries, which could have been difficult ordinarily. Recall that librarians' knowledge and skills are important and broaden through the use of the technological tools; hence it is imperative that this would continue to support the processing and transportation of materials and documents to other libraries. It was further noted that, the infiltrated of networking into library organisation is a sinequanon in the dwindling country of ours, Nigeria.

5.0 CONCLUSION

The application of networking in libraries has not supported librarians work performance, but grows the collections of libraries across the globe. Many institutions can now pursue many programmes without feeling the effect of planning and procuring required materials that would support their students and learners of different categories. Most higher education learning institutions which are promoted today, result to cooperation of other bodies which they have access to on regular basis. Application of resource sharing is vital and should be encouraged, no matter the circumstance.



As a Library and Information Science Student, what step would you recommend in the application of networking in libraries and information centres in Nigeria

6.0 TUTOR-MARKED ASSIGNMENT

1. What do you understand by the term, application of networking in libraries?
2. What significance does application of networking has to do with library operations generally?

7.0 References/Further Reading/Web Resources

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MODULE 3 STRUCTURE OF NETWORK

UNIT 1 CONCEPT OF SOCIAL AND INFORMATION NETWORK

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Overview of Network, Social Network and Information Network
 - 3.2 Different Forms of Network
 - 3.3 Types of Networks
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

This unit exposes students to the concept of social and information network. The two variables 'social and information' were substantiated for better understanding and clarity of importance. The vitality associated with this terminology came due to how people in the society attach so much importance to information and networking. The essence of networking is to share vital information relevant for individual/personal goals and organisational transformation. There is no individual in the society that does not require information for one reason or the other. Besides, the act of social interactions in networking has become key element in recent times, due to exposition of vital information and meeting people of greater value to personal lives, career goals, business opportunity and organisational development, especially the tacit type of knowledge which those individual carries. The concept of social and information network are basis which individual librarians and libraries must not joke with, if they want to remain relevant in their profession.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- explain what network, social and information network entails
- explain the different forms of network.

3. Types of Networks

3.0 MAIN CONTENT

3.1 Overview of Network, Social Network and Information Network

The understanding of network, social and information network was due to the waves in technological transformation and proliferation of information and knowledge on the Web. This has brought about the need for continuous sharing of information. The information shared becomes significant for societal needs. Generally, social network is essential for human existence. Through this avenue, communication, and interaction takes place.

In this world of digital technologies, people irrespective of their class require information to solve problems, create their own world and disseminate thoughts to the right people. This brought about the notion of social and information network (Sumadevi & Kumbar, 2019). Network is when you are connected with other people through some form of internet or Wi-Fi. Sometimes, it could be seen from where individual or group of people connect together for the purpose of common goal accomplishment or interest. The enabler of network is Internet or connectivity with other network. Social and information networks have optimal goals where people could connect in order to broaden their communication approach through lowering of cost benefits (Barsky & Purdon, 2006).

Barsky and Purdon (2006) further note that, social and information network has the capability to connect users together through interlinking of shared profiles. This has made individuals to become members of social and information network sites through invitation of other members, they grow the network. Libraries among other organisations have gained popularity in the use of network, social and information network. This was based on exposition of the writer of this module having visited several library websites, where social network sites were displayed. The network found in libraries has been able to facilitate their operations to others libraries located in cities, town, States, and countries. The social and information network, provide information products and services strategically used for marketing purposes. The process of marking library products and services is another way of network with users and other enterprises (Sumadevi & Kumbar, 2019).

Social and information network in libraries enhances access for users, amidst populating other organisation information products and services.

The desire to use social and information network in libraries was to enhance service delivery of information processing, repacking and dissemination among staff members. This is crucial and key factor in any growing libraries (Sumadevi & Kumbar, 2019). While this is ongoing in libraries in developed world, many libraries in Africa and especially in Nigeria still struggle to find foot in this regards.

1. Network: The term network is not associated with organisation or libraries only. Network can be found anywhere or everywhere (Meyers, n.d). Presently, it is difficult to do anything in libraries without the support or use of network, especially when it comes to issue of communication and usage of data (Meyers, n.d).

A network has to do with interconnectivity among cluster of persons or things that are skilled in sharing vital information with another (Keracheva, 2021). The reason could be to share information or data, analyse data, transmit and process documents based on the goal of pursuance. The accomplishment of this goal could necessitate the use of people, computer and methodological procedures (Meyers, n.d). Another point of emphasis as stipulated by Winkelman (2013) denotes that, network consists of two variables that are linked together, such that, sharing of resources of different kinds becomes easy. The resources could be files, books, computers, CDs, printer, electronic gadgets, cables, telephones, radio, and satellites, among others (Winkelman, 2013). These become significant as they are used for the purposes of communications, sharing, interacting and sustaining organisational work performance (Winkelman, 2013).

Relating this libraries and information centres context, where information technologies are involves, as means of enhancing job performance, network are interconnectivities of two or more computer systems either through a wireless or cable connection (Scarpatti, 2018). In the accomplishment of the goal of sharing information, knowledge, and other vital materials, several form of networks were instituted and they comprises of the following according to Scarpatti (2018):

1.1 A telephone network: A telephone network is associated with infrastructure used for the transmission of voice signs either from one person to another or people in a telephone post.

1.2 A neural network: The neural network are design to work like the human brain. The neural network encompasses group of brain cells that are connected together. This form of network helps to send signal to the brain cells when making connection with people or using any devices like the computer. An example of the neural network is facial recognition that helps to recognise whether someone is a male or female.

1.3 Human network are categorised into:

1.3.1 Family network: Family network consist of people that are associated to your family, where they share similar information and resources together, based on biological relationship. This type of sharing information and other resources are bi-directional irrespective of position and ages. The youngest family members could share with the oldest and vice a vice and as the family expand, so the net does as well. Below is a good diagram of such family network representation.

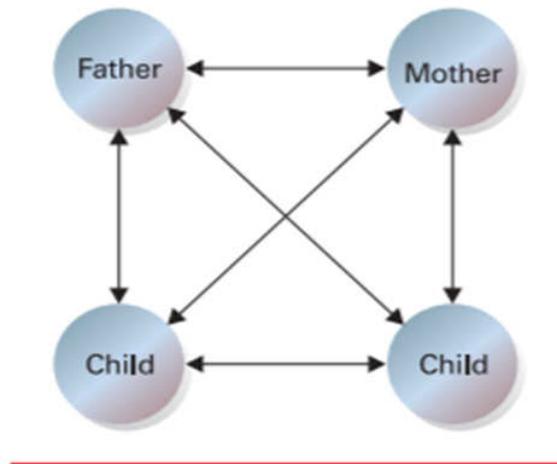


Fig 13: A network that connect family members together

Source:

https://www3.nd.edu/~cpoellab/teaching/cse40814_fall14/networks.pdf

1.3.2 Peer Network: The peer network has to do with the peer group of different family members. As each family member begins to grow in life, there are some that tend to be more attached to their peer group than family. This set of community could also share resources together, no matter what, considering the attached emotion and love. It is expected that family are supposed to connect more, but some peer friends might want to borrow something or share different types of resources based on their associates, where they help with homework among others. The bonds among these peers are very strong. See diagram below.

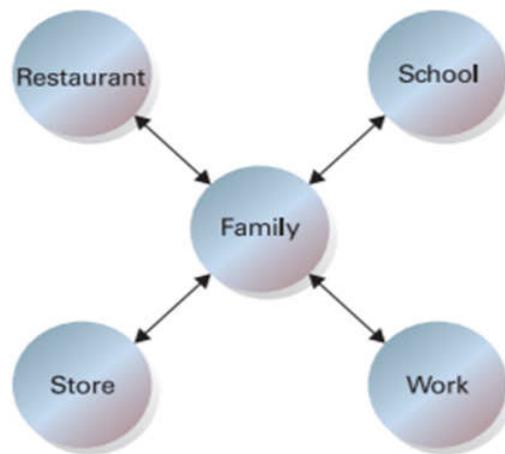


Fig 14: The family network connects with the greater community

Source:

https://www3.nd.edu/~cpoellab/teaching/cse40814_fall14/networks.

1.3.3 Contact Network: Contact network has to do with network of those in your contact. They are important because at some point you might need those contacts for one reason or the other. They vary due to the geographical location of the individual. The essence of contact is for referral purposes. Anybody that might be in need of help makes use of contact, especially in this era of networking. Contact could help connect someone in search of jobs. This help to create a list of people that you have met in your entire life and with this in place, most problems could be solved. This could be seen from contact in someone phone or email which you must have met either in workshops, conference or somewhere. They are most useful in times of great need. This form of networking plays a significant role as well.

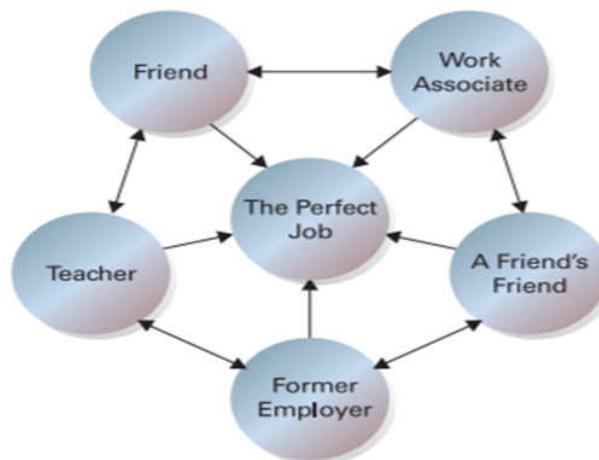


Fig 15: The more people in your network, better chances of find that perfect job

Source:

https://www3.nd.edu/~cpoellab/teaching/cse40814_fall14/networks

1.3.4 A computer network: A computer network consists of a group of computers that are linked to one another with physical lines, whereby they interchange information through digital data of binary encoded in representation of 0 or 1. These sometimes use different languages to interconnect or transfer data or information. The computer networks which are interconnected together require different strategies for the purpose of sharing information and other resources. A good example is shown in Figure 4 and 5. These computers connected together could also be expanded based on needs of task accomplishment. When you connect your personal computer known as the local computer to other computers based on information or networks that need to be shared, it is referred to interlinked devices or connection. As additional computers are linked to other network such that they could share resources, the network grow into dominant tool. This become significant as it could help employees achieve a lot of work when they use the network considering the available data that it is capable of giving to support the additional computers. The actual influence of networking computers is to make sure there is strong support based on the supply of bandwidth envision through growing the connection. This allow diverse networks that could enhance communication of resource sharing better across other networks.

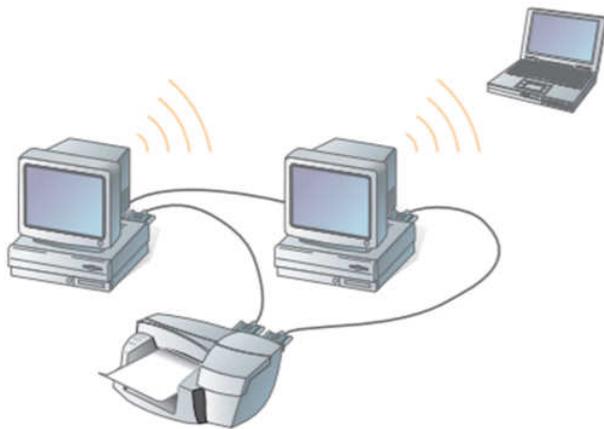


Fig 16: Computer network contains two or more computers connected together

Source:

https://www3.nd.edu/~cpoellab/teaching/cse40814_fall14/networks.pdf

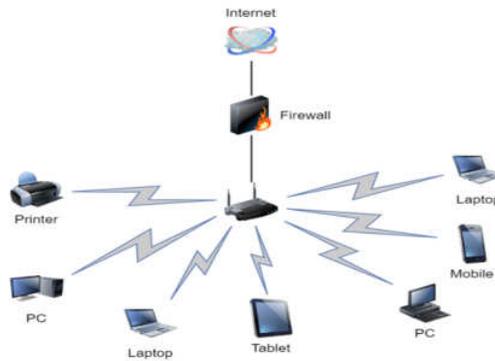


Fig 17: Computer networks components

1.3.5 A cloud-based network: This is another form of network situated in cloud that is supported through application of software and internet. Information and other documents are deposited in cloud through servers and web browser. Many organisations now use cloud based network to secure their resources. This form of network based is far cheaper, simpler and greener than a client-server network.

Winkelman (2013), notes that, network are important due to the following which it does for individual and library organisations and these are:

- It helps to deploy data
- Human beings could be occupied in it for search and communication especially using emails and others social networks of Facebook and LinkedIn
- Exchange of varieties of documents and profiles
- There is assurance of multiplicity of access to documents
- Multiplayers of video games
- Provide update of information to users
- Give broader access to unknown sources
- It can be used in a relaxed mode when permission is given
- It gives central control of programs and data

2. Social Network: Social network has to do with connectivity with people socially, through different platform. People could meet in the market place, churches, Mall, hospitals, schools etc. for different purposes. There must be some form of likeness among those who are meet or wanted to meet. It usually take place in virtual space, where people of different class share vital information and the shared information are used to affect changes in ones lives, through better functionality in the society. The social network are widely accepted networks of different types, such as Facebook, LinkedIn, Twitter, among others, used to update information in our areas of specialty (Chu & Du,

2012). Presently, many of these social networks are now used in present day libraries and information centres (Chu & Du, 2012).

Another definition by Boyd and Ellison (2007) regarding social network has to do with networking in web-based platform. The essence is for service delivery, such that, certain profile of connection are attached. Powell (2009) opines that, social network has to do with social connection between people as a form of friendship based on values, ideas and achievement that need to be made. This could take the form of book clubs, association of professional bodies, such as lawyers, engineers etc. It is one of the simple ways of promoting library activities in during when programmes are organised in the university environment. This might not require whether you know the person of not but provided something has brought all of you together.

Sahoo and Sharma (2015) note that network promotes library products and services. Jadav (2014) notes that, social network has supported collaboration among libraries where staff members come together to solve existing problems like review and developing policy and framework that could be used to improve service delivery. Sahoo and Sharma (2015) further note that, issues that has to do with reaching local users through social media channel could be employed to address feedback obtained from users of libraries. Issues with application of knowledge and skills developed through visible and building connections through experiential practices among staff could be feasible when there is an established social network in the library environment (Huan & Eric, 2010).

Video indicating network and how they work in any environment



1. <https://www.youtube.com/watch?v=zqjqrGgX0CI>



2. <https://www.youtube.com/watch?v=DrhhdekP1ZO>



3. <https://www.youtube.com/watch?v=J5wMiV-SLwU>



4. <https://www.youtube.com/watch?v=CRF0ysrEbDA>

3. Information Network: Information network has to do with a free flow of information within network. [Nance, Korfhage and Bhat \(1972\)](#),

revealed that, when there is a mechanism that enhances free flow of information and transfer through appropriate connectivity to other networks, it is termed information network. It means, through that connectivity, information resources were able to flow, linked together and transferred through network configurations. What enabled the flow of information and the transfer process are objects/things such people with great ideas, facilities like computers, method of applications/organisation used to collect, process, transmit and disseminate data ([Nance, Korfhage & Bhat, 1972](#)). Richard and Blahut (2002) note that, in network, the telecommunication helps to process the transfer of information over a long distance using radio waves and optical signals. In this regard, the computers are fused together through cables and satellite or phone lines.

The transfer process that takes place in information networks could be called in graph theory as isographic or nonisographic (Otte and Rousseau, 2016). In the isographic transfer process, the cyclic and dispersed networks are defined. Another point to note through which the measure of the information network operates is the user-friendliness and elasticity in message transfer, are developed. These measures for the basic structures are used to characterize more general structures. While some comparisons of message transfer structures can be made, development of more comprehensive measures is a necessity (Otte & Rousseau 2016). The resources of people, method and computers earlier mentioned are imperative and could proffer solution to identified problem in any organisation. The objects/resources imply those things that are believed to have effect in a positive way in the organisation ([Nance, Korfhage & Bhat, 1972](#)). For example, information of skills, knowledge, attitude, tools, policy, computer among others are significant in the organisation and cannot be quantified.

Another remark by Blahut (2002) towards information networks has to do with numerous sources or frequency through which information are transferred. It is believed that, sometime the channels could have inconsistent condition made obligatory by users. In the same vein, Blahut (2002), believed that, the Information networks which is interlinked with the World Wide Web has played a significant role in ensuring a smooth movement of information through a varied content and form.

Information networks played a significant role in the areas of social interactions, business/commerce, education, politics, telecommunications, aerospace, among others. Therefore the need to attribute to its use becomes imperative considering the embedded computing mechanism that is inherent in it ([Nance, Korfhage & Bhat, 1972](#)). The information network has served diverse purposes, especially in the representation of the control systems (Blahut, 2002).

3.3 Types of Network (pan, lan wan, man, polan, etc.).

There are different types of network that are recognised globally today. These are also used in support of service delivery in libraries and information centres today. Bourgeois (2016) made reference to different types of networks mostly used today and they are:

1. Personal Area Network (PAN): The personal area network is one among the least basic type of network. The personal area network consists of the following facilities, among which, are the wireless modem, a computer, phones, printers, tablets surrounded in a range of 10 metres. These are used by an individual in a particular place. An example of the personal area network could be seen below. An example of this is seen below.



Fig 18: Example of PAN

There are two types of Personal Area Network

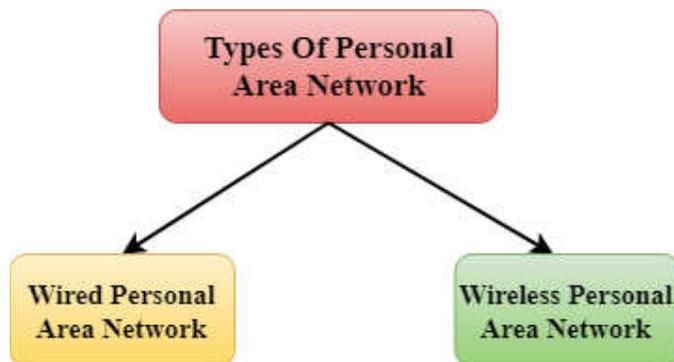


Fig 19: Types of PAN

- Wired Personal Area Network
- Wireless Personal Area Network

The wireless personal area network is established through a simple use of the wireless technologies that comprises of Wi-Fi, Bluetooth, while the wired personal area network is formed through the use of USB. These are mostly used at homes, offices and shops.

2. Local Area Network (LAN): The local area network is one of the communal, innovative, simplest and often used type of network by different group of people. It permits people to connect together through close building of proximity to share information and resources. Through the use of routers, the LAN connects to a wider area network for enhanced data transfer and networking.

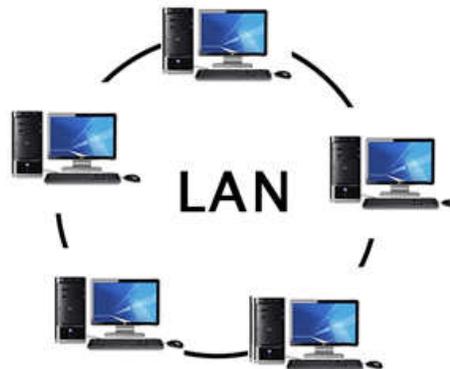


Fig 20: Example of LAN

3. Wireless Local Area Network (WLAN): The wireless local area network is of close associate in terms of functions and features with local area network. It uses a wireless networking technologies of the Wi-Fi. Although works more with wireless cables for its connection. It permits users to interchange from place to place, in the coverage area, even while sustaining the network connection.



Fig 21: Example of WLAN

4. Campus Area Network (CAN): The campus area network is another type of local area network that is bigger than LAN. The networks are interconnected to each other across the entire environment. Although, less significant to the metropolitan area networks (MAN). The CAN is common in places like the university or bigger district school or business environment. They are developed such that they could spread round the entire environment and buildings such that, it becomes easy in sharing networks and resources at the same time. See diagram below for assessment.

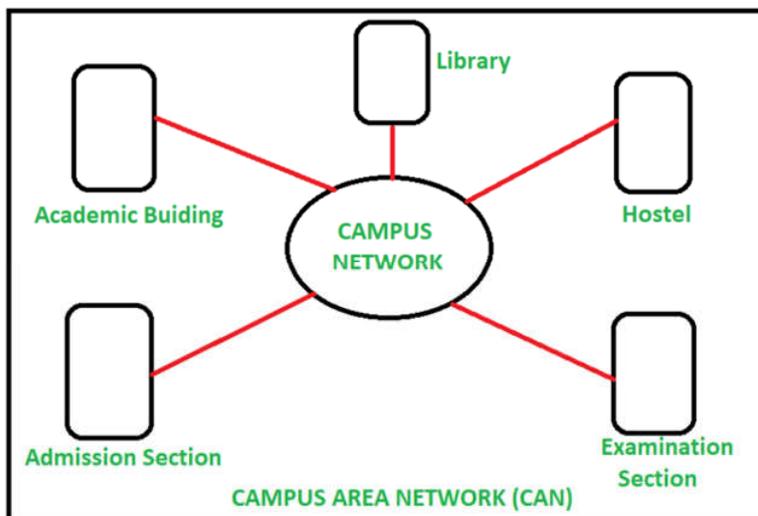


Fig 22: Example of WLAN

5. Metropolitan area Network (MAN): The metropolitan area network is another type of network that is superior to the LANs but much slighter than WANs. It has all the elements of both types of networks. MANs could be connected to each other through the telephone lines. MAN has wide ranges that cover an entire town or city. Due to its large nature, it is mostly maintained and cultured by a big organisation or company. The MAN is mostly used by government agencies to support citizens and private organisations.

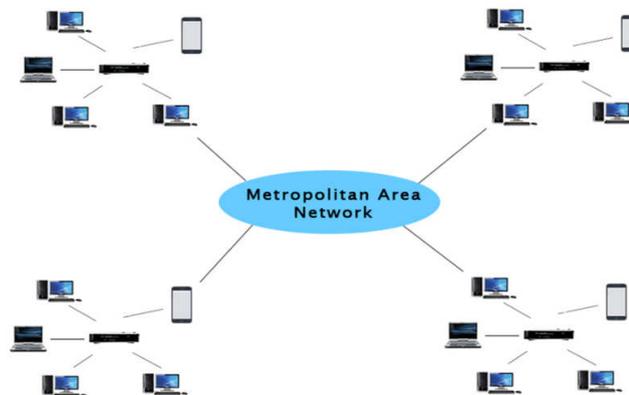


Fig 23: Image of MAN

6. Wide Area Network (WAN): The wide area network consists of a network over a large geographical region, like a province, State, or Countries. It is considerably further composite than LAN. The WAN is able to connect different computers together transversely much elongated in any physical distances. The essence is to enable computers and low-voltage devices connect remotely to each other, for easy communication. This enabler of this connectivity is the Internet. It is mostly used by big organisations like government and other educational institutions.

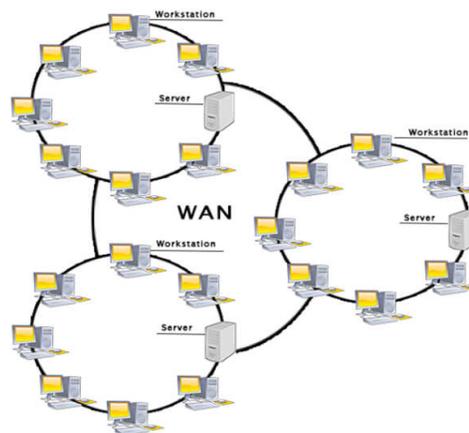


Fig 24: Image of WAN

7. Storage-Area Network (SAN): The storage area network is networks that help to store information and data that has been gathered from different sources. It has a very high-speed network that connects such that, sharing groups of storage devices is able transmit to the servers. It is believed that, instead of relying on both LAN and WAN, data and information are moved away the network but store through their personal high-performance network. SANs may have access to the information in the server in a similar way provided the actual pattern of approach is followed.

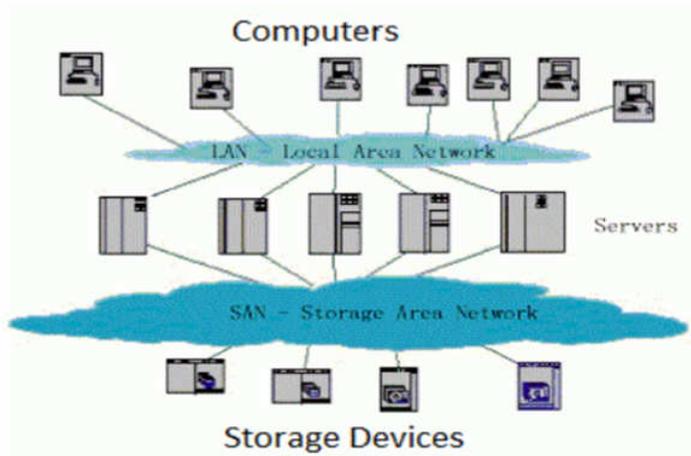


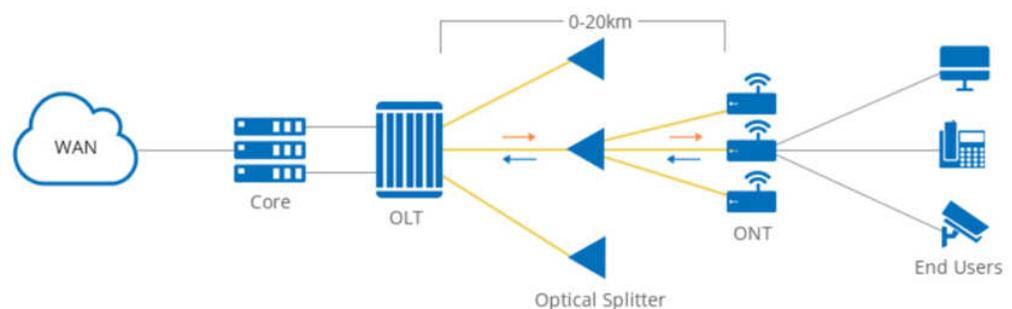
Fig 25: Image of SAN

8. System-Area Network (SAN): The system area network is similar to the storage area network in some features used. This area network has high-speed connection that is available in the server, such that, the designated application of storing information is well articulated. That is, server-to-server connection based on clustered positioning. The operations of computers in SAN work in a single system of high speed. The system is backed up with high frequency of bandwidth through supporting software.



Fig 26: Image of SAN

9. Passive Optical Local Area Network (POLAN): The passive optical local area network (POLAN) is assembled preceding the basis of passive optical network that could be close to any passive optical network. The POLAN is a point-to-multipoint in-door network of infrastructure with visual splitters that help to transport data and information over a solo point to manifold user endpoints. This uses a wavelength division that could be in the form of multiple technologies which permit bi-directional up flow and down flow of communiqué. The POLAN uses a traditional switch-based Ethernet of LANs. The use of single method optical fibre is significant through several signals where the serve could serve users on the devices of structured cables.

**Fig 27: Image of POLAN**

10. Enterprise Private Network (EPN): The enterprise private network (EPN) were designed and owned by individual or private body that desire to operate some form of businesses, such that, they would be able to connect to different geographical areas, in the bid to share information and other resources. The essence of the EPN based on the plan of the private business owner, was to reach out to other of his/her business environment, for easy communication, production purposes, office and shops re-organisation. The EPN uses different networks topology equipment nodes in their connections.



Fig 28: Image of EPN

11. Virtual Private Network (VPN): The virtual private network is one step to another connection among client and server. It could also be regarded as site to site interconnection between two virtual private network servers. When a network or internet connection is interlinked from the home of the company head or owner to the head office and other possible branches, it is regarded as virtual private network. The essence of the interlinking and connectivity is to monitor activities of work flow, communication and visualising the site of the company through available gadgets.

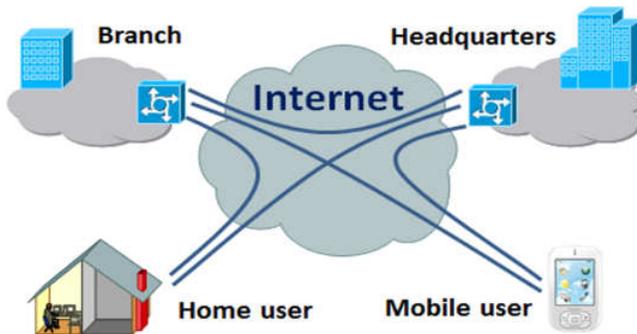


Fig 29: Image of EPN

4.0 SUMMARY

This unit examined the concept of social and information network. This was further broken down into simpler variables for better discussion and comprehension by the students. The variables discussed were these network, social network and information network. Each of the concepts

were treated separately in order to lighten students understanding regarding what they need to know and how to approach it out the classroom environment. The rationale that necessitates this separation of the three variables ‘network, social network and information network’ was the growing needs to social problems and evolving changes that keep venting in the creation of newer digital technologies. The use of the Web has become part of human existence and the only way to move along this trend is to become conversant in continuous use of the technologies to share and knowledge relevant for societal needs and personal development. It was establish that, networking being one of the variables discussed denotes interconnectivity among cluster of persons or things that are skilled in sharing vital information with another. In this present day, it is difficult to do anything without the use of network, either to gain access to information, knowledge, use the bank, and other facilities in accomplishment of responsibility in the workplace environment. Some of the facilities believed to have enhanced network operations are computers, cables, telephones, radio, and satellites, among others. It was further established that, different forms of network which consists of telephone, neural, human network (family, peer, and contact), computer network and cloud-based network are part of the family of network.

Importantly, it is worthy of note, to acknowledge the various types of network that are used globally in rendering both specific and generic services in organisation. These types of network have also been infiltrated into libraries and information centres for enhanced and deepened job descriptions and resource sharing among librarians in present day information and knowledge economy. Among the types of network mentioned in this study unit are: personal area network, local area network, wireless local area network, campus area network, metropolitan area network, wide area network, storage area network, system area network, passive optical local network area network, enterprise private network and virtual private network.

5.0 CONCLUSION

Social and information network has become indispensable in the reorganisation of libraries and librarians personal development in this era of digital technologies. It plays a vital role in the attainment of library organisation goals and vision statement. In order to meet the growing capacity of registered users information needs on daily basis across different institution in Africa and specifically Nigeria, libraries cannot afford to work without the support of the various types of network of personal, local, wireless, campus, metropolitan, wide, storage, system, passive optical, enterprise private and virtual private

network. These could help promote and transform the library environment and their associated institutions.

6.0 TUTOR-MARKED ASSIGNMENT

1. What do you understand by the term 'network, social network and information network'?
2. How can the different forms of network be used to enhanced library services to users in present day digital technology?
3. What are the benefits and barriers associated with the use of networks in support of the operations and services rendered in libraries and information centres today?

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UNIT 2 TYPES OF SOCIAL NETWORK E.G WWW, BLOGGING, FACEBOOK, INSTANT MESSAGING, AND TWITTER ETC

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcome
- 3.0 Main Content
 - 3.1 Types of Social Network
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In the previous unit, we highlighted overview of network, social and information network. This was further divided into forms of network and their types, which consist of personal, local, wireless, campus, metropolitan, wide, storage, system, passive optical, enterprise private and virtual private network. This has shown support as applied in libraries and information and other associated institutions/organisations.

This unit will expose students to the various types of social network, as used by many organisations globally and currently libraries and information centres. The social networks discussed are: Facebook, Blogs, LinkedIn, YouTube, Twitter, Wikipedia, Virtual games, among others. The essence of their application in library environment is based on current research practices globally and the need to transform library system. The application of social networks has come to stay in libraries.

2.0 INTENDED LEARNING OUTCOME

By the end of this unit, you will be able to:

- explain of the types of social network in relation to quality service delivery in libraries.

3.0 MAIN CONTENT

3.1 TYPES OF SOCIAL NETWORK E.G WWW, BLOGGING, FACEBOOK, INSTANT MESSAGING, AND TWITTER ETC

There are different types of social network globally. The different types of social network are used for specific and general job performance in organisations, which libraries and information centres are inclusive. The types of social networks now used in libraries consists of the following: Facebook, WWW, LinkedIn, Blogs, MySpace, instant messaging technology, Twitter, YouTube, Ning, flicker and Slide Share.

The rise in use of the different types of social network was based on the usefulness in terms of service delivery, sourcing materials, re-organisation and distribution of information to users and anticipated individuals (Ezeani & Igwesi, 2012). These has become ubiquitous since libraries and information centres can no longer cope with engrossed creating users profiles, managing users contact and information request, tagging and sharing information resources on the social network sites and designing other strategy for better service delivery in the bid for librarians strengthening their personal growth. In the light of the above, the identified types of social networks are discussed below.

1. Facebook: The Facebook which is one among other social network sites was launched in 2004 by Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz and Chris Hughes. The creators of Facebook were students of Harvard University. The Facebook is one of the prevalent social networks used across the world, with over one billion users for different purposes. The purpose of the use of Facebook was for personal profile, communication, sharing information, networking through friendship, post pictures and groups and social awareness campaign, among other things. Many young people around the age group of 18-25 across the world have developed interest in making use of the Facebook (Mazman and Usluel, 2010). Facebook is most popular between young people. This has also made libraries and other information centres develop interest to make use of Facebook in marketing their information products and service in recent times (Kaplan & Haenlein, 2010; Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017).



Fig 30: Logo of Facebook

2. WWW: The World Wide Web is a system for displaying text, graphics, and audio retrieved over the Internet. It comprises of global system of Internet servers that offer ranges of access to information and documents, needed for certain actualisation of task or goals. The World Wide Web uses different Hypertext Mark-up Language (HTML), to enable access to content of information which is difficult to understand (Madhusudan & Nagabhushanam, 2012). The essence of this was for easy interlink to both remote and international environment. At the moment, many libraries and information centres have gain interest and popularity in the use of WWW, such that, their operations becomes firm and no stress involved, because prior before now, harvesting and sharing resources within and among other libraries have shown to be rigorous using the normal or traditional routines. It is believed that users could make have broader access to several information materials at the WWW without many struggles (Bakewel, 2007; (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017).



Fig 31: Image of WWW

3. Twitter: The twitter which was created in 2006, by Jack Dorsey, Noah Glass, Biz Stone and Evan Williams has gain popularity in almost all organisations in the world today. The Twitter has become widely used social network across the globe, including libraries and information centres. It is used to tweet library products, services and other activities like research week and newly arrived books, journals and artefacts happening. With this in mind, users could post, follow and trace certain

tweet that was posted in the library and those responsible in managing the tweet in the library could respond back as well. Many organisations including politicians prefer to use the twitter as their official networking sites for marketing and service delivery strategy (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017).

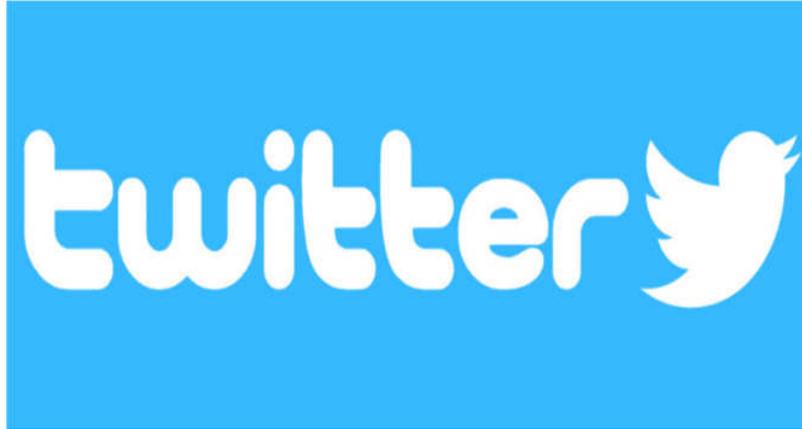


Fig 32: Image of Twitter

4. LinkedIn: The LinkedIn was developed by Reid Hoffman with a group of his team from two projects Socialnet.com and Paypal in 2002. This was not launched or became operational until 2003. At the early stage of its creation, the growth was slow, until many people know about it that it became explosive. LinkedIn is a professional network site dedicated for experienced, skilled and knowledgeable individuals, where they could share their thoughts and other things associated with disciplines, job search and service delivery (Storrs, n.d). LinkedIn has shown to inspire professionals by connecting with one another such that, real life situations are solved. The LinkedIn is one of the favourite sites used for advertising of jobs, networking and sharing professional experience on critical discourse. It is also a site where someone could meet expert in their areas of specialisation. Many people are connected through professional bodies of teaching profession, among others in LinkedIn platform (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017).



Fig 33: Image of LinkedIn

5. Blog: The blog is a webpage that operates like the conventional media used in transmitting news, activities and information. With the support of the blog, users could access them and share information and their personal events. Individual could also create their personal blog as well. Blogs are man-made web pages based on personal experience and knowledge and what the individual hope to present in it. Sometimes there work of group blog but not similar to the individual. It has shown that blog permit sharing of information with other readers. With this in mind, those reading the blog could post comments and share with others as well. It can be noted that, blog serves as webpage publishing which could be used to distribute information to many as possible at once. The use of blog is imperative as users of library could harness it and read about activities happening in the library especially their products, services and new arrival of books/collections. It serves as authoritative tools for networking with users and associated members especially in this age of digital technologies (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017).



Fig 34: Image of Blog

6. MySpace: MySpace is another type of social network that is created for interaction purposes, either from one individual to another. The essence of MySpace is for friendship purposes, thus getting involve with one another by way of contributing to individual networking space. Those involved with each other knows that, their main aim is friendship, and is to benefit from each other. In MySpace platform, it is indicated that, the essence of sharing particular information could lead to giving contact to others. Such contact is expected to bring benefits to the individual involve in the platform of My Space. The vision of the individual in Myspace is safeguarded and protected from external body, such that, no irregularity and intruders based on regulation of enforcement request (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017).



Fig. 35: Image of Myspace

7. Instant messaging (IM) technology: The instant messaging technology is another online platform where individual could chat and share information. It is believed to permit a scenario where transmission of text messages takes place through the enabler of the Internet. IM are used to understand the culture and dynamic of present day organisation. In this regards, users and librarians could be involved in IM where they found out whether the requested information resources is available or not or possibly when best to come and pick the materials up. The support that enhances the instant messaging technology operates like the local area network, within a small environment. The significant of the instant messaging is that, the messages are short and brief before it could be transmitted from one party to another, otherwise it might not work properly (Baldikov, 2019). Sometimes it might be difficult to understand the sender since the message is brief, as some people are not able to express their thought in a short form. Therefore the receiver should be smart enough to understand short messages (Baldikov, 2019).



Fig 36: Image of instant messaging

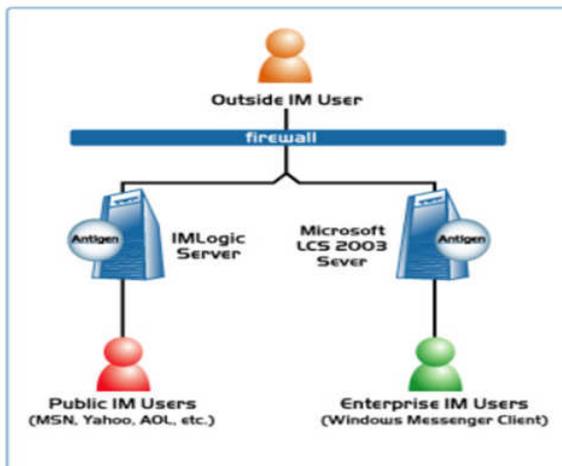


Fig 37: Image of instant messaging

8. Ning: The Ning is another type of social network created by Marc Andreessen and Gina Bianchini and advertised in 2005. Ning is significant due to its ability to network, create its own social site and permit users to join for the purposes of sharing in the networks created. It is mostly used for learning purposes where interaction takes place while learning from each other in the network platform. In this regards, all assignments and other information are posted for the sake of the entire class. Due to its nature, libraries could adopt it for service delivery and marketing their library products, services and other future activities like orientation (Jasser, 2018).



Fig 38: Image of Ning

9. Flickr: Flickr is known for its hosting and sharing website platform of images and video of important events or activities. The images and video of activities serves as archival materials required for retrospective purposes. The essence of sharing such images and video on the website is that, individuals who are in need of them could have access to them. Those images and video becomes historical and someone might not be able to keep them very well. Therefore, uploading them into the university library websites or repository serves as the artefacts of the library. Those photos and other pictures remind us of activities that have taken place in time past. Most of such similar video and photos and pictures are common in Nigerian museum. Tourist could come and have a look at those pictures when such need arises. For instance, whenever you go to any government house, and public and private parastatals, most of the individuals that have headed one position or the other, pictures are usually kept in those offices as a way to remember. Therefore, the idea of storing pictures and videos in university library websites is not a bad one. Flickr offer varieties of confidentiality in any work setting, thus letting library users to know for what purpose their pictures could be used. Flickr gives users who did what, why and how, especially when studying pictures of people during war, and transition era. It is a form of recognition of job performed (Chakrabarti, 2016).



Fig 39: Image of Flickr

10. YouTube: The YouTube is a website platform where recorded items such as music, films, play and other things are stored. It is similar to the flicker except that, most of all that is stored in the platform are in video forms. The essence of storing recorded items/video in YouTube is also for accessibility, retrieval and sharing. YouTube permit billions of users to ascertain, watch and share unique video coverage that has been created in time past. Most information resources also come in video form which could be deposited in YouTube for other to watch and download and watch at their convenience. Presently, most seminars, education materials such as teaching and learning library resources could be converted into video form for users and stored in YouTube. The essence of the use of YouTube is to manage spaces in the library environment (Chakrabarti 2016; Hussain, Loan & Yaseen, 2017).



Fig 40: Image of YouTube

11. Slide Share: The slide share is another online platform that is represented in the form of a slide, presenting items one after the other. It is mostly used by faculty members, students and other academic personnel for sharing slides pictures or presentation based on certain research reports, teaching and learning processes. The essence is to see that all the slideshow are spread round the entire community. It could also be used during conference and seminar gathering, where items are projected for easy access and proper following as each slide show one after the other. Slide share uses different strategy in ensuring the information or items in the slideshow are circulated among members of the community (Chakrabarti, 2016).



Fig 41: Image of Slide Share

The dynamics of social network when applied to library functionality cannot be underestimated due to the intricacies that surround the embedded software application of the networks (Suri, 2013). Resource sharing becomes unquantifiable as social networks remains in libraries. It has become profound in present day information and knowledge economy, that social network are unbeatable to other types of networking. The reason being that, without the support which social networks offers to libraries and information centres, the services rendered would be devoid of substance considering the need of information required on daily basis by users and other staff members.

Please watch the video link below

It shows how social networks are significant in ones lives and its assistance in broadening your horizon regarding what has been taught in this study unit. Copy the link and drop it on the Internet.



1. <https://www.youtube.com/watch?v=DZTg6LOPIQ4>

4.0 SUMMARY

This unit examined the various types of social network available and used globally. The types of social network has been infiltrated into the library to strengthen their services, as they are used to address specific and general job performance in the library system. The use of the different social network of Facebook, WWW, LinkedIn, Blogs, MySpace, instant messaging technology, Twitter, YouTube, Ning, flicker and Slide Share among others has led to the rise of library users in recent times. It was established that, the usefulness of these types of social network brought about quality service delivery, multifarious sources of materials, proper repackaging of the library system and distribution of information to users that were never seen in time past.

Importantly, since library continues to render service to meet users' needs and support their parent institution, the application of social network sites in library environment should be enforced because research practices will continue, societal needs must be met and transformation of library system must be attained. Therefore, the onus of this rest on librarians' personal development in their job profession, thus creating an environment that will attract resource sharing to support other sister librarians. This goal indicates that, the application of social networks has come to stay and would continue to be part of library entity.

5.0 CONCLUSION

Since social network is imperative, not only to libraries and information centres, but every organisation and human being, the need to advance its application become imperative. The use of the various types of social network available globally, has infiltrated into the library system. This would reinvigorate librarians' weakness in order to increase job specifications that they are saddled with on daily basis. The use of social network is indispensable and would continue to play key roles in the operations of library and information services.

6.0 TUTOR-MARKED ASSIGNMENT

1. Identify and discuss four types of social network?
2. Of what relevance are social networks to libraries and information centres in Nigerian context?
3. With the types of social networks in libraries, do you think users will be interested in visiting and accessing the physical building to patronise library materials?

7.0 REFERENCES/FURTHER READING

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UNIT 3 SOCIAL NETWORK ANALYSIS, IMPLICATIONS AND NETWORK SERVICE PROVIDERS IN LIBRARIES

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Concept of Social Network Analysis
 - 3.2 Implication of Social Network Analysis
 - 3.3 Network Service Providers in Libraries
 - 3.4 Various Network Service Providers
 - 3.5 Large Scale Network Data
 - 3.6 Models of link Structure
 - 3.7 Methods of link Analysis
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In this study unit 3 of module 3, we shall be considering social network analysis, its implication and network service providers available to libraries and information centres in Nigeria. The rationale behind this discussion relates to how the operations and other activities carried out are enabled through the support of the social network analysis and network service providers.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- explain the Concept of social network analysis
- discuss the implication in the context of libraries
- discuss the various network service providers and its relevance to operations of library services
- discuss the various Network Service Providers
- explain large Scale Network Data
- discuss the models for Network Structure
- discuss the methods for link analysis.

3.0 MAIN CONTENT

3.1 SOCIAL NETWORK ANALYSIS

Social network analysis (SNA) is the process of investigating social structures through the use of networks and graph theory. Social network analysis (SNA) provides insight into social influences within teams, and identifies cultural issues. SNA has been used as a strategic approach to team building, and to understand how team building can change the dynamics of an organisation's social network. SNA involves analysing all the interactions and activities that took place in the social network for certain period of time.

The essence of SNA is to see whether the social network is growing or not. There is much impact with its use. A study by Sheedy (2019), alludes to social network analysis (SNA) as the procedure that involves the inquiry of collective arrangements over the use of networks. For examples in SNA, there are several representations such as:

- (i) nodes that represent separate actors: In clear terms, nodes represent people that are linked together through social network. Nevertheless, the separate actors in nodes could be likened to friends, family members having some ties or link together.
- (ii) People: They could be seen as the users connected together within the network, being able to visualise what happens in the network
- (iii) other things inside the network: network comprises of IP address, routers, switches, packet switching, circuit switching, ports, network cable types

Also example of ties, edges or link are the relationship that exists between nodes and actors. This provides how they are connected together in the network. Sheedy (2019) notes that, the SNA apply graph theory and network modelling procedure in each node. Also the graph theory and network modelling procedures are the underlying forces which the social networks develop into progression of groups in relation to information diffusion.

Presently, social network analysis (SNA), is an essential characteristic of examining social networks because it uses different numerical methods for data investigation ([Tabassum](#), [Pereira](#), [Fernandes](#) & Gama, 2018; Jan & Vlachopoulos, 2019). Examples of 2 numerical methods for data investigation are: discrete data and continuous data. The analysis of data becomes important as each day passes; students will be interested to learn about it because, without data, students would not be able to access

documents and information online. Besides the importance is associated with other future activities which students might want to pursue, like apply for jobs, purchase items online among others. The usage of data increases in social network on a daily basis ([Tabassum](#), [Pereira](#), [Fernandes](#) and Gama, 2018). Therefore, the SNA measures the usage of data in the social network in order to regulate its approach. The SNA distinguishes the behaviours of users in the network environment ([Tabassum](#), [Pereira](#), [Fernandes](#) & Gama, 2018). Based on the emphasis laid above, it could be a welcome idea, to regulate or analyse free flow of data usage in social network. Social network consists of fixed set of pinnacles, relationships and links (Jan & Vlachopoulos, 2019).

Previous study by Stokman (2001) asserts that, social network analysis reflects on the behaviour of distinct personnel within array of associations where the network arrangement functions. The interactions among people result to the way people behave in any SNA. It offers chances for individual selections, in order to maintain the associations that govern the universal arrangement of the network (Stokman, 2001). In SNA, large number of events takes place in the development of arrangements and locations in the networks (Stokman, 2001). In order to depend solely on what regulates the variances in a chance to have assemblies the exploration could lead to significance of strong connected clusters. The correlation of human behaviour whether at the beginning of established relationships in the network could be measured on the structure of involvement in the interactions. That is, the level of their interactions and connectivity with each other. The network could expedite influences of individual relationship on how often they communicate with each other (Jan & Vlachopoulos, 2019).

[Tabassum](#), [Pereira](#), [Fernandes](#) and Gama (2018) note that, networks has many data networks moulded among substances other than communal units. For example, sensors, texts, brain neurons, products, physical localities and predators etc. In this regards, the SNA were made to mostly analyse social networks based on the data used in their networks. Another task of the SNA includes documentation of persuasive, impressive and dominant actors that uses numerical measure of data. This implies that, companies, and possibly libraries social network could be analysed based on the usage of data, such that, there is a control system that regulate the flow. A practical example can be attributed to the one operational in the mobile telecommunications, SNA methods could be applied through phone call networks ([Tabassum](#), [Pereira](#), [Fernandes](#) & Gama (2018).



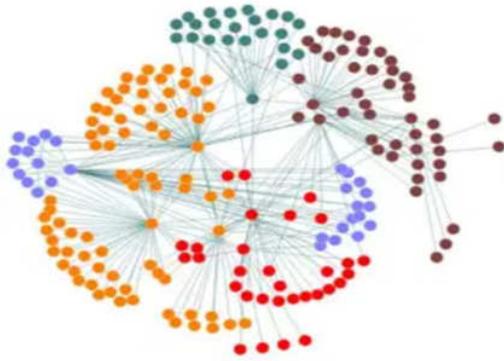
1. <https://www.youtube.com/watch?v=xT3EpF2EsbQ>

Based on the analogy made by Sheedy (2019), Jan and Vlachopoulos (2019) and [Tabassum](#), [Pereira](#), [Fernandes](#) and Gama (2018), in relation to figure 44, it can be deduce that, through social network analysis, activities which are carried out in organisation could result to the following:

- advance novelty and knowledge progression
- application of improve strategies
- envisage relationships that could transform staff members inside and outside the workplace environment
- recognize knowledge restriction such that, individual and groups could have access to them
- ascertain knowledge movements thereby, encourage staff member to tap from each other for the purpose of team work
- fast-track knowledge streams through appropriate useful and organisational frontiers
- reinforce capable efficiency of prevailing proper communication networks

Sheedy (2019), Jan and Vlachopoulos (2019) and [Tabassum](#), [Pereira](#), [Fernandes](#) and Gama (2018) through:

- identification of the network of individuals that require analysis
- gathering all required information to accomplish such task
- spell out the aims and possibility of analysis and decide on the closeness of recording and writing such analysis
- frame up theories and questions that will help in analysing social network
- cultivate the idea of using the right methodology and design in the case of social network analysis
- the need to measure the individuals and classify them according to the connections and knowledge movements among them
- the need to use the appropriate software mapping tool in order to envision the networks
- need to appraise the chart based on the problems identified and opportunities
- strategize and implement activities that could bring preferred changes
- draw the network after a appropriate period



Node colours identify the classification of the element represented by the node

Fig 42: Image of Social network analysis

The reason that brought about the explanation above was due to social networks being nodes that comprises of people, individuals, organisations or linked systems that are connected together for the sake of interdependency. Therefore, social network analysis serves as instrument which could be used to map the various connections, thereby visualizing both recognized and unrecognized connections. This would help to monitor the knowledge flows among individuals, clusters and organisations in the networks.

3.2 Implications of Social Network Analysis

Several implications regarding social network analysis has been identified, which could influence libraries when adopted in the operations. The identified implications are positive as suggested by [Tabassum](#), [Pereira](#), [Fernandes](#) and Gama (2018) and they are as follows:

- SNA offer understanding towards how social interactions take place among group members or teams
- Most of the issues discuss in social network has to do with social issues
- Uses tactical method for building individual networks in the organisation
- When users are connected in social networks, what they deliberate on is issues that shows their familiarity are safeguarded
- Most of the time, issues about the social universal are mostly discussed.
- Interaction among individuals during social networking is for the purpose of analysing each traces of conversation
- Recognizing influencers within the network

- Different groups of people are always in constant connection no matter their time of networking
- Diverse designs of communication are used whenever people are in constant connectivity
- It permits Company to select their communication medium that they want to employ to interact

The actualisation of the above implication is that, easy connectivity and relationship are built. When there is nonappearance of a tie, it therefore means, there is no relationship. The value placed on the capacity of the movement of a tie shows that there is a network flow. SNA has revealed that it is an influential tool for the proof of identity on design of set of structure, due to the case of data obtained on participation in a small group. The normal social network involves personal networks, although the essential thrust is concerned with observing for community of networkers.

3.3 Network Service Providers in Libraries

The network service provider (NSP) according to Holmes (2021) has to do with an established organisation that is recognised and known to offer network connectivity services. The services are for commercial purposes through Internet service providers (ISP). It can also be seen as an organisation that possesses functions and sells access of Internet support with structure and services to individual or institutions. The network service provider has the support of a big network clouds that are used across the globe. This backbone makes it easy for any individual to have connection of Internet service provider such that, communication becomes easier among people and group of other Internet service provider all over the world (Holmes, 2021). In order for any individual or organisation to have the ISP, certain requirements must be met and this include, having to get the licence of such approval by the government of any State or country, thereafter, going to subscribe such services from the network service provider, known as the legal company operating such services.

It is important to note that, subscribing for ISP requires further planning and paying subscription fees in order to stay connected and maintain the server as well. The individual or organisation requesting to have ISP should also bear in mind the need to have backup strategy of software for computer network and telecommunication devices required for all the processes involved. The processes involved is to ensure that you obtain the licence of ISP, pay subscription fees, acquire all required gadgets for the connectivity and maintenance culture is also adhere to, in order to have and experience longevity of the connectivity. The required

network assists in the support of linking to all detached computer network via the global network backbone (Holmes, 2021).

The reason that necessitates ISP among individuals and several companies was based on service delivery. The service delivery requires efficient and effective use of emails, phones, computer, printers and other digital technologies for office operations. In present day work environment, hardly could any individual, private and public organisation cope with job performance if there were no ISP (Holmes, 2021). These have stretched into further operationability in the workplace environment where staff members begin to learn and acquire diverse skills and knowledge for easy workability that is required in their job performance through the internal connectivity. The diverse skills and knowledge of Word processing access the Internet, manage files, are significant in any workplace.

There are several network service providers across the globe. However, our concern in this study unit has to do with those in Nigeria, supporting libraries and information centres. In Nigeria, there is an established body/organisation that is commissioned by the Nigerian government to give approval and licencing to individual and organisations that wants to provide Internet services to people or entire nation and it is called the Nigerian Communications Commission (NCC).

3.4 Various Network Service Providers

The most recent and recognised NSP licenced to operate in Nigeria according to Okeowo (2020), which most libraries have subscribed to, are:

- 1. Spectranet:** The Spectranet was established and given the licence/permission to operate in Nigeria by the Nigerian Communications Commission. The essence is to support Internet services across the entire country. Spectranet was known to be among the first Internet Service Providers to have introduced 4G LTE Internet service in Nigeria, meant to be spearhead in Internet service world.

2. **Tizeti:** Tizeti is one of the most influential and big wireless company that provide Wi-Fi and dipping cost of solar panels used to generate small Capex/Opex network. This network is maintained through towers that permit disruptive, customer-friendly price of unrestricted Internet service across Africa. Tizeti offers extraordinary speed broadband Internet to different houses, business owners, occasions, conferences. They do this by deploying free Wi-Fi hotspot at different localities diagonally in Africa.

3. **IPNX:** The ipNX is known to be among the fastest Internet service providers in Nigeria. It is meant to function through the usage by crowd through innovativeness of small business owners and inhabitants. This ISP bring innovation of world-class services, such that, the capability to recognize, fulfil and surpass today's market place would requests evidence of experience, obligation, determination and desire over a long period of time. These are the confession of exceedingly skilful professionals in most organisations.

4. **Cobranet Limited:** Cobranet Limited is another NSP, regarded as a top ISP with much data, launch in 2003. Cobranet is believed to offer all subdivision of Nigerian society by way of dependable and safeguarded ISP with data management. Cobranet presently deals with company Internet strategies for organisational and business sustainability. Most of these organisations are based in state- of- the -art –cities like Lagos, Abuja, Port Harcourt, Enugu, Kano and Jos, especially where radio network is situated.

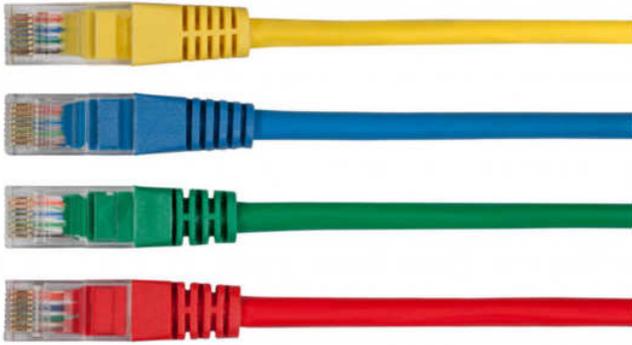
5. **VDT Communications:** VDT is another private NSP, which is licensed for quality service delivery, concentrating on the delivery of both Enterprise Wide Area Network (WAN) and Metropolitan Area Network (MAN) linked together in their connectivity. They use both fibre optic and wireless communication substructure for networking and accessibility. VDT has broadband communications that are shared within the organisations through tenancy of fibre optic. It has spread across the entire country as we speak, giving a massive service to different people and organisations.

- 6. Vodacom:** The NSP of the vodacom business situated in Nigeria, comprises of a solely owned subordinate of the Vodacom Group. This is one of the pan-African companies that provide connection and communications to different bodies. They offer service area to the landmass's of Africa, with specification to companies in the oil and gas, retail, banking, mining, distribution, and tourism. The ISP of the Vodacom has helped many of this company to stay buoyant with connectivity throughout Africa and the world at large. Vodacom has a system incorporation and maintenance culture of different high-speed Internet services, which entails Pan-African information networks, cloud holding resolution, wireless broadband, international Vodacom provider networks, enterprise voice and Internet of Things (IoT).
- 7. Hyperia:** The Hyperia has been in existence since 1997 in Nigeria after being licenced. The Hyperia, consist of members of CIS and Chagoury group of companies of the then ancient labels in African Internet world. Being among the first Nigerian Internet strength to the provision of services, Hyperia was devoted to offer minimal cost and stress-free access to the Internet through the use of modern Internet technology.
- 8. MainOne:** The MainOne, which is known to be called one cable, remains to participate meaningfully in transporting digital information throughout West Africa. Through the arrival of secluded investment resulting to large working population, the need for the continent begin to rise, where empowerment is necessary to initiate progression and transformation among the people. The MainOne's SME-in-a-Box Connect was meant to support the need of minor and average enterprises in Nigeria. Since the country is still a growing one, it becomes imperative to have telecoms services that could strengthen cost of consistent and reasonable, permitting achievement of businesses without much competition. These services were made simple for everyone to participate in through secure fibre connectivity across offices to other part of the world.
- 9. ICSL:** Information Connectivity Solutions Limited (ICSL) is seen to make provision of service of ISP, through best broadband network technologies and connection solutions. The ICSL decided to obtain subscription from the non-Oil and Gas Communications Corporation since Omnes Communications Nigeria Limited could no longer function as Schlumberger Information Solutions. The [ICSL](#)'s central capability became the delivery of steady and exceedingly accessible wireless area network (WAN) solutions. The company has associations of

VSAT, microwave and fibre to distribute solution design to run into customer's information needs, instead of conventional cover solution.

- 10. Excelsimo Networks:** The Excelsimo Networks Limited is under the umbrella of the Nigerian telecom company, which was licensed to support and offer Internet Services by licencing organisation of Nigerian Communications Commission, (NCC). The company could enhance the know-how of technical skills personnel such that, managing their devoted Internet Services Facility, becomes a feasible power point to point power, without interruption. Excelsimo Networks has devices of sophisticated Teleport that is located at the heart of Gbagada, Lagos. It is meant as a pillar of Optics Fibre Cable required for quality service delivery across Nigeria.
- 11. Telkom:** Telkom is another NSP known across the world but mostly used in Africa. Its services are endless with variety of options which one could choose from. Telkom offers reasonable choices of products from 20GB for a less amount of money. This also depends on the option you opt for. Telkom is known to be among the largest providers Internet solutions in Nigeria, even across Africa. It offers ranges of covered and uncovered areas in the nation, where people from homes, office and environs could use it for their services.
- 12. MTN:** MTN known as Mobile telecommunication network which has mostly reserved its place and name as mobile network industry that offer ISP across Africa. It was believed that their service including data is reasonable and appropriate for homes, offices and companies. Many individuals and companies have resort to its use.

In this study unit, it would be appropriate, though depending on the suitability and affordability of the various libraries and information centres to apply the subscription of the various NSP mentioned in this segment. Subscription to use any of the mentioned NSP would help to advance and transform libraries for better social network in their operations. A study by Frost and Sullivan (2016) note that, it is imperative to consider the following when choosing any NSP that will support the operations of any library or organisations and this includes: how long the NSP has been in operations, calibre of professionals, network facilities, range of network to the organisation, assembling cables and others facilities to be use for connections, nearness to top cloud service providers and the world, ease of business transactions and multilayer network and security devices among others. Below are some diagrams to show some connectivity in operations.



Cat5 cable, which is used with networks.

<https://www.easytechjunkie.com/what-is-a-network-service-provider.htm>

Fig 43: Cables used in Internet service provider



Fig 44: Connectivity in Internet service provider

3.5 LARGE SCALE NETWORK DATA

Large scale network data has to do with large volume of network data that is used in networking or internet connectivity. Presently, the use of social network has become so evolving such that, without the support and use of large scale network data, it becomes difficult for application of data transmission in networks in libraries and information centres. Nowadays, a large quantity of data is the volume of data used in a network. They are usually consumed in social networks, and this sometimes poses some problems such as consumption of much finance to the organisations if it happens that they do not have the capability to cater for such expenses. Although, this depends on the nature of hardware and software used, thus requiring much data. Most of the newer technologies like 5G and iPhone sometimes use a lot of data considering the software applications that runs in it. In order words,

under the large scale network, the need to plan for a large scale network data become significant because, it is expected that, the social network should continue to be functional without stoppage such that it attain its utility.

A study by [Sarmiento, Bifet, Gama and Cunha \(2013\)](#) indicate that, in [large scale network data, certain features of](#) group of software tools are involved. The reason being that, it is the software that are used to run the systems. Software like graphlab, Pegasus, snap (parallel computing tool for graph analysis). Some of this software are believed to make use of large scale data considering the volume of application and systems software that runs in the operations.

A practical example with this scenario of the large scale network data could be seen from network analysis of two groups of company. Network A: with company of one (1) to five (5) individual, and Network B, having over twenty thousand people. When we analyse the data usage of Network A, with one or less than 5 people, it can be deduced that, the network scale data will not be that large. However, coming to Network B, a company with more than twenty thousand people, it is expected that, the running operations where systems and other gadgets and facilities are used, a large scale network data would be consumed. This same approach relates to friends or family connected to each other using one network, it is expected or believed that, the scale of data usage would be large or more.

Therefore, the analogy from this two examples indicate that, large scale network data is dependent on the usage of data, based on application software that runs in their systems or phone, for what purpose, operations and individual or company involved. It is difficult to determine the usage of data when it comes to social network because the network is always on and functional. Therefore, the more people uses the network, the larger its scale of rising. For instance, when you are connected to the Internet, most of the things or activities that takes a large scale network data is when you download some PDF documents of large volumes, visits some sites that are not necessary, and stay on the network for a longer time than expected. Some of this scenario could take a large scale network data. The connectivity here does not involve high scale where a large degree of connection needs was used unlike previous scenario of staff members of a company all connected to the network, it is expected that, a high degree of connected nodes were used.

Another dimension of large scale network data which De-Ming and Yu-Feng (2018) gave was the use of different types of social network such as Twitter, Facebook, and YouTube amass huge data in their day-to-day operations. When users of system decide to also play games using social

network, the scale of network data is believed to also rise. Besides in order to search for useful information takes much time and data as well considering the energy and time spent looking for particular information that will solve human problem in the society (De-Ming & Yu-Feng, 2018). The social network is believed to take a large scale data for every operation (De-Ming & Yu-Feng, 2018). In the light of the above discussion, libraries when considering large scale network data, it should only be when they have crucial job description and specific users to attend to since it was emphasis at the beginning of this study course that they were not funded. The usage of large scale network data is essential when there is adequacy of provision of fund to that effect and besides, it is meant to support crucial information needs of the user.

3.6 MODELS FOR NETWORK STRUCTURE

The models for network structure have to do with a framework that guides the building up of networks over a period of time, such that, it could accomplish its purpose. Models of network structure signifies how the network should look like based on activities of those connected to it, interaction made and services which it rendered to users. Networks are meant to serve a particular purpose and when there is no structure surrounding it, it is possible, its purpose is defeated already. A model from a general point of view could be seen as a lens or framework used to map or guide a particular study. It can also be referred to a shortened illustration of factual condition (Aminga, 2012). Models differ from one discipline or area of study to another. Models serve two purposes, analysis and predictions which are anchored on analytical power, uniformity and practicality of its expectations, range of information offered and generalization and simplicity (Aminga, 2012; Kebede, and Butterfield 2009).

The significance of models in network structure was to guide how the network operates through application of consistent monitoring, since users of social network cannot be asked to stop using the network. It is assumed that, the precision of data validation through appropriate structure would help to know and see how the network continues to grow. This has helped to identify relationship of users in the network structure. Based on the above analogy, Aminga (2012) argues that, the models of network structure are principles upon which issues of discourse are measured. They become useful when someone is able to understand the operations of everyday activities in the network.

Aminga (2012) alludes to certain demonstration that is most vital in the structure of network through which events occurs. Therefore in order to have functional models in network structure, we should be able to simplify ideas that are representative such that, when measured, there

will not be any manipulation within the structure (Aminga, 2012). The engagement in network structure arises on the need to have proper interaction in the bid for quality service delivery among broader networks. Preparing and implementing the models of networks structure require identifying essential requisites of competencies, connection with users, familiarity with application to user the network, community of users and obligation with combined network services. These are very paramount in the structure of models network.

In another dimension, it was emphasised that, the need to have models in network structure has proven to be important in the development of social network, since majority of them uses linear programming (Network Models, n.d). The algorithms in network structure shows that very proficient and authorization solution occurs in network models especially when there is large linear-programming processes involved (Network Models, n.d). It is believed that, the efficacy stalks after the element of pivot processes has been located simply for the removal, devoid of the necessity to maintain and update the structure.

Based on the above analysis, it is worthy of note that, in the context of libraries, the network models or models network is seen from the structure of the library systems that is set up to serve the entire community of any institution. This structure has one or more networks that support the operations embedded in the model of the network. That is, the model has different focus or specific duties to perform based on how it was developed. This implies that, in network structure, diverse services and operations occurs, as not all who are in network does the same thing. There is some sourcing for information to meet their needs, others into friendship, some monitoring activities, among others. The most interesting thing in the network structure is that, they function simultaneously in achieving one goals. Importantly, it is interesting to note that, there are model that are suitable for certain network structure, in order to enhance better connectivity, otherwise, the structure will malfunction.

 1. <https://www.youtube.com/watch?v=89mxOdwPfxA>

3.7 METHODS FOR LINK ANALYSIS

When we talk about method for link analysis, the issue that comes to one's mind is the connection that is associated with gathering of methods that help with the operation of data used in the illustration in nodes and links (Donoho, 2005). Some of the techniques according to Donoho (2005) comprises of subgraph matching, cliques and K-plexes,

spread of effects, imagining, pivots and authorities, organisation, and alignment. The link analysis extends to presentation of social network analysis, virus-related, marketing strategy, Internet searches, fraud discovery, and crime deterrence (Donoho, 2005).

Another point of view according to Olson and Lauhoff (2019) was that, in link analysis, what is mostly considered is the relationship that exists between units in a network. This becomes fascinating when dealing with social network analysis. This has been used several times to find out the degree of proportion in social relationship that cut across social media and collaboration networks (Olson & Lauhoff, 2019). In this context, people could be characterized as nodes and the connection among them can be link to graph. Link analysis has been used in diverse context and subject areas, such as biological science, to examine protein interactions, law enforcement and terrorism, business and computer sciences. With the aid of link analysis, it is possible to determine the growth analysis through forecast of where the graph is going or possibly determine where the clients are heading, actually permitting the systems to intermingle with the customers to increase the likelihood of their purchasing goods or items (Olson & Lauhoff, 2019). Furthermore, link analysis could also be attributed to addition of web pages already in use based on direction of information or items. In order words, a crawler strategy or robot/spider performing a traversal of the network graph by means of attractive high quality pages. When one page has been fetched, the link would have to decide which page available of the regular uncrowded pages to draw next (Olson & Lauhoff, 2019).

Loshin (n.d), story is similar, but distinct compared to previously represent. Link analysis according to Loshin (n.d) denotes the existence of link in different dimension and everywhere. There are basically two types of links, which are the internal and external. The internal link deals with when you are required to link one page on your website to another but not necessarily departing from the same area. While the external showcase the linkage of your website page to that of offline domain. However, in order to understand this scenario very well, below is the practical attestable method of link analysis. This comprises of physical (i) (people: family, friends, seminar or conference attendees), (ii) objects: telephones, computers, mobile phones etc.), (iii) online: Internet, graphs etc. (Loshin, n.d). The different kinds of link mentioned have some designation, breakdown and assessment performance patterns for their activities.

The view that surrounds the connectivity of the different link analysis mentioned is fascinating, particularly when we consider individuals and additional kinds of parties, as well as the understanding that could be derived from the connections. For instance, if we have to examine the

numbers of people that we are linked to, let say 1000 people. It could also be seen that this 1000 people are linked to other people whom we might not know of and this is how link analysis grows. Can we say that or is it accurate to say that the people you are connecting to, might be different from mine. Therefore, it could be deduced that link analysis is subject to the fact that, those who you are connected to might somehow be connected to me as well through the chain of social network analysis.

Relating this to library context, it is evident to know that, numerous applications of this nature is associated with social network being the backbone of enhanced service delivery in present day information and knowledge economy. Most of the users in libraries are also linked to one another hence some users share their resources with one another.



1. <https://www.youtube.com/watch?v=CdzTeJDo7pc>



2. https://www.youtube.com/watch?v=o_-njsxjRaY

4.0 SUMMARY

This unit examined the social network analysis, implications and network service providers in libraries. The reason that necessitate this was based on the understanding that surrounds social network analysis (SNA), which involves analysing interactions and activities social network over a certain period of time. The feature of network incorporates nodes and algorithms. Since social network has the characteristic of different numerical methods its analysis of data usage becomes imperative. It was established that, SNA measures the flow of data usage in social network in order to regulate its approach. This was based on the behaviour of personnel involved in associations within the network arrangement. In the light of the shrewd analogy, several implications regarding social network analysis were identified, to include: offers understanding among teams' users, use of tactical methods, treaties with social systemic, analysis of electronic traces and join diverse groups of people together, among others. Recall that, social network analysis is significant; therefore, the need to have a network service providers cannot be undermined in proper reorganisation of the effect expected from social network.

The network service provider (NSP) being a recognised institution licence for such operations is expected to proffer connectivity of internet services to the individual and organisation, of which libraries are inclusive. Among the NSP registered in Nigeria for operations are:

Spectranet, Tizeti, Ipnx, Cobranet Limited, VDT communications, Vodacom, Hyperia, MainOne, Information Connectivity Solutions Limited (ICSL), Excelsimo Networks, Telkom and MTN. In the same vein, large scale network data, models for network structure and methods for link analysis were also discussed.

5.0 CONCLUSION

It is interesting to note that, social network analysis, its implications and network service providers has become a fascinating discourse in this study unit due to the intricacies surrounding its operations. There are no way libraries or any other organisation could survive without the strength which Internet service provider offer in reorganising their operations in service delivery. Librarians in the bid to perform their daily task rely heavily on social network. Therefore, based on the analysis surrounding activities of social network where nodes and algorithms are required, its incorporation in libraries becomes indispensable.

6.0 TUTOR-MARKED ASSIGNMENT

1. What do you understand by Social Network Analysis?
2. What implications does it have in relation to service delivery in library and information centres?
3. Substantiate network service providers in libraries in relation to the recognised and licenced organisation that offer such services?
4. Write short on the following terms: (i) large scale network data, (ii) Models for network structure, (iii) Methods for link analysis

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MODULE 4 NETWORK COMMUNITY DETECTION AND VIRUS OUTBREAK IN LIBRARIES

UNIT 1 OVERVIEW AND TECHNIQUES OF NETWORK COMMUNITY DETECTION

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Overview of Network Community Detection
 - 3.2 Techniques of Network Community Detection
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In unit 3 of module 3, issues associated with social network analysis, implications and network service providers in libraries were discussed. This was further strengthened under the discourse of social network analysis with emphasis on large scale network data, models for network structure and methods for link analysis. In this present unit, we shall consider the overview and techniques of network community detection

2.0 INTENDED LEARNING OUTCOMES (ILOs)

At the end of this unit, student should understand the followings:

- What network community detection entails
- The techniques that should be applied in network community detection

3.0 MAIN CONTENT

3.1 Overview of Network Community Detection

The understanding that surrounds network community detection could be well articulated when each of the variables are broken into different segment. By the term ‘network’ we imply interconnectivity between two or more cluster of persons, for the purpose of sharing information with each other (Keracheva, 2021). Winkelman (2013) gave another point that signifies network that is linked together, simply because they want

to share resources of files, ebooks, information stored in different computers, etc.

A Community is a group of nodes and algorithms or people that are connected together or entity having close interest or association with mutual understanding of people that are joined together for certain benefits (Yang et al. 2010). Community detection has to do with detecting the function of intricate networks (Javed, et al., 2018). Community detection could be considered where availability of data sets of large-scale networks are required (Javed, et al., 2018). Community detection serves as key features that might be useful to extract information from the networks. The utmost encounter facing community detection is that, there is no worldwide accepted explanation of the community structure that has existed (Fortunato & Hric, 2016). Therefore, in order to trace community detection in any large-scale networks requires some enormous effort of continuous monitoring of the network. It could be deduced that, certain procedures may support ideal communities in a reasonable and fast growing mode due to the optimisation surrounding the detection of networks.

Network community detection is increasing immensely considering the extent, diversity, and intricacy of the operations of changing networks (Javed, et al., 2018). This results to the innovative and diverse categories of communication in the networks. This categories cut across emergence of multiagent, Internet of Things, wireless devices, cloud built, among others. The operations that surround network are intrinsic due to numerous non linear upsurge in the multifaceted developing patterns used. The non linear upsurge network consists of diodes, transistors, and iron core inductors and transformers when the core is saturated. In which case, the circuits operate in nonlinear way of mixers, modulators, rectifiers, radio receiver detectors and digital logic circuits. The designs help to understand the unforeseen effects on countless features seen in the network (Javed, et al., 2018).

When analysing a practical network, such as internet or local area net, it is usually difficult and if not more complex to detect large scale data due to the intermingling entities that want to generate varied categories of data (Samandari, Soroush, Seider, Arbogast and Oktem 2020). The reason attributed to different kinds of networks that are fused together. This is a good example of complex networks, where modern industrial entities are integrated together for operations. Therefore, the lesson that should be learned here is the different set of insignificant networks that detect the connections of larger network due to the attention received from the applications in many industrial and science areas of study. A study by Samandari, Soroush, Seider, Arbogast and Oktem (2020) established that community detection uses disintegrated large networks

to change less interacting networks due to the interconnection of varied communities in the network.

Another important point made by Khan and Niazi (2017) towards network community detection is that, it is associated with multidisciplinary field of study, such as computer, computing science, information science, engineering and information technology, etc. The network community detection has the ability to detect exploration of dominant, innovative and bursting nodes among scientometric texts. The network community detection helps to access visual examination, intellectual and computing background (Niazi & Hussain 2011). Therefore, in order to sustain the network community detection, there should be a regular monitoring of the nodes and algorithms within the interconnected network. The cause of network community detection is when there is a complexity of increasing size and structures of the network (Javed et al., 2018). Complex networks have resulted to network community detection in recent times.

3.2 Techniques of Network Community Detection

By techniques, we mean the strategies or procedures through which network community detection could be eradicated. The techniques that could enhance network community detection are:

This made Jianjun, Longjie, Mingwei, Weiguo, Yukai, and Xiaoyun (2016) to identify divisive spectral process as one of the technique of network community detection. The divisive spectral process has the ability to categorize community structures from networks that uses a sparsification operation to pre-process the networks first, and then uses a recurrent dissection spectral algorithm to partition the networks into communities. Another point is separating the networks into communities through the aid of spectral algorithm. The spectral algorithm technique is the standardized cuts algorithm or Shi–Malik algorithm normally used for image separation. Therefore, grouping the communities into different web pages leads to sharing vital information in the same networks (Jianjun et. al, 2016). The predisposition of the vertices that led to the partitioning according to the various groups was the impenetrable connections among vertices inside the groups and thinner boundaries through groups (Jianjun et. al, 2016).

4.0 SUMMARY

This unit examined community as a group of nodes and algorithms connected together for the purposes of sharing information. The understabnding of community linked us to its detection, where functions of intricate networks are detection on daily basis whether the networks

are working well or not. Therefore, tracing network community detection in large-scale networks requires diverse techniques and continuous monitoring of the network. It was established from this study that, network community detection are increasing immensely due to the amount, variety, and intricacy of the operations of changing networks. This resulted to the innovation of different categories of communication in the networks. The study further note that, certain techniques of divisive spectral process, separation of the networks into communities through the aid of spectral algorithm among others believed to have enhanced network community detection in organisations, which libraries are inclusive.

5.0 CONCLUSION

In present day information and knowledge economy, network community has become so significant considering the waves in technological drives and social interactions. Network community continue to expand or grow due to the number of users involved. The growth becomes so intriguing to the extent where continuous sharing of information and knowledge cannot be devoid from any individual connected to the network. Many organisations today rely heavily on social interaction derived from network community, which libraries and information centres could benefits when applied into their environment. Irrespective of the detection noticed in network community, it has shown to perform and increased relationships among participants through the support of nodes, algorithms and divisive spectral processes, based on the separation of the networks into communities for adequate functionality.

6.0 TUTOR-MARKED ASSIGNMENT

1. What do you understand by the term, network community detection?
2. What are some of the techniques that could enhance network community detection?
3. Why is this imperative in any network community environment?

7.0 References/Further Reading/Web Resources

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UNIT 2 OVERVIEW AND CAUSES OF VIRUS OUTBREAK DETECTION IN NETWORK

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Overview/concept of Virus Outbreak Detection in Network
 - 3.2 Causes of Outbreak Detection in Network
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In unit 1 under module 4, issues surrounding the overview and techniques of network community detection were discussed. In this unit, we shall consider the overview and causes of virus outbreak detection in network with relation to libraries and other organisations.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, students should be able to understand:

- Overview/concept of virus outbreak detection in network
- Causes of virus outbreak and how virus outbreak affects the organisation

3.0 MAIN CONTENT

3.1 Overview of Virus Outbreak Detention In Network

When we made mention of virus outbreak, we refer to those threats that negatively causes challenges to networks in any workplace or organisation. This has also had effect to individually owned networks. Those threats enter the network knowingly and unknowingly especially when the network are not well secured with adequate antivirus or antibody that will fight against their entrance. A practical example could be referred to a scenatio where a human being did not take proper care of his/her self very well, by means or ways of not washing your hands always, even after you go out simply becasuse you might have touched

different places, knowingly and unknowingly to you. Such person or individual could contact one virus or the other. There are many viruses today when it comes to human being. A good example is the present pandemic called corona virus (COVID-19), that erupted in China 2019 December. Other forms of virus associated to human beings are Ebola and Hanta fever, measles, chicken pox, and shingles, among others.

In relation to the present study unit, and as was earlier mentioned, virus outbreak in networks are very common due to some people purposefully develop the virus as a mean to hack into people's network. Those virus outbreak causes danger to the network used today in rendering and strengthening organisation for their service delivery. In order to curb this scenario, the need to detect network from virus outbreak becomes essential. There are specific ways and/or techniques for detecting virus: (i) through close monitoring of the network; (ii) checking the server that supports all networks, (iii) checking to see if the antivirus for the computer systems is active, (iv) networking by installation of antiviruses. The antivirus is like antibody that protects the networks and other systems from getting destroyed by viruses (Krishma, Mohan & Srinivasa, 2018). The act of doing this is called virus outbreak detection in networks.

Presently, networks are widely used at different geographical places where diverse individuals and organisations meet their organisational goals and improve work performance of their staff. Through this effort, an increasing numbers of data communication facilities, frequencies and accessible software applications, are handled in huge numbers through well-organised method (Krishma, Mohan & Srinivasa, 2018). This offer technological improvement of prospects that could serves as security threats to networks. Some of the threat is both internal and external threats. Some of the outer threats comprises of hacking, virus attack, Trojans, worms (Krishma, Mohan & Srinivasa, 2018) among others. Although, virus has shown to becomes much stronger for destruction purposes. Therefore, you require a strong antivirus before they could be eradicated from entering your systems or networks. Some of the viruses result from the users' permission due to the various sites that the user has entered. Another consideration is that, the location where the item or documents is sent from could also be carrying the virus unknowingly to you. But whatever is the case always protect your systems with regular monitoring and good and updated antiviruses. This can be done through assigning of team members that have knowledge of systems, who would carry out such responsibility of checking the systems always.

The adoption and use of computers are critical in 21st century workplace. To avoid the loss of data antivirus software should be installed and other information that has been saved for ages, getting the

appropriate computer software, hardware and antivirus becomes a must do process (Lloyd & Robert, 2001).

Lloyd and Robert (2001) emphasise that, in line with inadequate power supply, modern sensor hardware are planned with low-power sleep mode, such that, through the sleep mode left for a while, certain power are saved, otherwise it becomes difficult to connect to back to the Internet. Such inability to connect could expose the system to virus when not properly switched off. Another point of view noticed by Lloyd and Robert (2001), since sensor nodes stand as source guarded, they are prone to feeble protection abilities of outbreaks by virus or worm attacks on the Internet. This is especially when the nodes are positioned in intimidating environment.

3.2 Causes of Virus Outbreak Detection in Network

There are five causes of virus outbreak and these are: (i) human beings, (ii) malfunctioning of computer systems, (iii) non installation of software and (iv) lack of maintenance of the system, (v) opening emails not sure of the address and or visiting websites not known. The causes of virus outbreak differ from one individual and organisation to another. When users of computer systems did not handle their computers and network very well, it could cause virus out. There are some individual or people that are very meticulous when it comes to handling of things, while others do have such culture or attitude. Careful usage pattern will help to safeguard the network and computer systems from being attacked of virus. For instance, someone who uses the network should be able to maintain and clean the network through antivirus updates that would remove viruses. The regular cleansing of the network and computer systems will make the network more enhanced through prolong functionality and life span. Sometimes, visiting unfamiliar sites could expose the system or network to viruses. A study by Joshi and Pati (2012) mentioned the following signs of virus outbreak:

- When computers runs slower than normal or expected
- Computer stops booting or tresses regularly.
- Computer cracks
- Pirated software
- Computer start over and over again or continuously
- When computer or network does not run as normal in the system
- Applications does not work properly on the computer
- When disk drives become unreachable
- Sent items from the computer do not print accurately
- Uncommon fault messages start showing
- When menus and dialog boxes are perceived in one-sided form

- When antivirus program deactivated for no purpose
- Weird sounds plays from the music speaker unpredictably
- A panel of the hard drive vanishes away
- Windows Task Manager powerless

These among many more factors could result to detecting virus outbreak in any networks or computer systems in the organisation, whether libraries or private organisation.

4.0 SUMMARY

In this unit, it was established that virus outbreak detention in network, refers to threats that negatively cause damage to networks functionality in any organisation or institution and possibly to individual owned networks. The virus outbreak in networks are very common today due to some people purposefully develop the virus as a mean to hack into people's network. Those virus outbreak causes danger to the network such that, it becomes difficult to perform to expectation the strength required in the organisation for service delivery. Those threats enter the network knowingly and unknowingly especially when the network are not well secured with adequate antivirus or antibody that will fight against their entrance. This scenario brought about the need to detect network from virus outbreak. This can be done through close monitoring of the network where the server and supporting networks and computer systems are installed with antiviruses. The antivirus is antibody that protects the networks and other systems from getting hacked or destroyed by viruses. In the light of the above, it was further deduced that certain factors could lead to the virus outbreak being detected in networks and they include: when computers runs slower than normal or expected, computer stop booting retorting, or tresses regularly, computer cracks, computer start over continuously, does not run as normal in the system, applications does not work properly on the computer, among many more.

5.0 CONCLUSION

Networks are indispensable to individuals and libraries and information centres based on the goal and objective of rendering information services to users and other class of users. Therefore, no matter the circumstances of virus outbreak detection in network, its use cannot be denied from being enforced. Another crucial factor that should necessitate its use irrespective of causes noticed or that result to its detection is the digital divide and propagation of continuous use of digital technologies, especially now that the world is experineing unprecedented pandemic of covid-19 thus moving into virtual platform of operations in all spheres of life.

Here are some video/youtube of viruses in computer and networks
Find time to watch and digest the information therein.

1.  <https://www.youtube.com/watch?v=DF8Ka8Jh0BQ>
2.  <https://www.youtube.com/watch?v=zqwXpQn93Po>
3.  https://www.youtube.com/watch?v=3nrwAW_0FjU
4.  <https://www.youtube.com/watch?v=uLVPJAVwfJE>

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the term ‘overview/concept of virus outbreak detection in networks and how does it affect the organisation or individual using it
2. How can the causes identified in virus outbreak detection in network be eradicated

7.0 References/Further Reading/Web Resources

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UNIT 3 STRATEGIES OF VIRUS OUTBREAK DETECTION IN NETWORK

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Strategies of Virus Outbreak Detection in Network and how to apply it
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In unit 2 of module 4, we discussed the overview and causes of virus outbreak detention in Network. In this unit, we shall consider the strategies through which virus outbreak detention in network could be curbed.

2.0 INTENDED LEARNING OUTCOME

By the end of this unit, you will be able to:

- explain the strategies of virus outbreak detection in network and when and how it could be applied to eradicate virus outbreak in future occurrence.

3.0 MAIN CONTENT

3.1 Strategies of Virus Outbreak Detection In Network

Having known and establish what virus outbreak detection is all about in network, the need to strategise on the way forward, to have the life span of such network becomes important. By strategies, we mean various application of methods and procedures to apply in curbing virus outbreak and its detection in network. Based on extant literature search and discussion had from this study unit, it was established that, the knowledge of antivirus programs application could serves as one strategy through which virus outbreak could be detected in networks. The antivirus program exposes the individual or organisation to assign someone who should be responsible for the monitoring of the various networks, where issues of signature, heuristic-based, behaviour and cloud detection are considered. These help whoever that is managing the

server and network to check how people use the network to gather information and documents. The sourced information and documents by different people using the network could be monitored and restricted from visiting certain sites and not downloading some materials that might cause damage to the network. The assigned individual should be able to apply the use of different codes, procedures and his/her fingers as password to monitor and maintain the server and network in most operations (Elovici, 2012).

To this end, Khan, Syed, Mohammad and Halgamuge (2017) referred to different strategies of multi-layer security and software updates method which could be used in protecting networks and other computer systems. Among the software updates in networks are network firewall and internet protocol system, office systems firewall, anti-virus software, interactive detection, office systems safety covers and monitoring system malware among others. There is no way, some of these software facilities could be devoid of network if we want it to grow and become sustainable. The application of the mentioned software facilities helps to eradicate unwelcome or unidentified connections in the server. The identified software updates in networks and computers blocks unnecessary ports as well because it has shown to minimise attack of hackers and viruses (Khan, Syed, Mohammad & Halgamuge, 2017).

In correlation with the above analogy, Nerds (2019) made reference to the following strategies to virus outbreak detection in networks and other computer related systems. This consists of the following:

- Back up your networks with reputable facilities
- Use of antivirus software,
- Install firewall,
- Avoid websites not familiar to you,
- Do not open email you have never seen before or not sure of the address
- Avoid people from using your computer
- Avoid downloading from unrecognised software
- Never share your data with someone you do not know

Based on the above recommendations of strategy raised, it is important that, the user of networks or computer systems should apply their common sense in whatever they do since the viruses are difficult to detect sometimes.

4.0 SUMMARY

This unit emphasised that, virus outbreak are everywhere in network but the ability to monitor its detection becomes significant. In this study, it

was establish that, different strategies of antivirus programs could serve as strategy through which virus outbreak could be detected in networks. Other strategies for virus outbreak are software updates which consist of network firewall and internet protocol system, office systems firewall, antivirus software, interactive detection, office systems safety covers and monitoring system malware. The application of the mentioned software facilities helps to eradicate unwelcomed or unidentified connections in the server. The identified software updates in networks and computers blocks unnecessary ports as well because it has shown to minimise attack attack of hackers and viruses. Therefore, in accomplishment of the above task, individual should be assigned in library organisation, to monitor the various networks, where issues of signature, heuristic-based, behaviour and cloud detection are of utmost reagrding information and documents sourced by different people using network.

5.0 CONCLUSION

Network cannot be devoid of virus outbreak. It gives the individual or library organisation using such network, the consciousness to also think and plan ahead towards its detection and provide solution to eradicate virus outbreak. Virus outbreaks play an important role in checkmate staff members to always work with their mind more than their hand. This is so because, usually, when there is virus outbreak, the strategy to apply comes from cross fertilisation of ideas put together by all colleagues working together in the organisation. They apply different software updates in networks of network firewall, internet protocol system, office systems firewall, antivirus software, interactive detection, office system, safety covers and monitoring system malware, to enhance their functionality of better service delivery in the organisation among staff members.

6.0 TUTOR-MARKED ASSIGNMENT

1. What are the various strategies applied in virus outbreak detection in network?
2. Which of the strategies applied are most suitable in virus outbreak detection in network?
3. How has it helped individuals and organisations in the sustenance of their network and computer systems

7.0 References/Further Reading/Web Resources

Elovici, Y. (2012). “Detecting unknown computer worm activity via support vector machines and active learning”, *Pattern Analysis and Applications*, 15(4), pp. 459-475, 2012.

Khan, H. A., Syed, A., Mohammad, A., & Halgamuge, M. N. (2017), Computer Virus and Protection Methods Using Lab Analysis, 2017 IEEE 2nd International Conference on Big Data Analysis

Nerds, F. (2019). How to Prevent Computer Viruses: 9 Tips to Keep Your PC Safe <https://fnerds.com/blog/how-to-prevent-computer-viruses-9-tips-to-keep-your-pc-safe/>

**MODULE 5 DIFFUSION AND INFORMATION
PROPAGATION ON THE WEB****UNIT 1 OVERVIEW AND IMPLICATIONS OF DIFFUSION
AND INFORMATION PROPAGATION ON THE
WEB****CONTENTS**

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Overview/Concept of Diffusion
 - 3.2 Diffusion of Information
 - 3.3 Information Propagation
 - 3.4 Web
 - 3.5 Implication of Information Propagation on the Web
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In this unit, we shall discuss what diffusion and information propagation on the Web means and its implication to libraries and information centres in relation to information dissemination to users of libraries.

2.0 INTENDED LEARNING OUTCOMES (ILOS)

By the end of this unit, students should be able to understand:

- Overview/Concept of diffusion
- Diffusion of Information
- Information propagation
- Web
- Implications of information propagation on the Web

3.0 MAIN CONTENT

3.1 DIFFUSION

In order to have a clear distinction of the overview of diffusion, diffusion of information and information propagation on the web, these were treated separately. This brings a better and concise understanding required of them in this study unit.

The term diffusion is not new globally, except for those individuals who are in developing nation. Diffusion is taught in all most subjects from primary, secondary/high school to the university level. In biology, diffusion means the movement of anything or particle from a region of higher concentration to a region of lower concentration through a semipermeable membrane. It can also be referred to the procedure through which information moves on or after one dwelling to another person during and after interactions (Myers, Zhu and Leskovec, 2012). Diffusion incorporates different techniques of field of study that cut across sociology, politic science, information science, biology, medicine, epidemiology and ethnography, among others. The diffusion practice comprises of three stages: (i) sender, (ii) receiver and (iii) medium.

- (i) **Sender:** The person or persons/group of persons that initiate the conversation before it was sent out. These set of people initiate the diffusion progression.
- (ii) **Receiver:** In this regards, we implies the information that was diffused from sender to the receiver through different mechanism. Usually at this stage, the receiver is more than the sender.
- (iii) **Medium:** The avenue or frequency through which the information are sent or diffused from the sender to the receiver. This avenue or channels could be the television, radio, social media, digital devices of mobile phones, computer and social connections etc.

The understanding of the diffusion stages is that, diffusion usually jumps by means of adopter that spreads the invention to others. Innovation naturally signifies novelty. This process contains intermittent changes. Diffusion could be accelerated, postponed, or even at a standstill when is it observed that the product used is faulty.

3.2 DIFFUSION OF INFORMATION

Louni and Subbalakshmi (2014) note that, diffusion of information has to do with the movement or transfer of information from one person to another. Before the information is transferred from the sender to the receiver, it will first of all be conceived, or gathered from different sources, processed, stored and then disseminated to the recipient or receiver. The reason for all this processes is to enable the receiver to comprehend and have a clear picture of information sent; otherwise, it will make no meaning to the receiver. For instance, if any information is sent in French language and the receiver does not understand French, it become a wasted effort as the receiver will not be able to translate what was sent. Another thing to note is sending information with different codes or use of abbreviation, which could also pose a problem to the receiver. In order words, before information are diffused, it should be well explicit or interpreted such that, the receiver will be able to undersand what was sent.

The transfer of information is meant to accomplish set goals or task. The tansfer or diffusion of information would not have been possible if not well understood through a medium. Some of those medium could be likened to social networks of Facebook, Twitter, digital devices of mobile phones, computer and social connections etc. Before now, different ways of information diffusion are through television, radio and telecommunication. The advent of digital technologies has transformed the process and operations of diffusion of information such that, geographical boundaries are no longer a barrier.

The diffusion of information has become indispensable to every human beings, library organisations and related institutions considering the need for application of information to make decision and planning. The Internet has made the world more accessible through the support of social network propel in sharing information for organisational productivity of staff members. Therefore, investing so much money in acquiring the right reources for library systems sustainability of diffusion of information becomes the target/priority.

Relating this to network in associated libraries and information centres, Myers, Zhu and Leskovec (2012) note that, social networks are central to the diffusion of information. The information diffused in social networks spreads to the person concerned in two diverse ways. The first way was when you are connected in social network and external influence of out of network sources. The second is when information are believed to pass through from one node to another through the boundaries in a known network (Myers, Zhu & Leskovec, 2012). The

accessibility of considerable online social media of data could permit someone to have access to adequacy of information (Myers, Zhu & Leskovec, 2012). The mostly used types of social network for information diffusion are Twitter, Facebook and linkedIn. The Twitter could be used to trace links of the node from the beginning of when the information was sent to present state. The external effect is measured and used to describe how the information is accepted. These are all monitored in the network flow. The way in which information is passed from one region to another is based on the fundamental social network permeated through the aid of radio, social media, television, digital devices of mobile phones, computer and social connections etc. Through this medium, information is diffused faster than expected (Myers, Zhu & Leskovec, 2012).

In time past, the role played by mass media in diffusion of information was difficult to be captured considering many global practices and social structure that is obtainable then. But the rise in social network where Web, blog and social media changed the picture and local effect to a better appreciated one, putting mass media and social network in the same ecosystem (Louni and Subbalakshmi, 2014). The diffusion of information has not only affected communication and connection with friends and family members but create business opportunity and social activism (Louni & Subbalakshmi, 2014). Presently, many types of social networks of Twitter, Facebook, blog, linkedIn, among others, has been integrated into the act of diffusion of information to enhance the influence of other network of relationship, both in the generic and specific approach of decision making. Another emphasis made by Budak, Agrawal and Abbadi (2012) was the behavioural patterns of individual towards the use of social network for diffusion of information. The behaviour of public in the direction of the use of social network could enforce libraries to adopt it considering changes noticed. Therefore infiltrating it could help to get the best structure of social interaction and friendship, offering the means of sharing information for personal development.

3.3 Information Propagation

The term propagation connotes the idea of distribution of something from one region to another. The distribution of something could be in the form of a commodity or products of goods or information regarding messages of God's words that may interest others. Therefore, information propagation means the distribution of information among network in any work place learning. The distribution of information in network revolves round a link on targeted messages. The actualisation of information propagation would not have been enforced if Internet technologies were not available and accessible. A study by Liang,

Zhang, Liu and Ma (2020) emphasise that, during information propagation, the process through which the information is propagated is not the same under the circumstances of social networks, because several communication models are evolved in social networks. This is accountable to the features of information flow in network structure.

The communication of information through online social networks from one region to another indicates that certain tools have helped to enhance the distribution arrangements, thus, arousing the dynamism of operations of the network systems. During information propagation, social network become the focal point of analysis even though the behaviour of users might not be determined on how information are dispersed (Liang, Zhang, Liu & Ma, 2020). People have shown how they receive and also publish information through the aid of the Internet. Therefore, the propagation of information becomes faster; wider and better as information propagation continue to grow (Liang, Zhang, Liu & Ma, 2020). In other words, before information propagation takes place, it is validated, so as to guide against infodemic, a scenario where many information are distributed leading to fake and misinformation in present day digital world. Nodes has shown to be imperative in the propagation of information, otherwise, users would continue to struggle to use social networks even though behaviour of users affirms a green port of online social network (Liang, Zhang, Liu & Ma, 2020).

In the same vein, Lifang, Qingpeng, Jun and Haolin (2018) note that, information propagation would not have been feasible without the support of social media of Facebook, Twitter, linkedIn, blog among others. These were used to distribute, use and re-use information meant for specific and general work purposes among individual and organisation.

3.4 WEB

A general understanding of the Web has to do with assemblage of web pages and connected content which are recognized by mutual field published on web server. Previous study by Bakewel (2007) alludes that, the web has to do with a universal connectivity of systems which are backed with Internet servers that offer access to broad array of information of formats, written in script. The web allows access to diverse content interlinked to both local and international environment. At present, many libraries and information centres now depends on the web for most of their operations and service delivery. There are no individuals and organizations across the world that could survive with the effort which the web has in reimagining situation and idea required for work performance. In the achievement of this study course, the web is a sine qua non, that is, something they cannot do without. Most of the

study materials and resources sourced today are through the support of the web.

The web is believed to have several characteristics, which are too numerous to mention, according to Misiak (2020). Among these are:

- The web is universally accessed. It does not mean where you are located
- Several features that enhances browsing exist on the web
- Variety of information that meets all information needs
- Known as information delivery environment
- It is a multimedia on its own
- Multiplicity of ways for storing information and other documents
- Highly interactive and accessible
- Most information are all embedded
- Has a user-friendly nature
- Does not require education and literacy to use
- Information and other documents stored can be be accessed anytime, anywhere.

3.5 Implications of Diffusion and Information Propagation On The Web

By implication, we mean the consequences, whether good or bad which diffusion and and information propagation has over the web. Diffusion and information propagation was what made the web to be so popular today. If there were no movement or transfer of information within the network, from one region to another or even among people, based on the activities that occurs within the web, where people visit the web on daily basis, its existence would have been docile. Therefore, diffusion and information propagation should not be taken for granted based on the implications believed to have affected the web on a positive note.

Garrison (2001) made mention of diverse circumstances that has affect diffusion and information propagation on the web. This cut across the following factors of, interactive improvement, numerous gathering of information, acquaintance with computer usage, progressive online research due to information overload, self education based on availability to different resources and everyday regularity of online use, among others.

In the same vein, Kim (2011) highlighted other measures believed to have implications on diffusion and information propagation on the web and they are:

- Creation of knowledge
- Dissemination of knowledge
- Strategies in knowledge application for work performance
- Capturing data, information and knowledge
- Economic through information and knowledge application
- Efficacy of diverse product through innovation and invention
- Characterize with diversities of collection
- Changes in our social life due to continuous use of the Web
- Re-evolved practices seen in diffusion and propagation of information
- Patterns of approach differ from one individual to another
- Multivariate movement of information and data
- Analysis of digital divide among users of the Web
- Broaden knowledge of users with continuous use of the Web
- Diffusion and information propagation enforces users to be attached with technologies
- Involvement of diverse online activities leading to more diffusion and information propagation
- The process is more social and personal
- Uses of diverse ideas, technologies and practices are involved
- Time to process, store, repackage and disseminate are peculiar in diffusion and information propagation
- Innovation are necessary for diffusion and information propagation to take place

Based on the above, it is important to note that, the Web serves as engine oil that lubricates the diffusion and information propagation on the Web. The strategies become enormous if they are not well articulated and applied judiciously, especially with regards to knowledge and skills of the use of the Web.

4.0 SUMMARY

This unit examined the overview of diffusion, diffusion of information and information propagation and the Web. This was further substantiated looking at how information is diffusion through the sender, receiver and the medium used. Interesting, it was established that the diffusion stages jumps by means of adaptation of invention. It can be noted that, the Web serves as enablers to facilitating diffusion and information propagation on the Web. The Web had shown diversities of resourcefulness not applicable to computer users, but universal people, several features that exist on the media, variety of information that meets all information needs among others. The study unit further established that, diverse implications of interactive improvement, numerous gathering of information, acquaintance with computer usage,

progressive online research due to information overload, self education based on availability to different resources and everyday regularity of online use, among others were noticed in relation to diffusion and information propagation on the Web.

5.0 CONCLUSION

The diffusion of information and its propagation on the Web are indispensable in this age of digital technologies. The consideration lead to the need for continuous harvesting and sharing of information to meet diverse information needs of users. The world has become a global village due to the support which the Web offers in diverse ways. Therefore it should be promoted among libraries and information centres and individuals willing to learn and unlearn in their life and academic pursuit.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the concept of diffusion, information propagation and the Web.
2. What implication does diffusion and information propagation have on individual and organisation seeking to grow and become compliance in present day use of social media network in Nigeria?

7.0 References/Further Reading/Web Resources

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UNIT 2 APPLICATION OF SOCIAL NETWORK SITES FOR INFORMATION DISSEMINATION ON THE WEB

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Concept of Social Network Sites
 - 3.2 Types of Social Network Sites
 - 3.3 Application of the Social Network Sites for Information Propagation on the Web
 - 3.4 Relevance of Social Network Sites for Information Propagation on the Web
- 4.0 Summary
- 5.0 Conclusion
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In unit 1, under module 5, issues regarding overview/concept of diffusion and information propagation on the Web were discussed. This was further broken down into variables of diffusion of information, information propagation and Web. The discussion had made us to understand how imperative it is to apply social network sites in propagation of information on the Web. This was due to the trends of global changes in digital technologies to support information services to users and meet professional development of librarians. In the current unit 2, we shall be considering application of social network sites for information propagation on the Web, which was further broken down into social network sites, types of social network sites, and relevance of the social network sites for information propagation on the Web.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

At the end of this unit, students should be able to understand:

- Concept of social network sites
- Types of social network sites
- Application of the social network sites for information dissemination on the Web
- Relevance of social network sites for information propagation on the Web

3.0 MAIN CONTENT

3.1 CONCEPT OF SOCIAL NETWORK SITES

The application of social network sites for information propagation on the Web has become profound in recent times due to increasing information explosion on the Web. But before going further to substantiate the application of social network sites for information propagation on the Web; it is interesting to have a background information and understanding of social network sites.

Boyd and Ellison (2008) states that, the concept of social network sites has been defined by different scholar considering the drift in technological invention taking place in the technological advancements. Social network sites are web-based sites created for the purposes of social networking. The sites permit diverse individual and organisations to share information and knowledge on a continuous basis (Boyd & Ellison, 2008). The social network sites helps users to articulate how they could connect with each other and navigate their connections to others as well, within the same system. It is interesting to note that, the environment within which the connections works differ and vary from site to site. This means that when you are a one search engine, the services which the internet or web offers differ compared to when you uses another serach engine or site. What is most significant is the interaction that takes place within the networks. Besides, another factor that makes the social network sites exceptional is the way users met and relate with one another and become more visible within the social networks platform (Boyd & Ellison, 2008).

The sole interest of the social network sites is basically not to meet people but to communicate in order to get insight and knowledge required for improved service delivery and professional growth (Boyd and Ellison, 2008). In this light, those who communicate learn and unlearn from each other when they communicate in the network. The profiles created are distinctive contacts where someone could type your personal information (Boyd and Ellison, 2008).

3.2 TYPES OF SOCIAL NETWORK SITES

Studies by Boyd and Ellison (2008) and Ahmad (2011) listed the various types of social network sites that are most used today on daily basis to include:

- Friendster
- Myspace
- Facebook

- Downelink
- Ryze
- SixDegrees
- Hi5
- LinkedIn
- Orkut
- Flickr
- YouTube
- Reddit
- Twitter
- FriendFeed
- BharatStudent
- and Floper
- Blog
- Ning
- Slideshare among others.

The above listed social network sites according to Boyd and Ellison (2008) and Ahmad (2011) are further substantiated below.

1. Friendster: Friendster is one among other social network sites that started operations in 2002. This is associated to Ryze Company, although designed to support social phase of their marketplace. The company function similar to socializing services. As a substitute, friends could offer individuals maximum like-minded through additional one. When the Friendster organisation newly started, it was growing exponentially, until the network was interrupted with introduction of bloggers. The Friendster functions like every other social network sites with regards to meeting people, socialising, and discussion forum.

To befriend unfamiliar person is not an easy task though, considering so many friendsters that are online recently. Therefore, in order to make use of the social network sites, the need to apply common sense is important as you are not sure what could happen if someone is not careful. Teenagers are shown to fail vulnerable in most cases just because they want to explore the world and learn new things as they grow up.



Figure 45: Image of Friendster

2. Myspace: MySpace is another type of social network that is created for interaction purposes, either from one individual to another. The essence of MySpace is for friendship purposes, thus getting involve with one another by way of contributing to individual networking space. In MySpace platform, it is indicated that, the essence of sharing particular information could lead to giving contact to others. Such contact is expected to bring benefits to the individual involve in the platform of My Space. In MySpace individuals is safeguarded and protected from external body (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017). The image of mspace is in the text for your assessment and understanding.

3. Facebook: The facebook is one of the prevalent social networks used across the world, with over one billion users for different purposes, as at 2004. The purpose of the use of facebook cut across personal profile, communication, sharing information, networking through friendship, create list, post pictures and groups and social awareness campaign, businesses among other things. Mnay young people around the age group of 18-25 across the world have develop interest in making use of the facebook (Mazman &Usluel, 2010). Facebook is most popular between young people. The facebook were purposefully to link people together, such that communication becomes easier and better, even though users still maintain their different profiles. Many companies have shown interest in the use of facebook in marketing their products and services and other personal work within the systems. The image of facebook is in page 95 in the text.

4. Downelink: The downelink social network sites were introduced in 2004. The features of this site were mostly designed for gay, bisexual, lesbians, and transgender communal due to the fact that many people do not want to associate with them. The reason was because people

believed that some of their activities and practices are not accepted in the society. Most of the features found in this site are meant for internal weblogs, such that, the naked part of their bodies could be exposed to each other. Through this medium they also send secret emails of their personal life.



Figure 46: Image of Downlink

5. Ryze: Ryze was among the first generation social network sites found by Adrian Scotts in 2001. The Ryze was designed to cater for the needs of corporate world. The reason was because many people wanted to venture into business but do not know how to go about it, especially with reaching out and meeting people without really travelling to the actual place. It became fascinating to business men and women when they saw that Ryze could attend to their information needs. Ryze could assist business people to network in persons and groups as well. This many professional have used in their strategy to link to other entrepreneurs. The site of Ryze has the capability to house over 500,000 members across 200 countries linking to over 1000 organisations whenever they want to host their meetings online. Even though it is still among the first generation social network sites, many across the globe still make use of it.



Figure 47: Image of Ryze

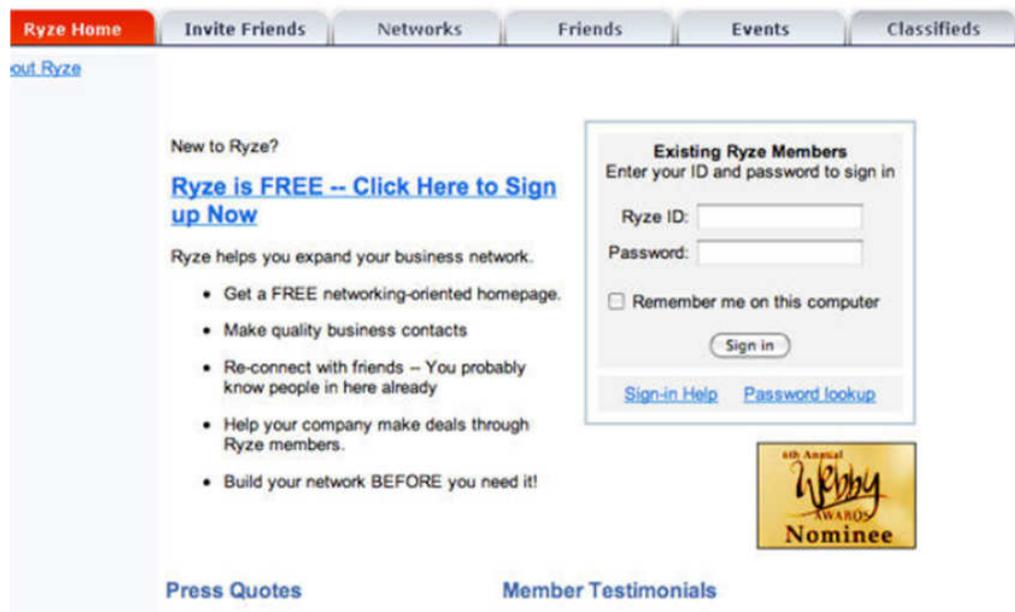


Figure 48: Image of how Ryze is registered

6. SixDegrees: SixDegrees was established in the year 1997, being among the first social network sites to be launched. The SixDegrees It permit users to do a lot of things such as create your personal profile, make friends with other users, and discuss or interact with people from different region which you have made friends with. At some point the SixDegrees was very popular, even though it is not much into use at the moment unlike other social network sites. It serves different roles of sharing ideas and information with all living things and activities in the society which one can think about in the world.



Figure 49: Image of Sixdegrees

7. Hi5: Hi5 was instituted in 2003 and presently boastful with over 60 million users' across the globe based on its functionality. Users could position their profiles such that, it can be seen by every other users or members. Hi5 is one of the social network sites that is well known in the U.S.A. It has a large population of users in the Asia, Latin America and Central Africa. It is useful for meeting friends and sharing information. It does every other activity seen in other social network sites.



Figure 50: Image of Hi5

8. LinkedIn: The linkedIn was developed by Reid Hoffman with a group of his team from two projects Socialnet.com and Paypal in 2002 but was not launched or became operational in 2003. At the early stage of its creation, the growth was slow, until many people knows about it that it became explosive. LinkedIn is a professional network site dedicated for experienced, skilled and knowledgeable individuals, where they could share their thoughts and other things associated with disciplines, job search and service delivery (Storrs, n.d). LinkedIn has shown to inspire professionals by connecting with one another such that, real life situations are solved. The linkedIn is one of the favourite site used for advertising of jobs, networking and sharing professional experience on

critical discourse. It is also a site where someone could meet expert in their areas of specialisation. Many people are connected through professional bodies of teaching profession, among others in linkedIn platform (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017). The image of a linkedin is shown in the body of the text.

9. Orkut: Orkut was created by Google employee Orkut Büyükkökten in 2004. Although not well known in the U.S, except in Brazil and India, with over 65 million people using it. Most of the users of Orkut share information on their status communicate and updates along side with instant messaging. Diverse features exist in Orkut such as being a fan of other friends, updates and share information. Users could customise their profile whenever they wish to do so. Users could add other members into their profile, known as crush list. Due to some of these features among many more, it becomes useful for use by many individuals and organisations for networking purposes. Orkut has broad communities of users across the globe.

orkut

Figure 51: Image of Orkut

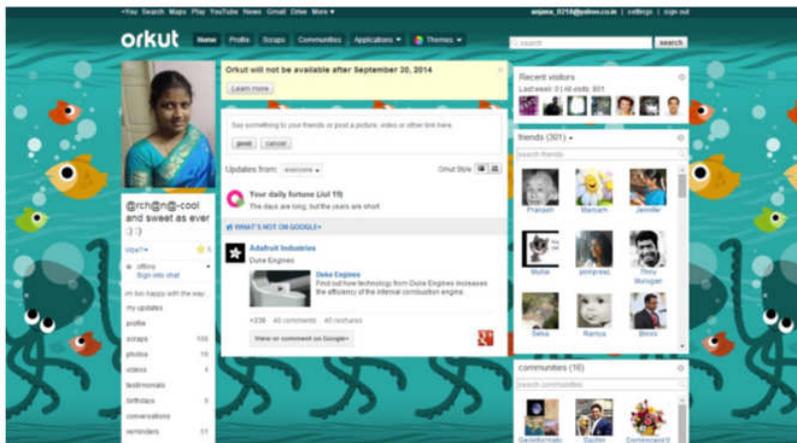


Figure 52: Image of how to register in Orkut

10. Flickr: Flickr is known for its hosting and sharing website platform of images and video of important events or activities. The images and video of activities serves as archival materials required for retrospective purposes. The essence of sharing such images and video on the website is that, individuals who are in need of them could have access to them. Those images and video becomes historical and someone might not be able to keep them very well. Therefore uploading them into the university library websites or repository serves as the artifacts of the library. Those photos and other pictures remind us of activities that have taken place in time past. Most of such similar video and photos and pictures are common in Nigerian museum. Tourist could come and have a look at those pictures when such need arises. For instance, whenever you go to any government house, and public and private parastaals, most of the individuals that have headed one position or the other, pictures are usually kept in those offices as a way to remember. Therefore, the idea of storing pictures and videos in university library websites is not a bad one. Flickr offer varieties of confidentiality in any work setting, thus letting library users to know for what purpose their pictures could be used. Flickr gives users who did what, why and how, especially when studying pictures of people during war, and transition era. It is a form of recognition of job performed (Chakrabarti, 2016). The image of a flickr is shown above.

11. YouTube: The YouTube is a website platform where recorded items such as music, films, play and other things are stored. It is similar to the flicker except that, most of all that is stored in the platform are in video forms. The essence of storing recorded items/video in youtube is also for accessibility, retrieval and sharing. YouTube permit billions of users to ascertain, watch and share unique video coverage that has been created in time past. Most information resources also come in video form which could be deposited in Youtube for other to watch and download and watch at their convenience. Presently, most seminars, education materials such as teaching and learning library resources could be converted into video form for users and stored in Youtube. The essence of the use of Youtube is to manage spaces in the library environment (Chakrabarti 2016; Hussain, Loan & Yaseen, 2017). The image of a Youtube is represented in the body of the work.

12. Reddit: Reddit social network sites were found in 2005. It is a social network sites that addresses news of combination from different web content. It is usually known to be in the front page of the Internet through some content known as Reddit Public Access network. It serves different communities for conversation purposes such that, activities of sport and human connection can be obtain in it through continuous searching online.



Figure 53: Image of Reddit

13. Twitter: The twitter which was created in 2006, by Jack Dorsey, Noah Glass, Biz Stone and Evan Williams has gain popularity in almost all organisations in the world today. The Twitter has become widely used social network across the globe, including libraries and information centres. It is used to tweet library products, services and other activities like research week and newly arrived books, journals and artifacts happening. With this in mind, users could post, follow and trace certain tweet that was posted in the library and those responsible in managing the tweet in the library could respond back as well. Many organisations prefer to use the twitter as their official networking sites for marketing and service delivery strategy (Chakrabarti, 2016; Hussain, Loan & Yaseen, 2017). The image of a twitter is shown above.

14. FriendFeed: FriendFeed is also a good social network sites that was introduced in 2007 but later purchased by Facebook. The FriendFeed permit people to take part in utmost online activities from different region but through harnessing together in single place. It is capable of doing so many things especially creating friends list based on their various profile, post and updates information as well. FriendFeed even before it was bought by Facebook, it is capable of creating content on the Web which shows relevance and usefulness to other social networks. It is one of the tools used in discovering information on the Web too. Users of the FriendFeed cut across all areas of specialisations.

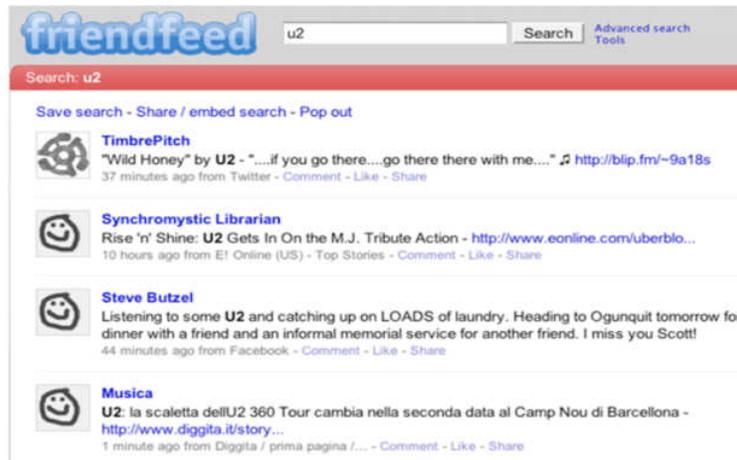


Figure 54: Image of Friendfeed

15. BharatStudent: Bharatstudent is also another social network sites that are mostly used by studetns. It helps to bring people together accross the globe. Most of the people involved in the use of Bharatstudent are young Indians students living in those areas. Many of the young Indian students believe through this platform, they could meet each other and socialise. The Bharatstudent is believed to have provided solution of information searches such that, people of different background in Indians like it so much. Whether professional of non professional seems to like this Bharatstudent as well, thus making the sites to grow rapidly.



Figure 55: Image of Bharatstudent

16. Flopper: Fropper has to do with the act of relating and meeting with people irrespective of the locations. This act of meeting people is for the sake of making new friends, such that, they could have pleasures of taking photos, videos and play games in blogging platform. Floper is gradually growing where different communities of people are fully involved. It is another social network sites used for interaction and socialising all the time. Millions of people are fully involved in its application.

17. Blog: The blog is a webpage that operates like the conventional media used in transmitting news, activities and information. With the support of the blog, users could access them and share information and their personal events. Individual could also create their personal blog as well. Blogs are man made web pages based on personal experience and knowledge and what the individual hope to present in it. Sometimes there work of group blog but not similar to the individual. It has shown that blog permit sharing of information with other readers. With this in mind, those reading the blog could post comments and share with others as well. It can been noted that, blog serves as webpage publishing which could be used to distribute information to many as possible at once. The use of blog is imperative as users of library could harness it and read about activities happening in the library especially their products, services and new arrival of books/collections. This serves as authoritative tools for networking with users and associated members especially in this age of digital technologies (Chakrabarti, 2016; Hussain, Loan, & Yaseen, 2017). The image of a blog is identified above.

18. Ning: The Ning is another type of social network created by Marc Andreessen and Gina Bianchini and advertised in 2005. Ning is significant due to its ability to network, create its own social site and permit users to join for the purposes of sharing in the networks created. It is mostly used for learning purposes where interaction takes place while learning from each other in the network platform. In this regards, all assignemtns and other information are posted for the sake of the entire class. Due to its nature, libraries could adopt it for service delivery and marketing their library products, services and other future activities like orientation (Jasser, 2018). The image of a ning is represented above.

19. SlideShare: The slideshare is another online platform that is represented in the form of a PowerPoint, presenting items one after the other. It is mostly used by faculty members, students and other academic personnel for sharing slideshow based on certain research reports, teaching and learning processes. The essence is to see that all the slideshow are spread round the entire community. It could also be used during conference and seminar gathering, where items are projected for easy access and proper following as each slide show one after the other. Slideshare uses different strategy in ensuring the information or items in the slideshow are circulated among members of the community (Chakrabarti, 2016). The image of a slideshare is shown above.

20. Foursquare: Foursquare another form of social networking sites where people could connect together and share information, make friends and transact business. Although history has it that, it is gradually

underutilised compared to other social networking sites due to the features they possess. Foursquare enable you to locate physical address easily with emphasis to recommending how to get to the place as well. The features of locating the address could be extended to checking in and out of the place whenever you desires. Even though there are other social network sites today, over 30 million across the world today still prefer the use of foursquare due to ease for business transactions.



Figure 56: Image of foursquare

The above mentioned social network sites are backed up with adequacy of bandwidth of Internet connectivity for its operations, such that, there is no interruptions. Without the support of the Internet connectivity, its operations is ineffective. The social network site serves diverse purposes in communication between users' in meeting their information needs. Present day library organisation and related information centres and individual could adopt the use of the social network sites that are most suitable and economical to them to use. The use of social network sites can be used as tools by different organisation, for enhance transformation of their industry in the society.

3.3 APPLICATION OF SOCIAL NETWORK SITES FOR INFORMATION PROPAGATION ON THE WEB

As earlier mentioned, at the beginning of this study unit, the application of social network sites comprises of different specific and general work operations in any organisation and by individuals. Boyd and Ellison (2008) and Ahmad (2011) note that, social network sites could be applied to create profiles for staff members on the organisation such that, they could communicate with each other within and other the work place environment. Such profiles become a database which could be stored in the cloud and can be accessed when necessary. Through the created profile of staff members, the organisation or individual concerned could be contacted using their locations. The profile is also visible to every individual connected in the network paradigm such individual committed any crime that could jeopardise the image of the

institution or organisation where they work; such individual could easily be traced.

Importantly, although many people do not have this exposition, the social network sites could be used in research practices for collection of data and information from respondents. On this note, the researcher sends the the questions out to different users of the social network sites and as they continue to respond to the question raised, the researcher or data collection personnel begin to harvest or collect the responses from them in different and collating them in Msword page. In this era of covid-19 pandemic, where it becomes difficult to travel and have access to people, the use of social network sites is very useful in data collection/gathering. With the wave of the covid-19 pandemic that is still ongoing, travelling to research environment collect data for research purposes should be aborted due to the use of social network sites. Social network sites are capable of settling and solving their problem for any individual and organisation.

Ahmad (2011) notes that, social network sites could be used in uploading differernt items, of images, photos and documents in the profile of social network sites. Most of the uploaded documents could be preserved for a very long time without any damage. Users of social network sites have also used it to watch video games for relaxation pruposes and self education where you watch what is being taught in the sites, to teach yourself on some new practices. For instance, when you want to learn how to bake, cook, drive and fix other things at home. This could be learn through watching youtube in social network sites. Some of the lesson learned cannot be quantified most especially when you are trap in the middle of doing or comleting a task or something for yourself.

The application of social netowrks sites could be integrated in search of jobs, advertisement and communication where information and knowledge are shared among professionals or colleagues on linkedIn platform (Brandtzaeg, 2012). It is imperative to note that, since social network sites are able to accomplish many task or goals, its application in different environment should be encourage. Other ways by which the application of social network sites could be possible according to Ahmad (2011) are:

- Information could be left for other users in their profile even though they are not available
- Querries or feedback sent on previous issues discussed could be retraced
- Discussion with different users simultaneously
- Someone could be in the social network site without getting tired

- There are diverse list of users where someone address could be located
- There are features for both private and public message for whatever information to be shared
- It's a fast growing environment that is unquantifiable
- Features vary and depends on users
- They could be extensively accessible irrespective of geographical locations
- Profiles could be used to trace someone feature provided some information are known and shared

3.4 RELEVANCE OF SOCIAL NETWORK SITES FOR INFORMATION PROPAGATION ON THE WEB

The relevance of social network sites meant for information propagation on the Web is such that, it cut across all areas of life. There is no sphere of human endeavours that can do without the support of social network sites. The reason is that, information and knowledge are shared among individuals and organisations. A study by Brandtzaeg (2012) made reference to how social network sites has been infiltrated into academic environment, where lecturers and other activities of teaching, learning and research practices has been engrossed with the use of social network sites. This was due to the benefits associated with sharing information and other documents among students, to ease their learning. It has also been observed based extant literature search that researchers now make use of social network sites such as Youtube, linkedIn, Facebook to gather information to develop research articles for publication, to achieve their academic development goals. One of the most significant factor as observed by academics is less face to face communication (Turkle, 2011). While reflecting on the relevance of social network sites, it is believed that certain barriers could bring set back to people existence and the society too (NielsenWire, 2010)

To this end, Valenzuela, Park and Kee (2009) referred to access of diverse and quantum information across different areas of discipline which could be repackaged for discussion purpose, entertainment and performing task both at home and workplace environment. This implies that, the relevance of social network sites vary from one individual to another and also for diverse job description that need to be accomplished. This result to social network sites revolves round social implications (Brandtzæg and Heim, 2011). The social implication relates to communications which users had from some of the commonest social network sites of Twitter, YouTube, Facebook, MySpace, Flickr and LinkedIn. These shows that social network sites has systematic configuration of usage and for diverse purposes depending on the interest of the users and what they derives (Brandtzæg and Heim, 2011).

4.0 SUMMARY

This unit examined the following concept that relates to social network sites, types of social network sites, application of the social network sites and relevance of social network sites for information propagation on the Web. The study unit informed us that, social network sites are web-based sites created for the purposes of social networking. It was established that, the sites permits diverse individual and organisations to have a built up profile within the system, where they could share information and knowledge on a continuous basis. It was established that different social network sites were used by individuals and organisations to support service delivery and they comprises of the following types:

- friendster,
- Myspace,
- Facebook,
- downlink,
- Ryze,
- SixDegrees,
- Hi5,
- linkedIn,
- Orkut,
- Flickr,
- YouTube,
- Reddit,
- Twitter,
- friendFeed,
- baratStudent
- and Floper among others.

The mentioned types of social network sites cater for diverse purposes, dependent on the needs of the users and interest. The application of social network sites for information propagation is believed to meet different specific and general work operations as attributed in the discourse carried out in this context. The general work of the social network sites is communication among users and the specific task of the use of social network sites could be related to research activities where researchers collect data from respondents, upload and send mails among others. It was mentioned that, communication among staff members, creating of staff profiles and contact details, tracking individuals involved in crimes, research practices through collection of data and information from respondents, uploading of different items, such as,

images, photos and other documents in the profile of social network sites and self education where you watch what is being taught in those sites, teach yourself new things, were part of the items mentioned in this study unit. It was acknowledge that, its infiltrated into academic environment, has transformed and better served lecturers and students in all activities that surround teaching, learning and research practices.

5.0 CONCLUSION

Social network sites and its application are indispensable in present digital environment where information needs to be shared in continuous basis. However, without its infiltration in libraries and information centres and other related organisation, such organisation will not be sustained with regards to sharing and managing information and knowledge on a continual basis. The relevance of social network sites will further strengthen the effort put in by staff of the organisation especially, with proper records profile and inventories of the organisation.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the concept of social network sites.
2. Of the various types of social network sites, which is mostly used?
3. How will the application of the social network sites improve information propagation on the Web?
4. How can you quantify the relevance of social network sites for information propagation on the Web?

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UNIT 3 CONNECTIONS WITH WORK IN THE SOCIAL SCIENCES AND ECONOMICS

CONTENTS

- 1.0 Introduction
- 2.0 Intended Learning Outcomes (ILOS)
- 3.0 Main Content
 - 3.1 Concept of Social Sciences
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- 4.0 Summary
- 5.0 Conclusion
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- 7.0 References/Further Reading/Web Resources

1.0 INTRODUCTION

In unit 2 under module 5, we discussed issues relating to concept of social network sites, types of social network sites, application of social networks and relevance of social network sites for information propagation on the Web. In this unit, we shall be considering the connections of works in the social sciences and economics.

2.0 INTENDED LEARNING OUTCOMES (ILOs)

By the end of this unit, you will be able to:

- explain the concept of social sciences
- define economics
- discuss the connections with works of Social Sciences and Economics.

3.0 MAIN CONTENT

3.1 CONCEPT OF SOCIAL SCIENCES

In order to understand this unit very well, it is imperative we discuss the concepts or terminologies one after the other. In the first instance we shall look at what social sciences connotes, thereafter economics before discussing the works that is associated with them. This will help to understand what the study unit emphasised.

A general understanding of the concept of social sciences relates to academic disciplines which focus on the manners that individuals act

within the society. The discipline tries to under study the culture, attitude and relationship of people with one another (Liberto, 2021). The subject areas of the social sciences comprises of political science, archaeology, geography, history, linguistics, law, sociology, psychology, anthropology and economics (Liberto, 2021). Some of these subject areas provide better thoughtfulness on the process to make comprehensive and operative organisations. Social science professionals include: psychologist, social workers, lawyers, government officials, among others.

It is important to know that, the discipline of social sciences is significant in the society. It helps to broaden the understanding of human beings, such that, they could apply their knowledge and skills in addressing societal needs. This could relate to their attitude and environmental factor that surround them (Liberto, 2021). Through social science discipline, where you are exposed to diverse school of thoughts with philosophical view, you become more knowledgeable in terms of application, knowing fully well that the environment you lived in has a lot of advantages and disadvantages to what, and how you do things when you grow up, and that is what they call 'common sense'. This path has given many people broadened ideas and ways through which they choose the best career in life. One significant factor associated with social science discipline is the application of strategies in both private, public, corporate and government policies, especially in leadership and goals accomplishment. This became feasible through the understanding derived in development and relationship among people in the society.

Issues regarding the liberal arts education and training have to do with the economy, human behaviour, social institutions and politics among others, are associated with the social sciences. The philosophical foundation of social sciences is centred on robust systematic and problem resolving skills mostly needed today by many organisation. When dealing with analytical issues that surround diverse institutions like the government, economy, family and others, what we must bear in mind is the approach through which the institution should be handled. Students must know that when conducting research in the social sciences, the methodological approaches used is more of qualitative, which is also obtainable in the humanities (Carlton, 2020). The analytical and interpretive approaches have become the approaches used in social sciences and humanities. There is relationship that exists between the social sciences and the natural sciences and humanities. This was due to interconnection of quantitative and scientific technique used for prediction in the society. Since the social sciences has relationship with people, societal view, interactions, development and operations of workplace learning, the interpretive research approaches becomes significant.

History has it that social sciences could be trace back to the ancient Greeks (Sharma, 2020). During the ancient Greeks, emphasis was positioned on human nature, mortality, the state and shaping western civilisation (Sharma, 2020). Drawing a link to social sciences as academic area of study, refers to instruction, thrived over the past 18th century in Europe (Sharma, 2020). Scholars such as Adam Smith, Voltaire, Jean-Jacques Rousseau, Denis Diderot, Immanuel Kant, and David Hume were amongst the intellects behind the foundations of the social sciences study in the Western World (Liberto, 2021).

Drawing a correlation from the discipline of social sciences and humanities, there is a connection of people within the society in relation to their attitude, culture and relationship. This has enables them to address societal problems or needs. The idea behind this was that, research has shown how many individual approaches issues even though their interest towards the various subject areas of social sciences comprises such as, political science, archaeology, geography, history, linguistics, law, sociology, psychology and anthropology differs. There is need for continuous development among people in the society in order to serve better and improve on best practices of their services through enabler of the social network analysis. Most of the operations in the social sciences would not have been feasible if not for the support which social networks have brought into it.

Another concern regarding this study unit is that, through the effort of the social sciences, resource sharing has helped to sustain the subject areas even with limited allocation. The courses mentioned in the social sciences are still operational and practicable in many institutions and organisations today.

3.2 ECONOMICS

Hayes (2020) defines economics as a social science discipline that deals with the manufacturing, delivery and consumption of products and services. Economics is meant to serve humanity such that, people, corporate world, government and entire country make selections regarding the allocation of resources on daily basis. This is believed to help people take the appropriate actions on what best to consume through their behavioural practices of utmost utility (Hayes, 2020).

Hayes (2020) notes that, the structure surrounding economics has to do with labour and trade. Economics relates to the applications of human employment in relation to resources allocation are well addressed. The essence of the allocation was to have equal ways of its distribution. Economics is divided into two areas, such as the macroeconomics and

microeconomics. The macroeconomics has to do with behaviour of the economy, while the microeconomics concentrates on individuals and businesses. Through this approach, the creation of goods and services has helped to sustain the people of every nation such that, the economy continues to grow for affirmed maximum productivity of policy (Hayes, 2020). Economics has articulated some indicators that helps drive every economy and this include gross domestic product (GDP) and the Consumer Price Index (CPI) (Hayes, 2020). Other things which are of importance in economics are socialism, capitalism and communism. They are important because they deals with issues of humanity and societal needs. The belief which people attached to economics is that, human beings wants are limitless. Therefore, efficiency and productivity must be of utmost priority by every individual and the nation at large.

A study by Sharma (2020) gave the narration of how the field of economics came into existence in the ancient Greek time by philosophers such as Plato, Xenophon and Aristotle. The studies carried out by the philosophers focuses more on the foundation of the social sciences and economics. This was further strengthened as people begin to travel, thus getting involved in international trade and mercantilism in the 15-18th century. The ideas of the philosophers has made many economic status of many nations improved tremendously. This was how maximising and minimising import and export of goods and services (Sharma, 2020). Adam Smith was acknowledged as the father of modern economics in 1776 based on his contribution, experiences, knowledge and book '*An Inquiry into the Nature and Causes of the Wealth of Nations*' in the field of economics. Smith's philosophy, alongside Jean Jacques Rousseau and John Locke, encouraged the notion of personality adaptability towards the economy. Then they presented the idea of [classical economics](#) (Sharma, 2020). Due to how resourceful Adam Smith's was, his book '*the Wealth of Nations*' continue to stand out till today and even used by many respected politicians and institutions (Sharma, 2020).

In the domain of economics, there are connections regarding how social network has strengthened the production, delivery and consumption of good and services in recent times, especially in this era of digital technologies. Social networks becomes crucial in order to facilitate the distribution of good and services meant to serve humanity, corporate world, governmental bodies and entire nation.

The resultant of social network activities was based on resource sharing activities which this study has covered thus far in this study unit. Resource sharing among library organisations has lead to allocation of resources to meet the societal information needs. Resource sharing is part of economics, because the bottom line of production of goods and

services is for it to meet users needs. The consideration attached to this emphasis is that, economics have discovered the role which social networks played in the areas of employment, disparity, distribution and innovation through which these operations are carried out.

3.3 CONNECTIONS WITH WORKS OF SOCIAL SCIENCES AND ECONOMICS

By connections, we mean the relationship, network or influences that exist among people. In this regards, the social sciences and economics are diverse and broad in nature. The relationship that exists between social sciences and economics lead to the factors mentioned below:

- There are association between individuals that lived in society and organisation they work (Liberto, 2021).
- Culture and attitude of individuals has interrelationship with different activities in the society (Liberto, 2021).
- Human beings apply their knowledge in solving problems in the society based on what they have also acquired from thoughts of social sciences and economics (Liberto, 2021).
- Application of strategies in both private, public, corporate and government policies (Liberto, 2021).
- Education and training that deals with humanity and society (Carlton, 2020).
- Economy, human behaviour, social institutions and politics Carlton, 2020).
- The methodological approach of qualitative is obtainable in the social sciences and economics (Carlton, 2020).
- Psychological traits, political application in governance, and linguistics (Sharma, 2020).
- Services to humanity, corporate world, government and nations (Hayes, 2020).
- Behavioural practices (Hayes, 2020).
- Applications to human employment and resource allocation (Hayes, 2020)

In relation to the above emphasis, Minsitry of Education (2012) made reference to the link of curriculum development addressing the broad needs of students in social sciences and economics. The education or training in economics is linked to other areas of learning in social sciences because, there is prevailing tool that stimulate and develop the application of learning of individuals in the society, for better service delivery.

The key issues of “resource sharing and networking” in this regard is that, the connection between social sciences and economics, would help to examine ways through which working together as teams would sustain planning, organizing, coordinating and motivating students to learn in their different environment (Ministry of Education, 2012). The processes should ensure that cross syllabus approach that concentrate on key know-how experiences and standards are incorporated. Another connection seen between the two subject areas is the use of mathematical and statistical languages, required for gathering and analysing data in their research domain and macro and microeconomics (Ministry of Education, 2012). Economics and social sciences show how students, teachers and other individuals connect with one another in the school system, the society and the entire world. This connectivity is supported through platform of social networks. This could happen through social media platform, where someone could be invited to come and speak or give a talk to the students. The students could also present symposium with examples of activities happening in real world and by so doing, they connect together. Possibly, the students could also make arrangement and take a research trip to known business or site seeing environment as a strategy of connecting to real world activities (Ministry of Education, 2012).

Based on what has been taught in this study unit, students should endeavour to visit recreational centres, in order to gain experiences, knowledge and skills that will integrate them better in the society. Such integration becomes necessary in order to manage their individual and family activities. It is imperative to note that, the idea behind these activities of exposing people or students to the places mentioned was based on the cost effect regarding best/quality education, improving standard of living and well-being. These are surrounded with systematic skills, experiences and knowledge of problem solving initiatives irrespective of geographical boundaries of the person (Ministry of Education, 2012).

Another point to note according to Ministry of Education (2012) with regards to connection of works with social sciences and economics are:

- capabilities of decision making both at the individual and government parastatal
- application of business strategy through managing products and services
- methods of research data collection and analysis being qualitative in nature
- use of mathematical and statistical skills for research practices at both economics and social sciences, and

- use of model or framework to describe individual behaviour towards monetary value in business and government institutions.

To this end, Malinvaud (2001) also made references to the following as connection with works in social sciences and economics and they are:

- progressive expansion of existing literature at both social sciences and economics
- application of behavioural patterns in the society
- role of social connections becomes imperative in the society
- understanding the people, behaviour and value system
- effect of labour efficiency to societal development
- mutual understanding based on discourse in both field of study
- the use of theories and methods in social sciences are common in economics
- social sciences and economics uses available resources to meet societal or public needs
- There is collective reasons of action among people in the society
- Diverse conventional laws and principles and bodies which oversees activities and connections of people, companies and associations in the society
- Customs, codes of behaviour and social norms perform an significant roles among people in the society
- human conduct, connections and attitudes are key factors in both subject field
- Social sciences and economics are able to make predictions to human being and society
- Decision making, processes and institutional factors are part of the both field

In agreement with emphasis made regarding the connections with works in social sciences and economics, Goyal (2009) states that, social networks are significant because it is through this medium the activities that surround humans being and work performance are fostered in the society. The social network are tied to disciplines in both economics and social sciences, such that, application of thoughtfulness is required for comprehensive and operational organisations in the society. The social networks assist individuals who are unemployed to search for jobs online, considering diversities of knowledge and skills. The reason being that, many organisations would prefer people with the appropriate skills and knowledge suited for such jobs. It is imperative to know that, presently many job advertisement are deposited in social networks like facebook, linkedIn, and twitter among others. For someone who is confronted with inadequate information, either from the background of social sciences or economics and both, require adequate information to

satisfy his/her information needs of job search, hence it is important for people to arm them with relevant and adequate information. The use of social network would enhance and facilitate connections with different people outside your environment, such that, through that, you gain access to varieties of information that would help sustain you in your future goals (Goyal, 2009).

Access to quality information would determine how far you could go in life. There is a slogan that says, 'the difference between the rich and the poor is access to quality information that would change your life. For instance, there are some people seating on top of gold today in their house environment but due to lack of awareness and access to such information and knowledge, someone from another country or environment could come and discover such and begin to dip the soil to extract the goal and then you start blaming yourself because you are not aware of such information. Another practical example can be likened to someone who got the right source and information and travelled overseas and after staying there for several years, possibly studied and worked and made good money, decided to come home and establish a good company and become successful in that environment. When some of his old school mates heard initially that he travelled abroad, they were saying, what is he doing there if not washing cars for white people or working in the mortuary, bathing dead bodies or people. It is possible they could have utilise or tap into such opportunity and see how they get connected to that friend of theirs. Information is very important especially in this age of digital technologies. Believe me or not, many people are suffering today because of lack of access to the right information.

Goyal (2009) further notes that, the use of social network as a connections to works in social sciences and economics could sustain the relationship that has been established or built over time, such that, scholars in the economics and social sciences domain begin to share information and knowledge together through writing of books and articles and creating other business opportunities. It can be established from the study of Goyal (2009) that, social networks perform a lot of functions through connection made and this consists of:

- Serves as bases of information around jobs creation and recruitment
- Distinguished history of study area
- Specified physical locations of associations
- Research partnership among individuals
- Broadening to other areas of networks

The connections that surrounds works in the social sciences and economics are unquantifiable due to the growth and expansion of research needs in sub-areas and willingness to share information and knowledge to meet diverse users' information needs. There is no way the two subject area cannot connect together since they continue to deals with human beings, society, culture, attitude, relationship, organisation, meditation, processes, institutions among others.

4.0 SUMMARY

In this study unit, it was established that, the concept of social sciences relates to academic disciplines that pay attentions to the manners of individuals within the society. The discipline studied human beings with relation to culture, attitude and relationships. The subject areas of the social sciences comprises of political science, archaeology, geography, history, linguistics, law, sociology, psychology, anthropology and economics. It was emphasised that, some of the subject areas offer thoughtful process that could be comprehensive and operative in nature in most organisations. The study further considers economics as a social science discipline which agrees to issues of manufacturing, delivery and consumption of products and services. Economics has been over-flogged by many scholars to mean services to humanity. The people concerned consider corporate world and government where they make selections based on allocation of resources in the system. This has been appropriated through possible actions on behavioural practices of factors of production.

It was emphasised that, economics has helped human beings make distribution of allocation equilibrium in terms of distribution the people. This could be seen in the kinds of practices of the macroeconomics and microeconomics. The macroeconomics deals with behaviour of individual in the economy, while the microeconomics concentrates on individuals and businesses. Importantly, the creation of goods and services has become possible through the support and effort of people of the nation such that, the economy continues to grow for affirmed determined productivity in relation to policy stipulated. Economics is an indicator that guides every economy in gross domestic product (GDP) and the Consumer Price Index (CPI). Apart from the GDP and CPI, socialism, capitalism and communism are too very crucial for its sustainability. Therefore, it is good for people to attach a lot of importance to economics, sciences, human beings are the driving force, that bring in the efficiency and productivity in goods and services. This unit also draw a distinction between the connections of works in the social sciences and economics and it emphasises that, there is a connection in the manners in which individuals act within the society and organisation, culture, attitude and relationship with one another in

different activities of human endeavours, broaden understanding of human, application of strategies in both private, public, corporate and government policies education and training of humanity, services to humanity, corporate world, government and nations among many more. Therefore, as a student, whether you are in the field of social sciences and economics or not, there is need to broaden your knowledge or horizon to know the connection that exist in this two field because it relates to issues pertaining to human beings where culture, attitude and relationship among other things were discussed.

5.0 CONCLUSION

The field of social sciences and economics are indispensable in present day educational system. The reason that necessitates this assertion is that, present course of study; 'Library and Information Science' is associated with social sciences because it deals with human phenomenon, based on information application and dissemination to meet users need. Social sciences and economics play a vital role in the accomplishment of the goal Library and Information Science. Social sciences and economics perform unidentifiable roles that relates to diverse social institutions where curriculum, and self-regulating education among people in the society takes place.

6.0 TUTOR-MARKED ASSIGNMENT

1. Define the concept of social sciences.
2. Explain the importance of economics to societal growth in present Nigeria scenario.
3. Draw a distinction between the connection associated with social sciences and economics and what implication does it have to Library and Information Science profession.

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