

# Information Retrieval In Special Libraries And Its Challenges

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**Abstract:** *This paper discusses information retrieval in special libraries. It also look at some key challenges involve in information retrieval. It discusses the concept of special library and how it differs from other types of libraries. It looks at information retrieval in special libraries and set out the processes involved in information retrieval, known as the information retrieval process. Information retrieval has become very important today, due to the mass of information that has been chain out daily. It used to be the work of librarians and other information professionals; however, today it has become important for a diverse group of people, such as researchers, students, customers, suppliers etc. and for that matter the need for knowledge in the area of information retrieval cannot be over emphasis*

*The paper ends with a call to librarians to specialize in the area of information retrieval, in order to satisfy the information needs of their clients.*

**Keywords:** *special library, information retrievals, information retrieval process, characteristics of special libraries, information retrieval systems.*

## I. INTRODUCTION: THE CONCEPT OF SPECIAL LIBRARY

Information provision and services in special libraries is quite different. While the other types of libraries collection may cover different subject areas - education, health, agriculture, recreation and tourism etc. – special libraries mostly have one major objective that is the provision of specialist and specific information for the sustenance of its parent organization. There is no one particular definition of a special library. Different scholars and organizations have defined the concept in their own way.

The constitution of special libraries association drafted in 1910 defined special libraries as “commercial, industrial, technical, civic, municipal and legislative reference libraries, the special departments of public libraries, universities, welfare associations and business organizations”. Furthermore, the definition given in the first issue of the journal, *special libraries* was, “ all small special libraries throughout the country; financial, commercial, scientific, industrial; and special departments of state, college and general libraries; and in fact, all libraries devoted to special purposes and serving a limited clientage. (Murray, 2013).

According to Reitz (2014), special library is “a library established and funded by a commercial firm, private association, government agency, nonprofit organization, or special interest group to meet the information needs of its employees, members, or staff in accordance with the organization's mission and goals. The scope of the collection is usually limited to the interests of the host organization”.

British librarian, Wilfred Ashworth also defines a special library as, ‘one which is established to obtain and exploit specialized information for the private advantage of the organization which provides its financial support’ (Ashworth, 1979).

The above definitions imply that special libraries are established to meet the information need of its parent organization. They collect materials which are relevant to the needs of the staff and cover the subject area of its parent organization.

## II. CHARACTERISTICS OF SPECIAL LIBRARIES

Libraries throughout the world have the same objectives. That is they are set up to collect, organized, store and disseminates information to meet the needs of the library

users. However, what distinguish one library from the other are the characteristics that they exhibit. These characteristics determined whether a library should be refers to as a school library, academic library or a special library. Special libraries have distinct characteristics that set them apart from the other types of libraries.

Firstly, special libraries are established as part of a larger organization which has non-library objectives. These libraries are established as a supporting department to the parent organization whose mission is different from the provision of information. The library's aim is to create policies and programmes to help achieve the objectives of the parent organization.

Secondly, services of the special libraries are limited to furthering the objectives of the sponsor organization. Services provided by these types of libraries are limited in scope. Only services that are aimed at fulfilling the purpose of the mother organization are provided.

Additionally, the collection of the library is defined by the interest of the sponsored organization. These types of libraries are set up by the parent organization; as a result its collections are specific to the area of operation of the mother organization. Example if the parent organization area of work is agriculture, most of the materials collected will be on agriculture related subjects.

Another characteristic of special libraries is that, the librarian and his staff are the principal primary users of the library. Special libraries are most often than not limited to the usage of the staff and the librarians; this is because its collections and services are limited in scope. Although some collections and services may be open to the general public, generally the staffs are the main users since their interest are the underlining factor of the library collection development programmes and service developed.

Furthermore, special libraries provide needed information to its users on demand and some time in anticipation. Mostly, information dissemination in special libraries is done on request by the users. The librarian can also anticipate the needs of individual users and deliver information based on the user specialization. Selective Dissemination of Information (SDI) is a major service provided in these libraries. SDI is carried out based on staff profiles which indicate their areas of specialization.

Moreover, special libraries collections are derived from both published and confidential sources. Technical papers, conference papers of staff of the parent origination are collected in addition to the books and journals the library acquired or purchased. These unpublished papers may contain a valuable information which can be process, stored and retrieve when the need arise.

In addition, special libraries subscribe to journals relating to their area of activity of its parent organization. In recent time, they subscribe to online databases which enable users to download scientific papers from the internet. Examples are AGORA, HINARI, EMERALD, JSTOR etc.

### III. THE CONCEPT OF INFORMATION RETRIEVAL

Information retrieval is the systematic and decisive searching for information in a system, of any form, in which information, whether in the form of documents, or their surrogates, or information itself are stored, obtained and presented to the user based on his queries.

The process, methods, and procedures used to selectively recall recorded information from a file of data. In libraries and archives, searches are typically for a known item or for information on a specific subject, and the file is usually a human-readable catalog or index, or a computer-based information storage and retrieval system, such as an online catalog or bibliographic database.(Reitz, 2014).

In other words, information retrieval (IR) is finding materials (usually documents) of an unstructured nature (usually text) that satisfies information need from within large collections. It deals with finding information or documents that are likely to be important to a user's information need as expressed by his request.

Information retrieval used to be the work of reference librarians and other information professionals. Naturally, most individuals seek information from their friends, neighbors, colleagues and libraries among others. With the advent of the internet, many professionals, researchers and highly placed individuals now seek information from the internet (Aina, 2004.). This means that millions of people now engage in information retrieval by searching the internet and other databases. The questions are; have these millions of people being able to retrieve the desire information? Do they have the requisite knowledge to separate the relevant information from the unwanted information? Answers to these questions will certainly, be no. this is what make information retrieval very important to all, especially for the special librarian.

Clients of special libraries most at times depend much on the librarian to retrieve the needed and relevant information in order to meet the demand of their daily activities. Because of the specialist nature of their information needs, a lot of tools and resource needs to be deployed to retrieve this information. Mostly, these types of clients require information which is current and sometime not on a popular subject area. This makes information retrieval in special libraries very important and should engage the attention of librarians and other information professionals.

### IV. IMPORTANCE OF INFORMATION RETRIEVAL

According to Barrack Obama as cited in Bury (2009), "every day, we are inundated with vast amounts of information. A 24-hour news cycle and thousands of global television and radio networks, coupled with an immense array of online resources, have challenged our long-held perceptions of information management. Rather than merely possessing data, we must also learn the skills necessary to acquire, collate, and evaluate information for any situation."

This suggest how important information retrieval has become to a diverse group of people, such as researchers, students, customers, suppliers etc. and for that matter the need for knowledge in the area of information retrieval cannot be

over emphasis. Today information is generated daily in quantities that make access to the needed information difficult. According to Alemna (2000) in African countries, it appears there is so much information generated within our borders that we can use to assist us in our development process. With this era of information explosion every individual needs to have an information retrieval skill due to the following reasons:

One of the major importances of information retrieval is that, it ensures that only relevant information is retrieved. This means that information retrieval ensures that only appropriate or the desired information is obtained from the mass of information produced daily.

Secondly, information retrieval ensures that the users are provided with current and the most accurate information. This is more important in a special library environment, where users, most often than not need information on current developments in their field of work. With the knowledge and skill of information retrieval, the user will be abreast with what others are doing in his field of work. It selects the information that is precise and error free for the users' base on his request.

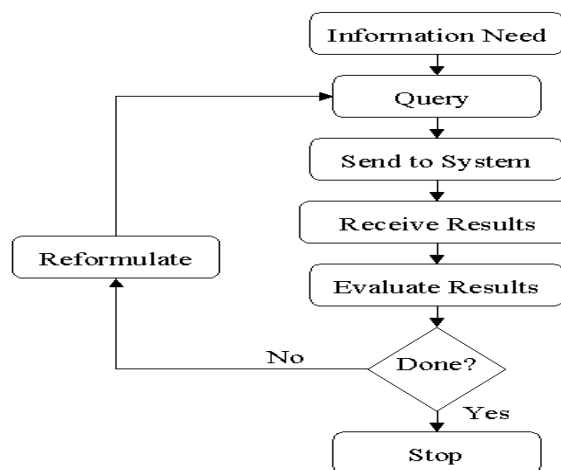
Another importance of information retrieval is that it saves both the librarian and the users' time. With the knowledge of information retrieval the librarian need not consult the mass of information in his possession before providing the right information to the user. All he has to do is to use the right search strategy to retrieve the desired information for the client. With the use of the right strategy, the searcher will be able to get the right information at the right time.

Moreover, information retrieval provides the user with concise information. The concise nature of the information retrieved lead to user understanding of the information provided. Instead of giving the user mass of documents to sieve the needed information, concise information is retrieved and presented to the user. That means any effective and efficient information retrieval system should be able to provide summarized information based on the users query.

Lastly, information obtained using the right retrieval strategy is reliable and objective. The system presents only information which matches the users' needs, avoiding unwanted information. In precision the non-relevant items are discarded by the information retrieval system. This makes the information dependable.

## V. INFORMATION RETRIEVAL PROCESS

Information retrieval is often a continuous process during which you will consider, reconsider and refine your research problem/terms, using different information resources, information retrieval techniques and library services to evaluate the information you find. The figure below implies that the stages follow each other during the process, but in reality they are often active simultaneously and you usually will repeat some stages during the same information retrieval process.



Source: Lecture Notes by (Dr. De-Graft Johnson Dei, 2018)

The different stages of the information retrieval process are:

**INFORMATION NEED OR PROBLEM / TOPIC:** An information need occurs when one need information to solve a problem. Information need is an individual or group's desire to locate and obtain information to satisfy their curiosity. This could come from a client in the form of a request to the information professional or to the special librarian in charge or by the librarian himself.

**QUERY FORMULATION:** Here the information professional or the searcher defined his information need and choose the information resources, retrieval techniques and search terms. The user then formulates the key words to enable easy retrieval of the needed information.

**SELECTION/SENDING KEY WORDS TO THE SYSTEM/INFORMATION RETRIEVAL:** At this stage, the formulated key words are imputed in the selected database. The searcher then performed his planned information retrieval techniques. This is a stage where the actual information needed is obtained.

**RECEIVE RESULTS:** This is getting the result or the needed information from the search conducted. This the actual stage where there is an attempt to satisfy the client's information need. The possible outcome or retrieved information is received by the searcher.

**EVALUATING THE RESULTS:** The searcher at this stage, need to evaluate the results of the information retrieve. That is whether or not the information obtained is relevant the problem concerned and satisfies the users need.

After evaluation when the information retrieved satisfy the user's need the process end there, however, if the information need of the user is not satisfy, a query is reformulated.

## VI. THE CONCEPT OF INFORMATION RETRIEVAL SYSTEMS

The concept of information retrieval system presupposes that there are some documents or records containing information that have been organized in an order suitable for easy retrieval.

An information retrieval system is designed to retrieve the documents or information required by the user community. It should make the right information available to the right user. Thus, an information retrieval system aims at collecting and organizing information in one or more subject areas in order to provide it to the user as soon as it is asked for. (Onwuchekwa & Jegede, 2011).

This concept uses a set of technics and strategies to query documents or records containing information that have been organized in an order and retrieve the possible information which is intended to satisfy the user. The system is strategically planned to retrieve the documents, documents surrogates or information vital or relevant to the user. It should make the right information available to the user at the right time. Thus, an information retrieval system aims at collecting and organizing information in one or more subject areas in order to provide it to the user, using a systematic procedure.

Lancaster (1968) as cited in Onwuchekwa & Jegede, (2011) asserted that an information retrieval system does not inform i.e change the knowledge of the user on the subject of his enquiry; it merely informs him of the existence or nonexistence and whereabouts of documents relating to his request. Consequently, it serves as a bridge between the world of creators or generation of information and the users of that information.

Two broad categories of information retrieval system have been identified:

- In-house/manual information retrieval system
- Online information retrieval system

#### IN-HOUSE/MANUAL INFORMATION RETRIEVAL SYSTEMS

In-house/manual information retrieval systems are set up by a particular library or information center to serve mainly the users who visit the library. These systems are developed by the staff to aid in information retrieval. The following are some of the manual/in-house information systems:

The library catalogue (now Online Public Access Catalogue (OPAC)) and classification schemes

- Indexes
- Abstracting

#### *THE LIBRARY CATALOGUE (NOW ONLINE PUBLIC ACCESS CATALOGUE (OPAC)) AND CLASSIFICATIONS SCHEMES*

In 1876 Melvin Dewey developed a systematic scheme of library classification, which became a unique tool for organizing library materials on the shelves. In the same year Charles A. Cutter brought out rules for a dictionary catalog, which enabled librarians to record systematically the library holdings in the form of catalogue entries that could be consulted easily by the user community.

These developments led to the development of a number of classification schemes and cataloguing codes to aid in information retrieval from materials collated and organised by the library.

Since then libraries have adopted the use of cataloguing codes and classification schemes to enable library staff and users to retrieve information easily.

According to Hegna (2017), Charles Cutter, stated the objectives, of the library catalogues as:

- ✓ To enable a person to find a book of which either the author the title the subject is known.
- ✓ To show what the library has by a given author on a given subject in a given kind of literature
- ✓ To assist in the choice of a book as to its edition as to its character

Cataloguing codes and classification schemes helps the library to organised bibliographic information of the library's collection and shelve them appropriately. This led to more efficient and effective retrieval of information. Today these bibliographic tools have online versions such as the OPAC which further enhance the ability of users to retrieve information easily by using computer terminals.

#### *INDEXES*

Index is one of the tools in manual information retrieval system used to locate information within a document. The most common type of index is the one found at the back of a book, which is used to find where certain topics are discussed within the text.

According to Xin, (1990) in an ideal information retrieval environment, a document or query statement is represented by a group of distinct index terms as well as the semantic relationships between these terms, so that retrieval could be based on a structure of semantic relationship.

Indexes to periodical literature are produced on a regular schedule and provide access to the topical contents of a group of publications. The publications indexed may be determined by a variety of criteria; topic, language, publication type, and country of origin are some of the most common criteria. For example, the readers' guide to periodical literature indexes a group of popular magazines published in the United States.

#### *ABSTRACTS*

Another manual or in-house information retrieval tool is an abstracts. Abstracts are brief or concise summery of the essential content of a document. It is a brief summary of a research article, thesis, review, conference proceeding, or any in-depth analysis of a particular subject and is often used to help the reader quickly ascertain the paper's purpose.

Abstracts are very useful tool in information retrieval system and seek to serve various purposes such as:

Librarians and library clients use abstracts to ascertain whether or not a piece of writing is beneficial to them or relates to a topic they are researching on. Rather than reading hundreds of articles, users rely on abstracts to tell quickly if an article is important to their research work.

They assist users to access available information resources and services which saves time and efforts of users of special libraries, who are mostly busy on their work. Abstracts include complete bibliographic citations, which are helpful when readers' need to cite resources they have used.

Special libraries in order to support the retrieval function of its service must make good use of abstracts, so that it can satisfy the information needs of their clients.

These are few and mostly commonly used retrieval tools in the manual information retrieval system, even though other document surrogates such as bibliographies, yearbooks etc. are also helpful in information retrieval.

#### ONLINE INFORMATION RETRIEVAL SYSTEM

The second type of information retrieval system is the online information retrieval system. This is a strategy of retrieving the desired information by the use of computer terminals. With this system computer is used to query an online database to obtain the needed information. By this method users obtain information from machine readable database, which information retrieval of very quickly and easily. To retrieve relevant information online, a number of search strategies has being developed to assist librarians and users.

#### SEARCH STRATEGIES/TECHNIQUES;

The library can be seen as a best system of information retrieval. This is because information is acquired, stored, processed, organized and retrieved on demand for its users. However, because of the huge number of information produced daily, retrieval of relevant information has become very important in the 21<sup>st</sup> century. To get the needed information a strategy need to be employed, hence the concept of search strategies.

Search strategies are the products of planned or situational interactions between users and Information retrieval (IR) systems. Search strategy highlights a working plan and interactive reaction for a given situation. (Xie & Joo, 2010).

Therefore, search strategies are formulated with the aim of retrieving relevant information based on the user queries. It is designed to help users to locate the information they need effectively and efficiently.

Today most special libraries subscribe to both online and offline database such as: EBSCO, TEEAL, Emerald Insight, Wiley Online Library, Science Direct, Springer Link Etc. hence the need for search strategies. There are a number of search strategies used to retrieve information from these databases. These are:

- ✓ Boolean operators
- ✓ phrase searching
- ✓ proximity search
- ✓ fuzzy search
- ✓ stemming
- ✓ truncation searches
- ✓ wildcard searches

This term paper will look at two of these strategies; Boolean operator and truncation which are consider in most literature as basic strategies/techniques.

#### VII. BOOLEAN SEARCH STRATEGIES

George bole (1815-1864) developed AND, OR, NOT Boolean operators. These operators enable the searcher narrow down his search, so that only relevant information is retrieved.

The operator "AND" includes addition of two different concepts for narrowing down the search.

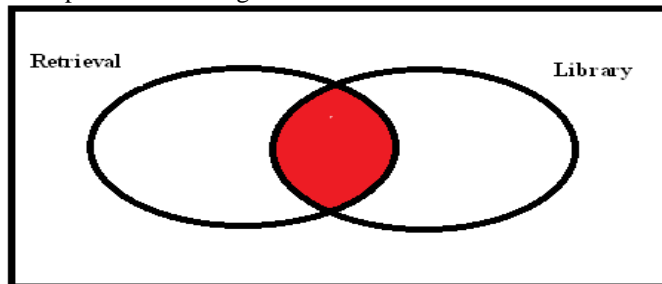


Figure 1

Example a search term "retrieval AND library" as indicate in figure 1. above will return hits where both constituencies (retrieval and library) occur.

NOT: this operator excludes unwanted results. It allows users to specify which term they do not want.

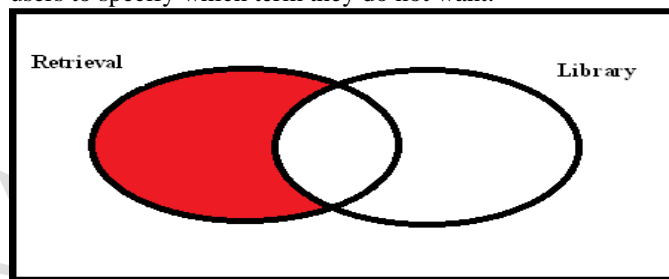


Figure 2

For example if you only want to read about retrieval and nothing about library you would use the search term "retrieval NOT library".

The shaded area in the Venn diagram figure 2. above represents the result set for this search using the operator NOT.

The operator "OR" includes more concepts to expand their connotation. It is used for broadening the search. It allows users to combine two or more search terms that will broaden the search to obtain information on both terms.

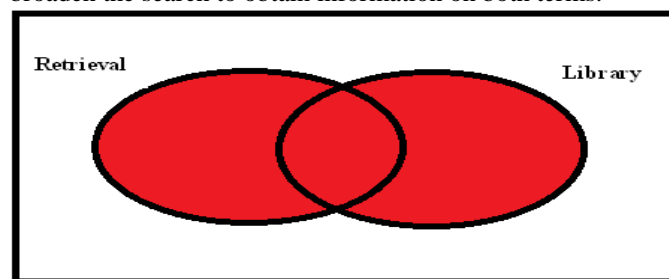


Figure 3

For example if you want documents, that contains information about both retrieval and library, you would need to use the search operator "retrieval OR library". The search will retrieve all information that contains either one or the entire constituent.

The shaded portion of figure 3. above indicates information that will be retrieve using the search operator "OR".

## VIII. TRUNCATION

Truncation, also known as wildcard, term masking, etc. is a search technique/strategy used to search in databases in which a word ending or beginning is replaced by a symbol. Frequently used truncation symbols include the asterisk (\*), a question mark (?) or a dollar sign (\$).

Different databases use different truncation symbols so it is important to check the database 'help' information or 'search tips' to know which symbol is used by the database you are searching.

Truncation allows different forms of a word to be searched simultaneously, and will increase the number of search results found.

There are three types of truncation.

**Right truncation:** this is where the search term is truncated or shortens on right side. This is aimed at getting results which begin with some set of letters. For example... *ret\** will retrieve all words beginning with "ret". Example, retrieve, retrieval, retrievals etc.

**Left truncation:** this is where the search term is truncated or shortens on left side. The aim is to get words which end with some set of letters. For example... *\*ship* will retrieve all words ending "ship". Example librarianship, relationship, horsemanship etc.

**Simultaneous truncation:** this is when the search term is truncated on both right and left. This is when the searcher wants results which have particular middle words. For example... *\*triev\** will give results such as "retrieval, retrieve, retrievals etc.

## IX. CHALLENGES OF SPECIAL LIBRARIES IN INFORMATION RETRIEVAL

**INADEQUATE FINANCIAL SUPPORT:** One major challenge facing special libraries and for that matter all other libraries is the issue of finance. Financial support to the special libraries is most often very low. The librarian always finds it difficult to either acquire the needed books or subscribe to journals (hard copies or online), in order to satisfy the information need of his users.

Acquisition or subscription to the needed resources will ensure that the library is equipped to retrieve the needed information, when the needs arise. Failure to acquire the needed information resource, which is always hindered by lack of finance, will make it difficult for the librarian to retrieve the needed information.

Also special libraries are seen to provide support services. They provide information to their staff to do their jobs. From an accounting point of view special libraries are essentially organizational expenses, an overhead. Unfortunately one of the areas to be looked at when an organization is not performing is the cost of its overheads. As a result, funding to the special libraries are the first to be cut when the organization is facing financial difficulties.

**LACK OF QUALIFIED STAFF:** For the special library to assert itself as a center of excellence in the provision of information, the people in charge must be well trained. Until recently, most special libraries were manned by senior high

school leavers. Most of them did not have the requisite knowledge on information provision and for that matter information retrieval. Users of these libraries most often are not able to get the required information, because the attendants simply did not know how and where to get the information to satisfy the clients. This phenomenon has put the special libraries in back light, because users feel the library does not have anything to offer towards the achievement of the vision and mission of the parent organization.

Special libraries need specialized staff who will adequately manage the library collection and other resources. With the fast growing technology, the staff should have a good knowledge of information technology and other e-resources, so that they can adequately manage them. The e-resource contains a lot of information which is a good source of information retrieval.

Moreover, where qualified staff exists there is no motivation for them to give out their best.

**LACK OF INFRASTRUCTURE:** Information provision in special libraries requires a lot of infrastructure that is very expensive. This includes high cost of technology which need frequent updating. One of the most important resources is the internet infrastructure. This aids special libraries

in information retrieval, usually in the form of literature search. With the advent of the internet, a lot of information including full text articles can now be downloaded. A lot of the reference books like the encyclopedias, dictionaries, almanac, guides etc. are now available online. Internet infrastructure and for that matter, connectivity in special libraries are non-existent, even where it exists it is slow and does not serve the users well.

Also, most special libraries are confined in small buildings which most often are not designed for the purpose of library activities. As a result they lack adequate space to house their collection and to provide reader service. The ability of the librarian to retrieve information depends much on the library collection. So where the building does not have adequate space to house the library collection, retrieval of information becomes difficult if not impossible.

This lack of infrastructure hinders the ability of the special librarian to retrieve the right information to meet the users' request.

**LACK OF ATTENTION BY MANAGEMENT OF THE PARENT ORGANIZATION:** No special library will be able to attain best results unless its management believes in it and is willing to give adequate support. However, this is not the case in most special libraries particularly, in this part of our world. The special libraries in most organizations are relegated to the background by top management. They do not give special libraries the attention they deserve. Most often the library is the last to think of because they are occupied by the activities of the organization. Inadequate support such as funding, provision of ICT equipment, provision of air-conditioners, comfortable tables and chairs for reader services are lacking in most special libraries. This attitude of management of these organizations affects greatly the ability of these special libraries to meet the information need of their clients.

**UNDEFINED SERVICES:** According to O'Connor (2007), special libraries can be a dynamic environment in which to work, but, like many library sectors, special libraries are

still struggling to find their place, to establish their territory and define their services in a new information world. The services of special libraries keep on changing over time. This is evidenced in the introduction of online catalogues and databases in some libraries. The environment in which special libraries operates are unpredictable, because management decisions affected the policies and programmes of the libraries greatly. The special librarians should take concrete efforts to provide services that meet the needs of current realities. They should not become complacent and assume that their services are recognized and indispensable. Their services are dynamic and must constantly be modified from time to time, especially with the advent of the internet. These make it difficult specially, in the face of dwindling financial support.

*THE INTERNET:* Another challenge facing special libraries is the view that "everything is on the internet, why do we need a library anymore". This is actually a challenge for all library sectors, but more especially to special libraries. This makes the existence of special libraries perhaps not as secure, because most staff prefers to use the internet to retrieve information than to walk to the library.

*LACK OF SCIENTIFIC METHOD OF MEASURING SPECIAL LIBRARIES VALUE:* Interestingly, there appear to be no universal accepted method for measuring special libraries value. Special libraries are set up to designed and provide services to meet the information needs of its users by saving their valuable time. Unfortunately, this time value of users is very difficult to measure in term of monetary value. No scientific method exists to measure the value of time saved of these users. It entirely depends on the users' satisfaction which is not scientific. Also, with advent of the internet, the services (literature searches) of special libraries is currently been challenged by users conducting searches themselves and retrieving information at their desks.

*OUTDATED COLLECTION:* The materials are mostly outdated and of little or no use to researchers. Current information, which is a distinguishing feature of special libraries, does not exist in most of the libraries. (Alemna, 1989). Thus, these libraries collections are outdated. These make the collection not useful or irrelevant to needs of the users. Clients of these libraries need information on current topics and less known areas, which are mostly found in peer review journals. These journals are non-existent or where they exist they are outdated and do not reflect current realities. Information retrieval therefore becomes difficult, when current information is sort for by the clients of special libraries.

*LACK OF SUPERVISION BY REGULATORY BODY:* Special libraries do not have a body that regulates and monitor their activities, more especially in Ghana. Although there is a Library Authority in Ghana, its functions are to establish, equip, manage and maintain public libraries in Ghana.

This phenomenon has left special libraries in the country to the management of individuals who work in these libraries. There is no coordination to ensure that all special libraries in the country work according to a guarding principles and practices.

While one special library may decide to use Library of Congress Classification Scheme to classify its collection, other may use the Dewey Decimal Classification Scheme, which

may lead to lack of uniformity in the service special libraries provide.

This challenge hinders the ability of both librarians and users of these libraries, because of the variation in the services these numerous libraries provides. A staff in one library may not know whether or not what he doing is conformity with standards, practices and roles of the library profession.

## X. CONCLUSION

Information retrieval in specials libraries is very important in any information provision centre. The librarians of special libraries should know the process involved in retrieving the needed information to satisfy the information needs of their clientele. Users of special libraries will be demoralized if their requests are not met in time. As a result, librarian in these libraries should specialize in the area of information retrieval, example literature search using both in-house means and online information retrieval systems. Knowledge of information retrieval system will put the special librarians in a better position to serve the library users more diligently and timely.

Unfortunately, the ability of librarians, working in special libraries, to meet the information needs of their clients is hindered by several challenges. Some of these are enumerated in this paper. These challenges make the work of the special librarians very difficult in their attempt to fine solution to his users' queries.

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