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Information Needs and Seeking Behaviour of Chemists: A Comparative Study of Universities of Ibadan and Ilorin

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Abstract

This study is conducted under a survey design. It attempts to identify the information needs and seeking behaviour of chemists in Universities of Ibadan and Ilorin. Descriptive research case study method was used to carry out the study. Data were collected by questionnaire administered to lecturers who were eligible to fill it in the departments of chemistry, biochemistry, geology, and pharmacy, or universities of Ibadan and Ilorin. In the two universities, the departmental lists of staff observed in the various departments concerned revealed that only 60 lecturers were qualified to be used in the research work. Out of the 60 questionnaires self-administered, 48 were well filled and returned. This represents 80% of the questionnaire given out. The findings of the research work showed that chemists need current research information. They prefer documented sources of information to non-documented sources. They were library literate making an extensive use of bibliographic tools in search of information. Chemists were not satisfied with the library resources and services. Suggestions were made on how chemists can get the information they need on their own without solely depending on the library and the staff which they considered inefficient.

Background

The modern science of chemistry, born in Europe in the 18th Century, has now spread over the civilized world¹ and undoubtedly to Nigeria. Today, chemistry and its related courses are taught in all the institutions of higher learning in Nigeria by chemists. Chemists, according to Vagianos², are scientists who pursue the study of chemistry; they dedicate themselves to the understanding of the physical universe through systematic investigation and measurement of the properties of matter. The chemists as scientists, work in different institutions in Nigeria, like colleges of education, polytechnics, universities; they also work in industries, like Agro-allied industries etc. Vagianos³ in trying to distinguish between an ordinary Chemist and a University Chemist states that: a University Chemist is required to teach, he is normally involved in pure research but pursues applied research at times; he and most of his colleagues have achieved their degree of doctor of philosophy (Ph.D.).

The university chemists constitute a fundamental part of the scientific community resident in the university, which is the most heterogeneous institution, requiring information services which will satisfy requests which range from the simplest to the most sophisticated enquiry. The University of Ibadan was founded in 1948 as a College in the University of London with three faculties – Art, Science and Medicine. It became an autonomous degree granting institution in 1962. Today, the University has grown into more than ten different faculties which are: Arts, Science, Basic Medical Science, Clinical Sciences and Dentistry, Pharmacy, Agriculture and Forestry. The Social Science, Education, Veterinary Medicine, Technology, Law as well as an Institute of African Studies.

The University of Ilorin on the other hand was established by a decree of the Federal Military Government in August 1975. As at that time, it wasn't a full fledged University but a University College affiliated to the University of Ibadan. It was in 1977 that the institution attained full autonomous status. It started with three faculties of Arts, Science and Education but has today developed to eight faculties of Arts, Science, Education, Health Sciences, Engineering and Technology, Business and Social Sciences and Agriculture.

Information needs of scientists depend on the nature of their activities, therefore, information relevant and necessary to scientific activities will be closely related to the functions of scientists within their work environment. Chemistry of all the sciences, produce the largest amount of literature, both in the pure and applied fields, as expressed by Farradane⁴. The direct implication of this is that, the university chemists need information which entails carrying-out research activities which are highly dispersed and embedded in the scattered literature. To therefore help them to be more efficient and productive in their work of teaching and researching, it becomes necessary to identify the specific information they need the sources of information they prefer, and their characteristics seeking behaviour.

Oderinde⁵ is of the view that the characteristics of users are varied and need to be studied so as to adequately meet their needs. Within the many disciplines in science and technology, demands and uses of information differ. University chemists spend their time to teach, conduct research, and participate in community services when invited. They need current information for these services. It therefore becomes necessary that they get the right information at the right time and in the right form that can be easily accessed. Lack of current research information and efficient storage and retrieval system can incapacitate teaching and research in Nigerian universities. This work therefore attempts to determine if chemists in Nigerian universities are in touch with relevant information. In addition, the study is to find out the information needs and the information-seeking pattern of the chemists in Nigerian universities.

Objectives of the study

In order to achieve the set objectives of this study, attempt would be made to answer these research questions:

- ❖ what are the information needs of the university chemist?
- ❖ how do chemist seek for the information they need?
- ❖ what sources are used by the academic chemists to satisfy their information requirements?
- ❖ what problem do they encounter when seeking for their information?
- ❖ what information sources are most preferred by the university chemist?
- ❖ to what extent do the university chemists depend on the library?
- ❖ to what extent does the university library satisfy the information needs of chemists employed in the universities?

Literature review

Martin⁶ described information as that which adds to our awareness or understanding of some topics, problems or events. A quick inference from Martin's perspective of information is that, it keeps one informed and it reduces ignorance and uncertainty. Aiyepoku⁷ understands information to be that which is used to describe man's accumulated knowledge in all subjects, in all the form and from all sources, that could help its users to make rational decisions.

Need, want and demand are terms which scholars have often confused with one another. In the expression of Alegbeleye⁸ some scholars have not got the real conceptualized meaning of what need, want, and demand are. Information need according to Aguolu⁹ is what an individual ought to have for whatever reasons. A want is what the reader would like to have, which may or may not be what he needs. Information demands may be vocal or written, and it is made to a library or to some other information system. Line¹⁰ opined that information need can be expressed in the question "what information would further this job or this research, and would be recognized as so doing by the recipient".

There is a marked difference between the ways scientists (especially chemists) look for the information they need. This observation is confirmed by the work of Herner¹¹ which he carried out on academic scientists and industrial scientists in their method of seeking and use of information. He discovered that the academic scientists make greater use of the library than industrial scientists. The reason he gave for this findings is that the literature of the industrial chemist is very dispersed and can thus delegate searches carried out by large and centralised information storage and retrieval systems. On the other hand, academic chemists do not delegate their information chores to outside agencies because of the concentrated nature of their work. Flowers¹², however, in a

research work on the information needs of physicists and chemists found out that there was no major difference in the information-seeking behaviour of scientists engaged in research and development and those of other groups.

The pool of literature reviewed showed that in recent years, much attention has been directed to the need to determine the information requirement of scientists. In fact, Oderinde¹³ pointed out that scientist's need of information has been thoroughly studied and documented and it has been reported that between 400 and 800 studies have been carried out on the information uses and needs by scientists.

Scientific researchers require scientific and technical information from literature. They often need specialised materials and technical reports which are not always part of the collection development policy of university libraries. They require information on non-line services which will help them to identify what has been published in their discipline. According to Saul and Herner¹⁴, scientists also require facts and figures and working constants. Golberg¹⁵ was able to arrive at the conclusion in a study of the information needs of social scientists that various formal channels such as books, periodicals, documents and libraries were among the information needs of scientists.

Wusenberger¹⁶ observed that maximum retrieval of information by users is an essential part of an information system, thus, without an accurate realisation of users' needs, effective dissemination of information is impossible. Information explosion is another reason necessitating information needs study. According to Coover¹⁷, it is estimated that there are two million scientific-technological articles written each year and the growth rate is judged to be doubling every ten-fifteen years. This makes it difficult then for individuals to seek the specific information they want and so spend more time looking for information. No wonder Lodge¹⁸ in his own opinion based on the research work he carried out made an assertion that information needs are to be studied so that the right information can be supplied to the right person at the right time.

Scientists communicate using both formal channel which is heavily documented and non-formal channel which is not documented. The formal documented sources may be, primary, secondary and tertiary sources while the non-documented sources may be in form of discussion with colleagues (inter-personal communication), communicating orally to one another in meetings like seminars and conferences, using memories to answer questions, exchanging ideas on phones and through paperless society. The idea that scientists communicated using non-formal channels is supported by Ehikhamenor¹⁹ in his study on the publication cycle of physical scientists in Nigeria by stating that inter-personal communication is an important effective element in scientific communication among the scientists. Ritti²⁰ however believed that scientists in the doctoral level value publications of results in reputable journals, and professional autonomy.

Oderinde²¹ noted that scientific information needs of Nigerian scientists still have to be identified. The observation of Woodward²² about the poor state of research activities on studying information needs in the third world necessitate more research work on the information needs of scientists in Nigerian environment. This study tried to address this issue.

Research methodology

For this study, the descriptive research design was used. Questionnaire were administered to 60 lecturers who were deemed qualified to fill them in the departments of Chemistry, Biochemistry, Geology and Pharmacy of Universities of Ibadan and Ilorin. The lecturers in the various departments teaching Chemistry and Chemistry related courses were chosen as the studying population. By observing available records and the departmental lists of staff, the researcher discovered that 103 lecturers were teaching and researching in the various departments considered in Universities of Ibadan and Ilorin. Out of the 103 lecturers, only 60 were qualified to fill the questionnaire. Some were at the time of carrying out the research, on sabbatical leave, some were on study leave, and some lecturers were not teaching courses related to the subject of the research study. All the 60 lecturers deemed qualified were used for the research because the total number look small and this, so sampling of population was done. Out of the 60 questionnaire administered in the two Universities, 48 were returned usable and this is 80% of the questionnaire given out.

Instead of using all the Nigerian Universities, only Universities of Ibadan and Ilorin were used for the research study. University of Ibadan which was geographically situated in the South Western part of the country was chosen because it has the various departments considered for the research and with many lecturers who have been teaching and researching in Chemistry for a long period of time. In addition, the university is well established and the departments are stable.

University of Ilorin, found in the middle belt of Nigeria was also chosen because it has all the departments that were considered for the research. It is well established and the departments are very stable with many staff. Its proximity to the researcher also favours its being considered. Since this allows the researcher to meet the respondents in person and solicit their co-operation to fill the questionnaire.

Data analysis was by simple descriptive statistical means.

Findings

Analysis of data showed that majority of the University lecturers have a qualification of masters degree and above in science which will enhance their competence in discharging their duties. The chemists need more than one type of information to carry out their duties as can be seen on Table 1 below.

Table I: Preferred Information Needs

Type	No. of Respondents	%
Specification	2	4
Trade	-	-
Research results	45	94
Design data	5	10
Statistical data	8	17
Technical data	11	23
Field data	8	17

Table 1 reveals that the major information needs of the chemists in Nigerian Universities is research results. When asked to indicate the type of information they need to carry out their work, 34 (94%) showed that they need current research findings most. These are original reports of scientific and technological investigations which keep chemists abreast of recent research findings. The information represent new knowledge and constitute the latest available information. It helps them to avoid duplication of what other researchers are doing. As Voight²³ has clearly stated that there is a great need for chemists to know what others have recently done or are doing. Chemists engage in inter-personal communication but they regard documented sources of information as the primary source.

Other information needs of chemists which were rated low are technical data and statistical data for which 11 (23%) and 8 (17%) respondents respectively indicated their interests. This is in line with Saul and Hernalers²⁴ observation that scientists need facts and figures and working constants.

It seems that academic chemists are not in need of trade data information as Table 1 shows. No respondent indicated interest for it. This might be due to the fact that they do not contain scientific information needed by academic chemists. This however may be useful for industrial chemists who engage in manufacturing work.

Analysis of the preferred information sources consulted by the chemists establishes a wide range of sources as shown in Table II.

Table II: Types of information sources preferred

Sources	No. of Respondents	%
Journals	46	96
Personal contacts	6	13
Abstracts	23	53
Library information departments	28	58
Books/Monographs	27	56
Handbooks	8	17

Reviews	26	54
Citation indexes	4	17
Conferences/meetings of professional societies	15	31

An analysis of preferred information sources used showed a high preference for journals as indicated by 46 (96%) respondents. This shows that academic chemists rely more on primary sources for their information. Chemists consult journals more than any other source of information because it is from journals and informal communication channels that scientists draw inspiration for their research. Journals also serve as outlets for the dissemination of research findings. This observation agrees with Eikhamenors²⁵ findings that journals are the most important sources of information for the Nigerian scientists. 28 (58%) respondents showed that library is an important source of information to them. This confirms the statement of Llull²⁶ that scientists depend mainly on the library for their published materials.

Apart from the primary sources of information (journals) used by the respondents, other secondary sources which are guides to the primary sources are used. Others are citation indexes 4 (7%) which received a low rating. Non-documented sources of information were not highly used by Nigerian chemists as analysis revealed. This is indicated by low rating of personal contacts and conferences/meetings of professional societies. They however serve as sources of information to chemists especially when in need of specific information which is directly connected with a research or operational problem at hand. In most cases, these sources serve as pointers to documentary sources. Similarly, Meadows and O'Connor²⁷ discovered in a study of respondents from astronomy and space science organisation that documented sources of information were preferred by his respondents. Books and monographs constitute an important source of information for teaching and research. It was rated high next to library as a source of information preferred by chemists. When asked to indicate how they get the information they need, a spectrum of information-seeking patterns were revealed. Table III shows the analysis.

Table III: Information seeking pattern

Method	No. of Respondents	%
Ask librarian(s)	17	35
Ask outside specialist(s)	7	15
Consult bibliographic tools	30	63
Ask colleagues	14	29
Use the computer	11	23

A vast majority of respondents are library literate. When asked whether they used the library or not, all of them indicated that they make use of the

library. 30 (63%) respondents showed that they consult bibliographic tools when seeking for information. Journal contains a great deal of scientific information needed by chemists. Chemical abstracts, indexes guides are some of the tools (secondary sources) used by the chemists as guides to get their needed information in the primary sources. This finding disagrees with Meadows²⁷ statement that scientists are reluctant to use all bibliographic aids available, as they seem to be prepared to spend a good deal more effort in their search for informal information. The result of analysis however confirms Flowers²⁸ finding that chemists use chemical abstracts to obtain specific information and for keeping up to date.

Librarians are important source of information to chemists as indicated by the table. 17 (35%) chemists consult with professional librarians when they are seeking for information. Professional librarians occupy an important position when it comes to storage, retrieval, and dissemination of scientific information. The significant role they play in scientific communication was recognized by Garvey²⁹ and he pointed out that the librarians will have to become experts in the communication structure of science and in behaviour of scientists within this structure.

It is not surprising that chemists ask their colleagues questions as a means of getting necessary information as it is indicated in the table. This finding agrees with Saul and Hernes³⁰ statement that information on procedures, techniques, materials and apparatus are generally obtained through inter-personal contact with other researchers as a primary source of scientific information. Information technology affords researchers access to information which are not available on open shelf in the library. Such information which can be stored on Diskettes, Compact Disk Read Only Memory (CD-ROM), Computer Hard Disks, etc. can be accessed by carrying out computer searching. 11 (23%) of respondents combine the use of computer with other means shown on the table to get their needs of information.

When asked if they need library at all to function maximally, all respondents indicated their need of the library as a source of information for their need of the library as a source of information for their needs of published materials. This confirms the assertion of Osiobe³¹ that the perceived need of information of users are met by making demands upon formal systems such as libraries, information centres, on-line services or some other persons in order to satisfy the perceived need. All Nigerian Universities have libraries which are stocked with literature which serve primary, secondary and tertiary sources of information. These include journals, textbooks, reference materials, abstract review, indexes, guides and so on and they keep the chemists informed about the work at hand.

The chemists need the right information at the right time and at the right place. As they need to keep abreast of new information, it is expedient for them to have access to sources where new knowledge and latest scientific findings are

reported. When asked if their libraries are adequate (in terms of resources) in meeting their needs of information, only few respondents 3 (6%) indicated that their libraries are very good in terms of resources available. To justify their claim that their libraries are not adequate for their needs, they itemised some reasons for the poor state of the libraries which include: non-availability of relevant materials, obsolescence of materials (materials not up to date), lack of proper organization of the available materials. Lack of current information is a constraint to research and it hinders effectiveness in teaching.

Conclusion

The study revealed that all University chemists need information which range from documented to non-documented sources. Documented sources of information are preferred to non-documented sources by chemists. Being library literate, they consult bibliographic tools in the library, and they are able to carry out literature search by the use of computer. Most of the problems confronting the chemists can be solved by improving the standards of the libraries in the higher institutions. This can be achieved by providing up-to-date information, qualified library staff and all facilities that can boost the image of the library.

On their own part, chemists should cultivate the habit of attending seminars, conferences, workshops and other professional meetings to get first hand information from colleagues when they discuss the findings of their research work. Inter-library loan with other libraries and resource sharing should be embarked upon by the libraries to solve the problem of acute shortages of relevant documented sources.

The government through the National Universities Commission can help to improve our library systems by increasing the library vote so that more journals and other published materials can be subscribed to. A similar study on a wider horizon which will include all the chemists in Nigerian Universities, and combine questionnaire with interview should be investigated. In addition, the effect of using modern information technologies to access local and global information by the Nigerian University Chemists should be looked into.

Finally, it is discovered from the findings that if chemists are supplied with current information, and if all facilities they need are made available, they would use varieties of information sources to satisfy their information needs.

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