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EFFECTIVENESS OF SOKOINE NATIONAL AGRICULTURAL LIBRARY (SNAL) IN DISSEMINATING VETERINARY INFORMATION

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ABSTRACT: The Sokoine National Agricultural Library (SNAL) was established by Parliamentary Act No. 21 of 1991, which elevated the former University Library to a national agricultural library. Therefore, SNAL serves both as a University Library as well as a national agricultural library. SNAL's overall goal is to develop and maintain library and information services in agricultural sciences and related disciplines. As a university library, SNAL aims at supporting efficiently and effectively teaching, research, extension, consultancy and other academic activities of Sokoine University of Agriculture (SUA). The Sokoine University of Agriculture (SUA) consists of many academic units that include four faculties; namely; the Faculty of Agriculture, Faculty of Forestry and Nature Conservation, Faculty of Science, and Faculty of Veterinary Medicine. This paper examines the capacity of SNAL in disseminating veterinary information. Electronic information resources available at SNAL are assessed with the aim of examining the coverage of veterinary information in comparison to other agricultural related fields offered by SNAL. Major electronic information resources include: CD-ROMs, e-journals and an OPAC. Additionally, the information needs and seeking behavior of veterinary scientists and students at SUA are identified in order to establish the extent to which SNAL meets their needs. The quality of library human resources at SNAL in relation to their capacity to provide veterinary information was observed as well.

Introduction

Improving the quality of library and information services has been a preoccupation of information professionals and librarians for a long time. Library assessment is one of the techniques that help to understand existing strengths and weaknesses in order to re-orient and improve library collections, services and activities to effectively meet the information needs of the patrons. Different criteria have been devised to measure the quality and effectiveness of information services. Traditionally decisions about effective services in libraries have been guided by extensive statistics on collection, the use of collections and services, and through comparisons with peer institutions on staffing, budgets and the like.

Developments in information and communication technologies (ICT) have changed the way libraries provide their services. As a result libraries have also expanded further their assessment techniques to include deeper understanding of access to their collections and services, the needs and behaviour of their patrons, and the effectiveness of their technologically mixed environments. According to Shaughnessy (1987), one of the fundamental factors for the quality assessment of information services is the focus on patrons. Since most libraries serve a diverse user community, assessment of the needs of different user groups is important because different users have different information needs.

Many libraries focus on the interests inherent in the institutions they serve. Libraries in universities, for

instance, have collections that reflect the core disciplines of the particular university. In many cases, the collections of such subject-specific libraries may be narrow in scope, but have depth within the specialty they cover. Consequently, librarians in these libraries must understand the language and culture of the institution in order to effectively meet information needs of the patrons. The Sokoine National Agricultural Library (SNAL) is one of the subject-specific libraries. Its collection is narrow in scope – agricultural sciences – but deeply covers agriculture-related sciences such as forestry, veterinary sciences, human nutrition, soil science, environment, animal science, crop production, agricultural economics and many more. Therefore, librarians at SNAL face challenging issues in the identification, acquisition, management and sharing of information both within and outside the university.

Sokoine National Agricultural Libraries (SNAL)

The Sokoine National Agricultural Library (SNAL) was established by Parliamentary Act No. 21 of 1991, which elevated the former university library to a national agricultural library. SNAL serves both as a university library for Sokoine University of Agriculture (SUA), as well as a national agricultural library for Tanzania. Like many other libraries, at present SNAL operates in a technologically mixed environment. The library provides both print resources and offline resources like CD-ROMs, as well as online services.

As a university library, SNAL supports the core mission of the university - teaching, research and consultancy - through the provision of library and information services mainly in agriculture, forestry and veterinary sciences. Sokoine University of Agriculture (SUA) is the second largest university in Tanzania that offers degree

programmes in agriculture and allied sciences. Currently the university has four faculties; the Faculty of Agriculture (FoA), Faculty of Forestry and Nature Conservation (FF&NC), Faculty of Science (FoS) and Faculty of Veterinary Medicine (FVM).

The Faculty of Veterinary Medicine (FVM) consists of six departments: the Department of Veterinary Anatomy; Veterinary Pathology; Physiology, Biochemistry, Pharmacology and Toxicology; Veterinary Microbiology and Parasitology; Veterinary Medicine and Public Health; and Veterinary Surgery and Theriogenology. The Faculty offers degree programmes both in undergraduate and postgraduate studies. At the time of this study the Faculty had about 140 Bachelor of Veterinary Medicine (BVM) students from first to fifth year, five postgraduates and 55 teaching staff.

Problem statement and justification

Despite the fact that library assessment helps libraries to effectively improve their collections, services and activities, no study has been conducted to assess the effectiveness of SNAL as a university library in serving different user groups at SUA. So far the studies undertaken were directed at managing information services to support academic and research excellence at SUA (Lwehabura *et al*, 2000); examining the automation process of the library (Matovelo, 2003); and assessing the information literacy skills of users (Dulle and Lwehabura, 2004). This study was designed to examine the capacity of SNAL in meeting the information needs of veterinary scientists at SUA. Specifically the study examined the coverage of veterinary information in selected electronic resources available/accessed at SNAL, identified the information needs and seeking behaviour of veterinary scientists at SUA, and assessed the quality of library staff as far as delivering veterinary information is concerned.

Understanding the capacity of SNAL in meeting the information needs of veterinary scientists would help in making the necessary improvements for effective utilization of existing services. Knowing the coverage of veterinary information in e-resources available at SNAL is important in identification, acquisition and management of e-resources for different user groups in the library. Information needs and seeking behaviour of veterinary scientists at SUA are necessary for SNAL to design user education programmes that can bring library services in harmony with the information needs and seeking behaviour of veterinary scientists. The study also adds to the existing literature in library assessment, as well as information needs and seeking behaviour of veterinary scientists.

Literature Review

Library assessment

Library assessment is an important activity which provides information on how relevant and effective a library is in meeting the information needs of the patrons. Such assessments provide useful information for libraries to improve their collections and services (Fidzani, 1998). Decisions about effectiveness of library services has been guided by extensive statistics on

collection strengths, on the use of collections and of services such as reference and interlibrary loan, and through comparison with peer institutions on staffing, budgets, foot traffic, and the like. According to Evans *et al* (1972), a number of criteria can be used to measure the effectiveness of a library. Such criteria include accessibility, cost, user satisfaction, response time and gross use of services etc.

However valid arguments have been posed about relying solely on the traditional "input measures" to assess or rank libraries. Measures of total access to materials, user services, and ability to share and collaborate to provide greater access have been called for to take their appropriate place in assessment programs. Vergueiro, W. and Carvalho, T. (2000) insist that assessing the effectiveness of services should be based on the opinion of the users for whom the services were made available rather than just on the vision that library professionals had about the services. However as Faries(1992) cautioned, while user surveys can never tell the whole story of how patrons are responding to a library service, they can provide valuable ideas about what does and does not work.

Electronic information resources

Following rapid advancements in ICTs a great deal of scholarly communication has moved to an electronic format. These include a variety of resources in the digital format whether online or offline, such as e-journals, e-books, Online Public Access Catalogues (OPACs), CD-ROMS, the Internet etc. As compared to the print format, the electronic format offers many advantages as pointed out by Ray and Day (1998):

- Consulting electronic information sources is often faster than consulting print indexes, especially when searching retrospectively; electronic resources are also more straight forward when wishing to use combinations of keywords.
- They open up the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents.
- Electronic resources can be printed, and searches saved to be repeated at a later date.
- They are updated more often than printed tools.
- One main advantage, especially to distance learners or those with limited time to access the library, is their availability from outside the library at any time.

However, in order to utilize the growing range of electronic resources, users must acquire and practice skills necessary to exploit them. Such skills include knowledge of the structure of the database and how to retrieve information effectively, as well as having basic computer knowledge. Dutton (1990) said that the skills required to maximize the potential of electronic resources are much greater than those required for searching printed sources, although this fact is in most cases not appreciated by users.

Information needs and seeking behavior of veterinary scientists

There is a relationship between the information-seeking behavior and the information needs of users. The consumption of information results from a need for information. This means when people have identified their information needs, they are in the position to seek information to meet those needs. Therefore, information seeking behavior is a deliberate strategy for seeking information as a consequence of a need to satisfy a particular goal.

Studies indicate that information needs and information seeking behavior of users are dependent on the field of research and they vary from one discipline to another (Wilson, 1997). They also depend on point in time (the historical dimension), place (the geographic dimension), level of technology, economic situation and social system (Haywood, 1993). Information seeking behavior is influenced by a number of factors, such as availability of information sources, accessibility to information sources, retrieval skills of users, level of technology, challenges facing the individual, level of uncertainty, cost to the user and searching or retrieval time (Ocholla, 1999).

The scope covered by studies in information seeking behavior is wide. A number of scholars, for example, have studied the information seeking behavior of particular groups of users such as students (Kuhlthau, 1992), legal practitioners (Haruna and Mabawonku, 2001), academics (Ocholla, 1996; Ocholla, 1999), veterinary researchers (Ikpaahindi, 1985; Chikonzo and Aina, 2001), humanities scholars (Thwala, 1996) and chemists (Potzsher and Wilson, 1990), among others. The focus of all these studies has been an attempt to gain knowledge on aspects such as who needs information, what is the information, why is information sought, how is the information sought, when it is needed and where is information required. Narrowing the focus of the study provides a better understanding of the information tools used by a particular group of users, a more detailed and accurate profile of the users, leading to an in-depth understanding of the information seeking process.

Like any other scientists, veterinarians seek information for the purposes of research, keeping up to date, preparation of papers for publications and talks at seminars and conferences (Ikpaahindi, 1985). However, when compared to human medical scientists, the information needs of veterinary scientists are normally broad in nature, since they deal with a wide range of species of animals and quite a wide range of animal diseases (Chikonzo and Aina, 2001).

Subject librarians

In academic and subject-specific libraries, subject specialists have an important role to play in meeting the information needs of specific user groups. This is especially the case in a specialized institution like a university where users have different needs according to their areas of specialization. The knowledge of the subject for which a user is searching for information can be an asset which will help librarians to effectively

communicate and meet the information needs of their patrons. Folster (1995) reported that in those institutions where staff with subject expertise perform reference duties, it was more likely that users' needs were effectively met.

Subject specialists can also help to ease communication problems between librarians and users. A study by Kathryn and Joan (1998) indicated that users encounter problems when explaining their information needs to librarians who lacked subject background, while communication was easy when users were explaining their information needs to librarian who had a background in their subject. The availability of subject specialists in a library is likely to improve communication with scientists, thus enhancing the chances to effectively meet their information needs.

Methodology

This study was carried out at Sokoine University of Agriculture, specifically at SNAL and FVM. The population for the study was drawn from both undergraduate and postgraduate students, as well as teaching staff at FVM. Both stratified and purposive sampling methods were employed in drawing a sample of 56 respondents for the study. The sample represented all years of study (for undergraduates) and departments (for teaching staff and postgraduates). The study used user surveys method in data collection. User surveys are often used when information professionals strategize on expanding the scope and recognition of library services. Primary data were collected through a self administered questionnaire, consisting of both open and closed ended questions. Secondary data were obtained through library and Internet research. Data collected were analyzed both qualitatively and quantitatively.

Results and discussion

A total of 40 questionnaires out of 56 distributed were received back, giving a response rate of 71.4%. At SNAL, selected e-resources - the OPAC, CD-ROMs and e-journals - were analyzed in relation to veterinary information.

Online Public Access Catalogue (OPAC)

The SNAL's OPAC contains bibliographic information of all the print resources available at SNAL. The OPAC is available both online and offline. Currently there are four databases that can be searched on the SNAL OPAC:

- SUALIB – This is a database for books
- SUAPER – This is a database for periodicals
- SUASPJ -This is a database for the special projects. The special projects are conducted by undergraduate students at SUA.
- SUASPE – for special collection material, mainly grey literature, books published within the country, government reports, and publications, as well as publications from various national and international organizations.

In general, the OPAC gives access to all print material in the library. Observations show that all databases in the OPAC are widely used by patrons, including veterinary scientists at SUA. Since the library's print collection is not updated periodically due to lack of funds, the OPAC is considered outdated as well.

CD-ROM services

Currently there are about 70 different CD-ROM databases at SNAL. Most of these CD-ROM databases are obtained through donor support, and some are donations from various organizations and individuals. The following are some CD-ROM databases available at SNAL that contain veterinary related information:

The Essential Electronic Agricultural Library (TEEAL)

TEEAL contains a comprehensive collection of full text journals and provides a complex bibliographic search engine. TEEAL has a wide subject coverage which includes: veterinary medicine, livestock production, agricultural economics, agricultural engineering, crop improvement, food processing and nutrition, forestry, plant protection, range management etc. The available TEEAL collection at SNAL is updated to 2001, which is very old.

CIRAD

This is a full text CD ROM databases which covers literature in agriculture, forestry and veterinary medicine. Currently SNAL has the CIRAD databases up to 2001.

VET CD

This is a bibliographic database for veterinary medicine. The available database at SNAL contains documents from the years 1973 to 1998.

MEDLINE

MEDLINE is a bibliographic database which covers subjects such as health, microbiology, health care, nutrition, pharmacology, environmental health, anatomy, organisms, diseases, chemicals and drugs, techniques and equipment, psychiatry and psychology, biological sciences and physical sciences. The database available at SNAL covers the period 1998-2000.

Animal Health and Production Compendium (AHPC)

This is a compendium from CAB International. It is a full text and multimedia database which covers the following subjects: animal science, animal health, animal production, animal nutrition etc. The available AHPC CD-ROM at SNAL is 2003.

British Society of Animal Science (BSAS)

This is a full text databases with information on animals and animal production. The available version is 1999-2000.

Dairying in the Southwest Pacific

This is a full text CD-ROM database which covers the following subjects: animal science, milk products, animal health, diseases, animal nutrition, forages and pastures. The CD-ROM also contains training manuals, searchable databases, bibliographies, full-text documents, country profiles and photographs relating to feeds, forages, milk production and processing, and smallholder farmers. The available version is dated 2000.

ILRI

This is a full text database with subject coverage on animal science, livestock production systems, livestock health and diseases, livestock genetic resources, livestock nutrition, livestock product processing, livestock policies. It is produced by ILRI. The available copy is Version 3 of 2001.

In general, it can be seen from the above explanations that most of the CD-ROMs available at SNAL are very useful as far as veterinary information is concerned. However, one major obstacle is that the available databases are not updated periodically.

E-journals

In recent years a number of organizations have started assisting developing countries in accessing e-journals. Such organizations include the International Network for the Availability of Scientific Publications (INASP) through its Programme for Enhancement of Research Information (PERI), and FAO through the Access to Global Online Research in Agriculture (AGORA). The organizations work to improve worldwide access to information and knowledge.

At present SNAL subscribes to a number of online databases with the assistance from the said organizations. Veterinary-related information is widely covered in most of these databases. Some of these databases include:

AGORA

This is a database that contains major journals in agriculture-related sciences including veterinary sciences, environmental and social sciences. AGORA provides full text journal articles. The goal of AGORA is to increase the quality and effectiveness of agricultural research, education and training in low-income countries, and in turn, to improve food security.

African Journals On line (AJOL)

AJOL is a database of African-published journals, publishing in a wide range of academic disciplines, including veterinary sciences. AJOL aims to promote the awareness and use of African published journals in the sciences by providing abstract and other bibliographic information.

EBSCO

This is a database with a wide subject coverage such engineering, applied science and technology journals. It contains journals in veterinary sciences as well. The database has over 4,000 full text, peer-reviewed journals and over 16,000 abstracted and indexed titles.

HINARI

This is an initiative of the *Health InterNetwork* which is led by the World Health Organization (WHO). The database was created to bridge the "digital divide" in health and to ensure that relevant information and the technologies to deliver it are widely available and effectively used by health personnel. HINARI provides access to full-text articles directly from the PubMed database.

E-granary (digital library)

E-granary is a digital library that can be made available in a local network. This database is an initiative of the

WiderNet project which aims at providing e-resources to institutions lacking adequate Internet access. The database has been developed by copying Web sites and delivering them to intranet Web servers of partner institutions in developing countries.

SNAL has the current version (2005) of the E-granary, which contains a substantial coverage of veterinary related information. The database is still new and currently the library is marketing it to users.

Information needs of veterinary scientists at SUA

Identification of information needs is quite a difficult undertaking and is not directly observable. It has been found to be a difficult task as it is almost investigative or detective work that calls for combination of approaches (Devadason and Lingam, 1996). However, investigating the information needs in an academic institution in many cases is straight forward. In order to identify the information needs of veterinary scientists at SUA, postgraduates and teaching staff were asked to state their fields of specialization. This is because according to Wilson (1997), information needs of users are dependent on among other things, the field of research and they vary from one discipline to another. Secondly, all respondents were asked to state the kinds of information they require for their daily academic activities.

The identified information needs of respondents were categorized into major subjects that include veterinary anatomy, anaesthesiology, molecular biology, immunology, animal diseases and welfare, veterinary surgery, veterinary practice, wildlife biology, microbiology, parasitology, pathology, pharmacology, environmental health, animal nutrition, physiology, and biochemistry. Generally the identified information needs are not new since they reflect most academic subjects and units at FVM. However, the findings imply a wide

range of information needs that SNAL should take into consideration in order to meet the information needs of veterinary scientists. The findings also showed that while some veterinary scientists have very specific information needs, the majority have more than one field of interest.

Information seeking behaviour of veterinary scientists at SUA

In order to determine the information seeking behaviour of veterinary scientists, a number of areas were investigated: information providers; frequency of using different information sources; quality of library services; information search skills and problems encountered in using e-resources.

Information providers

Respondents were requested to indicate where they seek veterinary-related information by indicating one or more of their major information providers, both within and outside the university (Table 3). As it was expected, over ninety two percent of respondents pointed SNAL as their main information provider. An explanation to this might be the question of proximity and the fact that the university library has more relevant and specific information resources to meet their information needs. Libraries of other universities/institutions ranked second highest (60%) as important information providers. In this category many respondents cited the Muhimbili University College of Health Sciences (MUCHS) library as an information provider. However, this is questionable because MUCHS library is located in Dar es Salaam, about 200 km away. At present FVM does not have its own library, except one department which has a small collection. This is why only ten respondents (25%) indicated that they go to departmental/ faculty libraries for their information needs.

Table 3: Information Providers

Information source	No. of respondents	%
University library (SNAL)	37	92.5
Departmental/ faculty libraries	10	25
Libraries of other universities/institutions	24	60
Others	22	55

Frequency of using different information sources

Respondents were asked to indicate how often they consult some of the information sources / practices to meet their information needs. This question aimed at comparing the use by veterinary scientists of some information sources at SNAL. The results in Table 4 indicate that all respondents (100%) exhibit a strong dependence on the printed sources of information. This suggests that printed sources of information are still

useful despite the availability of electronic information resources.

Internet browsing ranked second highest (75%), first among other electronic resources. More than half (57.5%) of respondents indicated that they have either rarely or never used e-journals. Despite the fact that CD-ROMs and e-journals provide scholarly information, still many users go for the Internet. This might be attributed to what has been referred as "Google effect" or "Googlization"- the tendency for users to just search the Web using one search engine (www.google.com) and to bypass important and indexed services.

Table 4: Frequency of using different information sources available at SNAL

Information sources	Frequently		Sometimes		Rarely		Never	
	Number of respond.	%	Number of respond.	%	Number of respond.	%	Number of respond.	%
Printed books and Journals	40	100	0	0	0	0	0	0
CD-ROMs	15	37.5	20	50	0	0	5	12.5
Internet browsing	30	75	7	17.5	3	7.5	0	0
Electronic journals	10	25	7	17.5	10	25	13	32.5

Table 6: Information search skills

Rank	No. of respondents	%
High	5	12.5
Moderate	24	60
Low	11	27.5

Ranking the quality of library services

Another important question required the respondents to rank the quality of library services provided by SNAL. The findings show that the majority (60.6%) of respondents ranked the services as moderate. This implies that despite the effort made by SNAL in providing information services to its patrons, there are still some user groups whose needs are not being met satisfactorily.

Table 5: Ranking the quality of library services

Rank	No. of respondents	%
Excellent	3	7.5
Good	9	22.5
Moderate	24	60
Poor	4	10

Information search skills

When asked to rank their information search skills, many (60%) respondents ranked their skills as moderate while about one third (27.5%) of respondents ranked their skills as low. It is apparent that effective utilization of new information resources requires some kind of training. It is, therefore, extremely important for libraries and their parent institutions to have in place a comprehensive user education programme. Several studies have pointed out the need to integrate information literacy programmes in university curricula; some of these include Tibenderana, (2005) and Dulle and Lwehabura, (2004).

Problems encountered when using electronic information resources at SNAL

Respondents were provided with a list of problems and asked to indicate one or more problems that they encountered when using e-resources at SNAL. In addition, they were provided with an open-ended question to add in other problems that were missing in the list. Results presented in Table 7 show that the overwhelming majority of respondents (87.5%) pointed inadequate computers in the library as being one big problem. This is true, because during this study there were only ten computers in the SNAL computer room for information search activities. Inadequate skills in using e-resources ranked second highest (82.5%). This closely agrees with results in Table 6 where 87.5% of respondents ranked their information search skills as moderate or low.

Low bandwidth is one problem common among many universities in Africa; SUA is no exception to this. This is why over three quarters (80%) of respondents cited unreliable Internet connectivity as another problem they have been encountering in using e-resources at SNAL. Other problems that veterinary scientists experienced at SNAL include inadequate e-resources relevant to their fields (70%), lack of awareness on what was available at SNAL (65%), frequent power cuts (55%) and inadequate guidance provided by librarians (55%) (Table 7).

Table 7: Problems encountered when using electronic information resources at SNAL

Problems encountered	No. of respondents	%
Lack of awareness of available information sources	26	65
Inadequate skills in using electronic information resources	33	82.5
Inadequate computers in the library	35	87.5
Frequent power cuts	22	55
Unreliable Internet connectivity	32	80
Inadequate information resources relevant to your field	28	70
Inadequate guidance by librarians	22	55

Staff quality at SNAL

Human resources are the most important ingredient in conceptualizing, planning, designing, implementing and managing information systems and services (Ming, 1996). Adequately trained library staff plays a crucial role in meeting the information needs of library users by guiding them to use library resources, services and facilities effectively (Adedibu and Adio, 1997; Hobohm, 1996). According to Majid (1996), besides information handling skills, subject knowledge is an asset for librarians to effectively meet the information needs of scientists.

Being an agricultural library, SNAL has a number of librarians with subject knowledge in agriculture related sciences. However, at the moment the library does not have librarians with subject knowledge in veterinary sciences. Librarians have a background in agriculture, forestry, animal sciences, human nutrition, education, extension and agribusiness. This is perhaps the reason why more than half (55%) of respondents pointed out inadequate guidance from librarians as one of the problems in using e-resources.

SNAL is currently working out a solution for this problem in recruiting new academic staff. Efforts are being made to ensure that the available academic librarians represent the diverse agricultural specialization available at the University and to ensure that at least all the major specializations have a subject librarian.

Conclusion and recommendations

There is a variety of electronic information resources that are found at SNAL. These resources have a wide coverage of veterinary-related information that generally matches with the information needs of veterinary scientists at SUA. However, most of these resources are not used to their full potential due to a lack of awareness of the available resources, lack of information search skills, unreliable Internet connections, inadequate guidance from librarians, inadequate computers, and frequent power cuts. In addition, most e-resources at SNAL are either not updated periodically or not sustainable mainly due to lack of funds. Libraries have to devise effective methods to ensure that the available e-resources are fully utilized by patrons. They also should overcome the challenge of donor dependence to ensure the sustainability of e-resources in libraries and universities in general.

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