Evaluation of the Use and Access to Scientific Information in Tertiary Institutions Using Federal Polytechnic Ede, Osun State, Nigeria as a Case Study

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Abstract

Purpose: *The study focused on evaluation of the use and access to scientific information in tertiary institutions using federal polytechnic Ede as a case study.*

Design/Methodology/Approach: *The study used a survey method. Cluster sampling technique was used to randomly select six respondents from each of the six departments in the School of Applied Science, Federal Polytechnic, Ede, in Osun state of Nigeria. A structured questionnaire was used in the survey to elicit necessary information from the respondents.*

Findings: *It was discovered that the level of academic staff awareness about availability of Science and Technology information resources at the Institution library was high (96.55%) and majority of them (100%) get informed about Science and Technology information through Search Engines and suggestions from friends and colleagues (93.1%). However, majority (86.21%) claimed to "sometimes" experience difficulties in accessing Science and Technology information from the Institution Library including "lack of access" to current journals in the Library (93.10%).*

Implication: *Difficulties in accessing science and technology information must be addressed to ensure maximum utilisation of information resources and services available in libraries of Nigeria's tertiary institutions.*

Originality/Value: *The study recommends among others that the Institution Library should always acquire the current scientific journals and devise urgent means of advertising such materials to the potential users, which are the instructors (lecturers and researchers) and students.*

Keywords: *Information accessibility; Information use; Science and Technology; National development.*

Introduction

Information is a major tool for planning and decision making; and a potent mechanism for development and transformation, if accessed and used effectively. The value attached to information, especially in advanced countries and super powers cannot be underestimated. Information is now considered as the fifth factor of production. It is on the premise that if you know enough, i.e. if accurate and timely information is available, one can reduce drastically, the cost expended on the other factors to improve productivity. Bashorun (n.d.) was apt when he affirms that information is life; and identifying useful sources of information is greatly important especially in science and technology. He points out further that keeping abreast of the literature in the area of science and technology is essential to avoid duplication of research efforts and discoveries. In the same vein, developments in science and technology are fundamentally altering the way people live, connect, educate, communicate and transact, with profound effects on educational and economic development (Chetty, 2012).

We are currently living in the information age, characterized by advancements in science and technology, explosive growth of information sources and profound knowledge creation; economy is information/ knowledge driven. Similarly, there are certain parameters for measuring the development level of a nation.

Scientific and technological development, being one of the qualities of an improved or improving nation, is a product of multifarious inputs inherent in the development of other sectors such as education, industry, agriculture, mineral resources, labour, business etc. in a secured environment. Thus, information is key to the development of these afore-mentioned sectors, thereby creating a formidable background for a robust national development, solidly rooted in Science and Technology.

Objectives of the Study

The objectives of the study are to:

- identify all hindrances to the availability of the scientific and technological information in the institution;
- evaluate the quality of information resources available to science and technology academic staff in Federal Polytechnic Ede; and
- make suggestions for a way forward based on the findings.

Statement of the problem

Information comes and is presented in multifarious forms and sources. Awareness, access to and use of science and technology-related information (STI) is necessary to foster national development. While the development of modern technologies such as digital computers and high-speed communication networks has already been used to facilitate information storage, accessibility, retrieval, and dissemination; still, there are certain challenges impeding accessibility to and use of such information. Lack of awareness and inaccessibility of information sources constitute parts of these challenges. Similarly, from our collective personal observations and experience, we have noticed that many academic staff in Federal Polytechnic, Ede, rely heavily on the use of mobile phones and personal collections in accessing necessary information. Study was conducted to evaluate the use of and access to scientific information in tertiary institutions using federal polytechnic Ede as a case study. Science and technology plays a strategic role in national development.

Review of Related Literatures

Developments in science and technology (S and T) are fundamentally altering the way people live, connect, educate, communicate and transact. In view of this, Chetty (2012) affirms that science and technology are key drivers to national development, because technological and scientific revolutions underpin economic advances, improvements in health systems, education and infrastructure. As a corollary to this, Lide (2005) pointed out that access to scientific and technical information is crucial to all phases of the scientific process. He further points out that information needs of scientists and technologists vary from simple to complex. Science and technology-related information (STI) is necessary to foster national development. However, information could only be found useful if disseminated and retrieved accordingly. Similarly, potential information user has to be aware of the availability of location or source, and the right information has to be provided to the right user at the appropriate time, in a right form, in a right manner, with minimal cost; which sums up the basic functions of the library.

S and T information are available in different sources such as textbooks, journals and CD-ROMs and are accessible through different means such as the library and of course, the Internet. Rajashekar (n.d.) pointed out some of the key S and T information resources available today to include the following: Preprints, discussion forums, electronic journals, technical reports, scientific database, patents and standards, reference sources etc. However, Angchun, Turner, Lin and Alemneh (2011) pointed out that the choice of information source depends on certain factors which include: convenience, ease of use, availability and proximity to the source. They reiterate that the most convenient, easier to use and familiar the information source is, the most such sources will be selected and used. Information is used by individuals, organizations, cooperate bodies as well as government agencies. The kind of information sought or used varies accordingly depending on the user and his needs. It is equally imperative to point out that for information to be effectively useful, it has to be timely, accurate and reliable, which underscores its qualities.

Uzuegbu and Uzuegbu (2013) argued that information is the bedrock of every kind of

transformation and development; and only strategic resource that contributes greatly to the socio-cultural, scientific, technological and personal development. Therefore, if information is seen as a major instrument for development, and its quantity and quality is seen as a major parameter for measuring the level of prosperity of a nation; hence, there is need to add that such information has to be made available, accessible and communicated (disseminated) appropriately to the right person or group for it to be useful.

Method

Social survey research method and cluster sampling technique were adopted for the study, due to the heterogeneous characteristics of the research subjects. By implication, a questionnaire consisting of multiple choice questions was implemented to solicit qualitative and quantitative data from academic staff in six departments. A total of 36 questionnaires were distributed, and 29 were completed, returned and valid for analysis. This represents 80.56% response rate. While distributing questionnaires, care was taken to ensure that respondents of different age groups, designation and gender were represented adequately in the population.

RESULT

Table 1: Respondents Distribution

Departments	No. of Questionnaire Administered	No. Returned
Nutrition and Dietetics	6	5
Statistics	6	4
Geological Technology	6	6
Science Lab Technology	6	5
Computer Science	6	5
Hospitality/ Tourism and Leisure Management	6	4
Total	**36**	**29 (80.56%)**

Table 1 shows the distribution of the respondents according to their departments.

Data Analysis and Interpretation

Collected data are organised into tables 2-6 while figure 1-2 presented additional analysis

Table 2: Awareness level about the availability of S and T information resources in the institution library

Variables	No. of Respondents
Aware	28(96.55%)
Not Aware	1(3.45%)
Total	**29(100%)**

Table 2 shows that majority of the respondents (96.55%) are aware of the availability of S and T information resources in the institution library, while only 3.45% claimed not to be aware. This shows that their level of awareness is high.

Figure 1 indicates various means through which the respondents get informed about available Science and Technology information resources. Search Engine has the highest frequency (100%) followed by suggestions from colleagues and friends (93.1%)

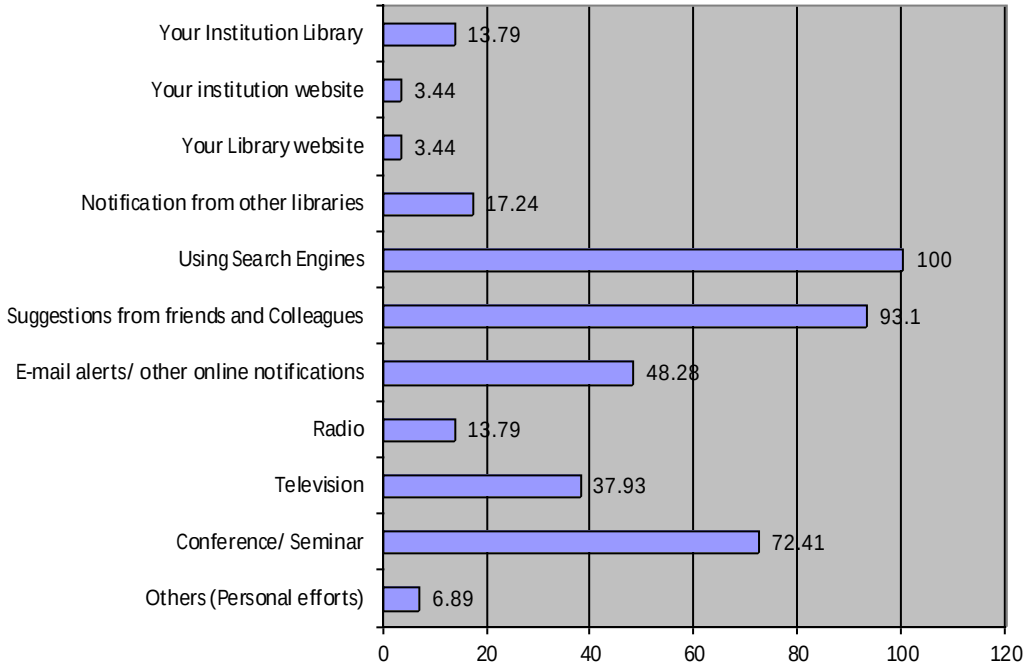


Figure 1: Means of getting informed about S and T information resources

Table 3: Frequency of information access means

Means	Daily	Weekly	Monthly	Less often	Never
My Institution library	0	6 (20.69)	9 (31.03)	11 (37.93)	3 (10.34)
My Institution website	0	0	0	2 (6.90)	27 (93.10)
My Institution library website	0	0	0	0	29 (100)
Other institutions libraries	0	0	0	6 (20.69)	23(79.31)
Personal/ in-house library	29 (100)	0	0	0	0
Mobile devices	29 (100)	0	0	0	0
Professional colleagues	22(75.86)	1 (3.45)	0	6 (20.69)	0
Internet search engines	29 (100)	0	0	0	0
Websites	29 (100)	0	0	0	0
Television	2 (6.90)	7(24.14)	5(17.24)	12(41.38)	3 (10.34)
Radio	0	5(17.24)	1(3.44)	19(79.17)	4(16.67)
Newspapers/ Journals	13 (44.83)	14 (48.28)	2 (6.89)	0	0
Conference/ Seminars	0	0	1(3.44)	28(96.55)	0

Percentages are in parentheses; n=29

Table 3 shows the frequency of accessing Science and Technology information by the respondents from various means. It was discovered that Personal library, Mobile devices, Internet search engines and websites constitute means that are mostly used on "daily" basis to access S and T information with 100% response rate. This is distantly followed by "Colleagues" with 75.86%. It was also discovered that all the respondents has "never" used their institution's library website to access S and T information, while only 37.93% and 6.90% claimed to use the institution Library and Institution website "less often" respectively to access S and T information.

Table 4: Frequency of use of access sources

Sources	VHU	HU	OU	NU
Textbook	6 (20.69)	23 (79.31)	0	0
Reference materials	5 (17.24)	11(37.93)	13(44.83)	0
Technology reports from govt.	0	1(3.45)	24 (82.76)	4 (16.67)
Printed journals	7 (24.13)	11(45.83)	12(41.38)	0
Google Scholar	27(93.10)	2(6.89)	0	0
Academia	0	0	5(17.24)	24(82.76)
Full text e-journals	7(24.14)	21(72.41)	1(3.45)	0
Reviews	0	0	2(6.89)	27(93.10)
Blogs	0	0	4(13.79)	25(86.20)
Social Media	26(89.66)	3(10.34)	0	0
Discussion group	7(24.13)	3(10.34)	11(37.93)	8(27.58)
Colleagues	2(6.90)	13(44.83)	14(48.28)	0
Conferences/ seminar proceedings	3(10.34)	26(89.66)	0	0
Electronic database	14(48.27)	13(44.83)	2(6.90)	0
Research reports	25(86.20)	3(10.34)	1(3.45)	0
Science and Technology abstract	0	6(20.69)	21 (72.41)	2(6.90)

VHU: very highly use, HU: highly use, OU: occasionally use, NU: not use

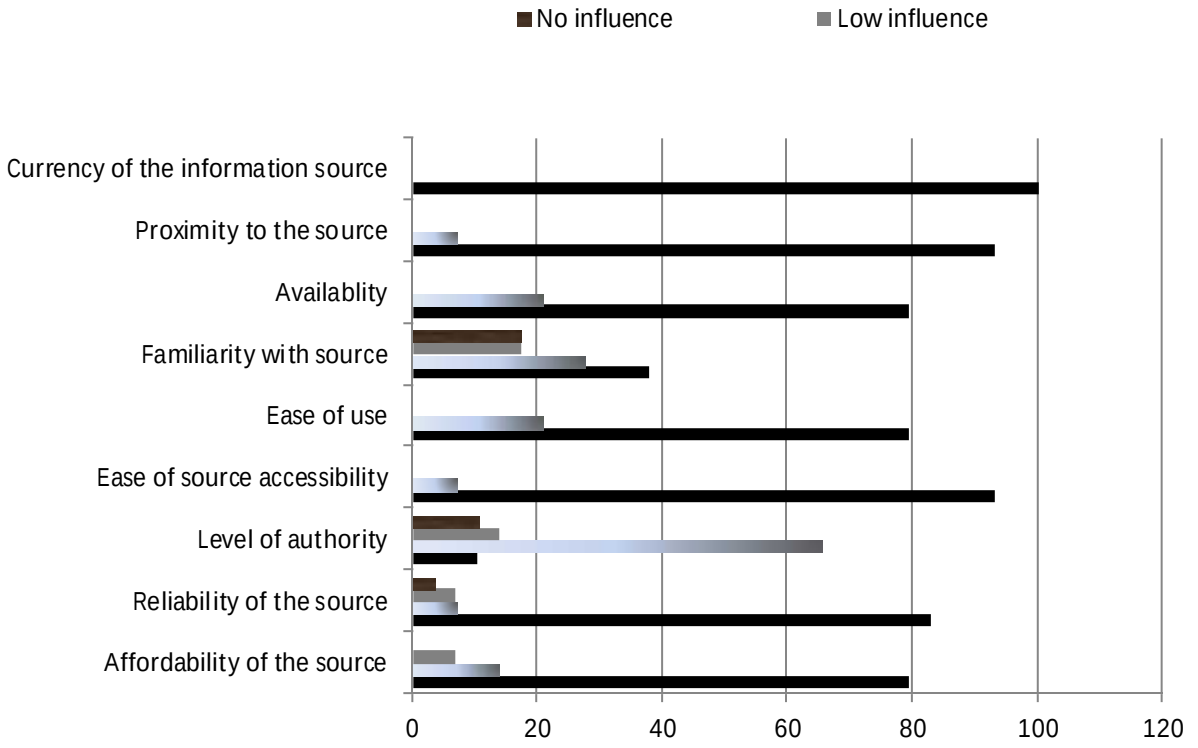
Table 4 shows that 93.10% respondents claimed that they use Google Scholar "very highly" to access S and T information, followed by Social media with 89.66% and Research reports with 86.20%. It was also found out that 89.66% respondents claimed to "highly use" conference/ seminar proceedings, followed by textbooks (79.31%) and 72.41% for full text e-journals, while some 45.83% "highly use" printed journals. However, majority of 82.76% and 44.83% claimed to "occasionally use" Technical reports from government and Reference materials respectively. Similarly, some 41.38% claimed to "occasionally use" printed journal for accessing S and T information, while majority of 93.10% and 86.2% claimed not to use Reviews and Blogs respectively for accessing S and T information.

Table 5: Difficulties relating to S and T information sources

	Frequency of Access Difficulties				
Sources/Means	**Always**	**Frequently**	**Sometimes**	**Rarely**	**Never**
Textbooks	0	0	5(17.24)	17(58.62)	7(24.14)
Printed Journals	7(24.13)	2(6.89)	14(48.28)	4(13.79)	2(6.90)
Reference materials	7(24.13)	11(37.93)	8(27.58)	2(6.90)	1(3.45)
Technical reports from govt. Agencies	9(31.03)	14(48.28)	4(13.80)	1(3.45)	1(3.45)
Google Scholar	0	5(17.24)	3(10.34)	14(48.28)	7(24.13)
Academia	0	1(3.44)	7(24.13)	10(34.48)	11(37.93)
Full text e-journals	6(20.69)	4(13.80)	11(37.93)	6(20.69)	2(6.90)
Reviews	11(37.93)	7(24.13)	2(6.90)	2(6.90)	7(24.13)
Blogs	11(37.93)	13(44.83)	4(13.80)	1(3.45)	0
Social media	3(10.34)	2(6.90)	17(58.62)	4(13.79)	3(10.34)
Discussion groups	10(34.48)	6(20.69)	5(17.24)	5(17.24)	3(10.34)
Colleagues	5(17.24)	17(58.62)	3(10.34)	4(13.79)	0
Conference/ seminar proceedings	2(6.89)	9(31.03)	11(37.93)	7(24.13)	0
Electronic database	9(31.03)	3(10.34)	7(24.13)	5(17.24)	5(17.24)
Research reports	7(24.13)	9(31.03)	8(27.59)	3(10.34)	2(6.90)
Science and Technology abstract	11(37.93)	9(31.03)	5(17.24)	2(6.90)	2(6.90)
My institution library	1(3.45)	1(3.45)	25(86.21)	2(6.90)	0
Other institution libraries	2(6.90)	8(27.59)	19(65.52)	0	0
Internet resources	4(13.79)	2(6.90)	4(13.79)	13(44.83)	6(20.69)
Television	3(10.34)	4(13.79)	7(24.14)	14(48.27)	1(3.44)
Radio	5(17.24)	7(24.14)	2(6.90)	8(27.58)	7(24.13)
Mobile devices	1(3.45)	1(3.45)	2(6.90)	4(13.80)	21(72.41)
Internet search engines	3(10.34)	10(34.48)	11(37.93)	3(10.34)	2(6.90)

Percentage in parenthesis

Table 5 shows frequency of difficulties experienced by the respondents in accessing S and T information through various sources and means. Some 37.93% respondents claimed to "always" experience difficulties accessing S and T information from Reviews, Blogs and Abstracts, and also, some 31.03% from using electronic database. Also, 48.28% respondents claimed to be "frequently" experiencing difficulties in accessing S and T information from Technical reports from government agencies, while another 58.62% shared similar experience from accessing information from their colleagues. Majority of 86.21% respondents claimed to "sometimes" experience difficulties using the Institution library for accessing S and T information. It should also be noted that majority of 72.41 respondents claimed "never" to experience any difficulty in using their Mobile devices to access S and T information. See Figure 3 for kinds of difficulties experienced in accessing S and T information from and through various sources and means respectively.



	Affordability of the source	Reliability of the source	Level of authority	Ease of source accessibility	Ease of use	Familiarity with source	Availablity	Proximity to the source	Currency of the information source
No influence	0	3.45	10.34	0	0	17.24	0	0	0
Low influence	6.9	6.9	13.79	0	0	17.24	0	0	0
High influence	13.79	6.9	65.51	6.9	20.69	27.59	20.69	6.9	0
Very high influence	79.31	82.76	10.34	93.1	79.31	37.93	79.31	93.1	100

Figure 2: Factors influencing choice of S and T Information sources

Figure 2 shows various factors that influence respondents' choice of S and T information source. It was discovered that "currency of the information source" has the highest response rate of (100%) who claimed that this factor has a "very high influence" on their choice of S and T information sources. This is followed by "ease of source accessibility" and "proximity to the source" with 93.1% each. Similarly, some 17.24% respondents claimed that "familiarity with the source" has "no influence" on their choice. Similarly, 82.76% and 79.31% claimed that "reliability of the information source" and

"affordability of source" respectively has a "very high influence" on their choice.

Table 6: Major purpose of using S and T information

Purpose	Daily	Weekly	Monthly	Less often	Never
For research	29(100%)	0	0	0	0
For classroom teaching	12(41.38%)	17(58.62%)	0	0	0
For preparing lesson notes	13(44.83%)	16(55.17%)	0	0	0
For general interest	5(17.24%)	20(68.99%)	2(6.90%)	2(6.90)	0
For further study	0	4(13.79%)	24(82.76%)	1(3.45%)	0
For preparing for conference/seminar	0	3(10.34%)	23(79.31)	3(10.34%)	0
For innovation	7(2.13%)	6(20.69%)	16(55.17%)	0	0
For writing technical papers	2(6.90%)	17(58.62)	10(34.48%)	0	0

Table 6 shows that all the respondents use S and T information on "daily" basis for research/ studies. Some 44.83% and 41.38% respondents claimed also claimed to use S and T information on "daily" basis for "preparing lesson notes" and "classroom teaching" respectively. Similarly, 68.99% and 58.62% claimed to use it on "weekly" basis for general interest and writing of technical papers. Some 82.76% claimed to be using it on "monthly" basis for further study.

Figure 3 shows various access difficulties experienced by the respondents. Prominent among these difficulties are lack of awareness by their Institution Library (93.1%) and lack of access to current Science and Technology journals in the at their Institution Library (93.1%). Another major difficulty is not finding the required information in the Institution Library (82.76%). Some 37.93% claimed that they experience difficulty in paying online to access full text information. Only 10.34% claimed to find it difficult to access needed S and T information through their mobile devices; while 37.93% claimed to experience information overload. Some 24.13% also claimed to experience technical difficulties in downloading required full text articles

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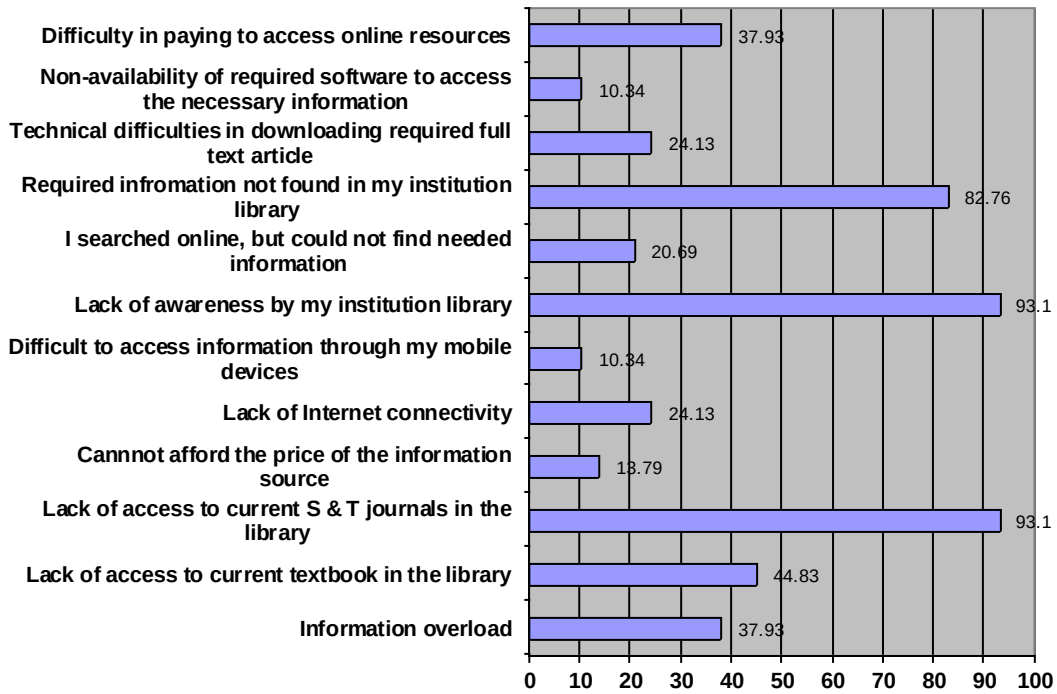

Figure 3: Access difficulties analysed

Discussion of Findings

The study revealed that the awareness level of the academic staff about the availability of S and T information was high and the major means of getting informed are through the use of Search Engines on personal internet devices, suggestions from friends and academic conferences. The institution's library has no website and this prevents the academic staff from using such mean. 13.79% of the 36 respondents claimed their awareness through the institution library. 100% of the respondents use their personal library, mobile devices and websites, while 75.86% contact colleagues on daily basis as their major means of accessing S and T information. This is in line with Ray and Day (1998) claimed that such means offer faster access to information. It was also discovered that many of the respondents use the institution library less often, or never. This may not be unconnected with difficulties faced in using the institution library. Lack of access to current S and T journals and textbooks in the library corroborates Ugah (2007) findings. This becomes imperative as the study shows that the major factor influencing the respondents' choice of information S and T information is *currency* and ease of source accessibility. This equally affirms Angchun, Turner, Lin and Alemneh (2011) study which revealed that most of the academic staff make use of online resources more than printed materials.

Conclusion

There is the need for timely access to reliable information, which is the bedrock of national development. This is crucial to the development of the science and technological sector, which in turn is one of the markers of a developed society. Though the academic staff level of awareness of availability of science and technology information resources library was high, they were not accessed and used. The academic staff prefer using Internet resources to the library resources in line with what is currently required for globalization. However, due to certain access difficulties experienced in using the institution library or accessing online full-text journals, most of them rely on their personal collections, mobile devices to use Internet search engines and contact colleagues in gathering necessary S and T information.

Recommendations

Based on the findings, the study recommends that:

- More awareness programmes and mechanisms should be put in place by the institution library on newly available S and T information resources and this could be best achieved by developing a functional library website or installing the Mobile Library App, which could be used as a tool for creating awareness or *advertising* newly acquired resources to the academic staff. Mobile/ e-mail alerts services technologies will also assist the institution on this.
- Procurement of *current* S and T textbooks, database and sustained subscription to S and T journals is crucial because access to Scientific and Technical information is imperative to embarking on scientific investigations.
- Individual academic staff profile has to be captured by the Library with a view to identifying their research interests. This will avail the library the opportunity to effectively provide the exact related information that may be needed on timely basis.
- The library also needs to enlighten the academic staff on how to source for S and T information from various sources and the need to develop their information literacy skills.
- The academic staff, researchers and every information user should not substitute the Internet for the library, as the library remains the most reliable information source.

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