

## **Information Needs and Information-seeking Behavior of Laboratory Technologists in a Health-based University in South-East, Nigeria**

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Received: 17 May 2024

Reviewed: 15 June 2024

Accepted: 25 May 2025

### **Abstract**

Laboratory-based research plays a vital role in achieving ground-breaking discoveries and scientific development. This type of research method is aided by Laboratory Technologists who provide professional support across a wide range of laboratory tasks. Consequently, this study examined the information needs and information-seeking behaviour of Laboratory Technologists to give an understanding of how they seek work-related information. The study is anchored on Wilson's (1996) Model of information behaviour, which guided the generation of four research objectives for the study. It adopted a descriptive survey research design for a population of 45 Laboratory technologists in David Umahi Federal University of Health Sciences (DUFUHS). The questionnaire was used to elicit data from the respondents. Out of the 45 copies distributed, 35 were returned, 34 were found usable, and were subjected to descriptive analysis. The study found that Laboratory Technologists primarily need information to promote innovations and new methodologies in scientific research, as well as to assist academics in obtaining and executing grants. They had a high utilization of information resources, particularly impersonal sources. This is followed by electronic resources and then print. The determinants of their information-seeking behaviour were source characteristics, role-related variables, demographic and psychological variables. The Laboratory Technologists were able to process and use the retrieved information. The study concluded by asserting that Laboratory technologists are a vital cog in the wheel of every research-based institution and that the information they retrieve benefits the entire research team.

**Keywords:** Information Needs, Information-Seeking Behavior, Laboratory Technologists, Wilson Model, Nigeria.

## Introduction

The realities of the 21<sup>st</sup> Century have significantly altered human experiences, transitioning them into an online environment driven by information and communication technologies (ICTs). The prevalence of these technologies has precipitated an information ecosystem characterized by information explosion and the resultant need for up-skilling to navigate the myriad of information in circulation successfully. This implies how people react or behave in their quest to retrieve the required information that matches their needs. As such, how various categories of people seek information and their behavioral disposition during the information search process have been examined by several studies. The synthesis of studies on information-seeking behavior of professoriate (Nwone & Mutula, 2018), Faculty members (Bhatti, 2010; Ogunbodede & Oniovosa, 2019; Kamada, Martin, Slack & Kramer, 2021), Researchers (Okonoko, Ojukwu & Mazah, 2015; Makinde, Jiyane & Mugwisi, 2021; Ogunode, Oshinaike & Tomomowo-Ayodele, 2022) and Scientists (Wellings & Casselden, 2017), show that members of the academic community are in continuous quest for work-related information.

The academic community often refers to a group of people within an institution of higher learning, such as a university. At the center of such an institution is the production of knowledge (Huang & Xiong, 2023), through teaching, learning, and research. A key ingredient in conducting research is scientific information (Igbinoia, 2017). The need for such information is heightened in medical or health-based universities, given their high concentration of science-based research and laboratory work. Consequently, universities now recruit Laboratory Technologists responsible for providing professional support to members of the academic community in their laboratory-based research activities.

Although there could be minor variations in the expectations from Laboratory Technologists, their obligation usually centers around research support services. They ensure seamlessness in the science or laboratory-based research that produces innovation. Cancer Research UK (2024) affirmed that they form the backbone of research efforts and that they are expected to be skilled in laboratory techniques and procedures. By implication, the success of scientific research and the overall objectives of research-based institutions could be influenced by the intellectual disposition of Laboratory Technologists. This disposition could be a function of the information at their disposal, available sources to meet their information needs, and their information-seeking behaviour (interchangeably used as ISB). However, there is a scarcity of scholarly investigations on the information-seeking behaviour of Laboratory Technologists who are vital members of every research team. As such, there is yet no robust documentation of the activities of Laboratory Technologists, undertaken in the quest to identify a message or content that meets their perceived need for information. Therefore, this study examines the information-seeking behaviour of Laboratory Technologists, using David Umahi Federal University of Health Sciences as a case study.

### David Umahi Federal University of Health Sciences

The David Umahi Federal University of Health Sciences (DUFUHS) was established in 2021 and is currently the only Federal Government-owned University of Health Sciences in the South-East (SE) geopolitical zone of Nigeria. The University, located in the Uburu community of Ohaozara Local Government Area in Ebonyi State, is one of the fastest-growing universities in Nigeria. The school currently offers 23 programs across seven faculties and is attached to a Federal Teaching Hospital, which has major centers and units (DUFUHS, 2024). In driving her

vision of developing the highest form of quality manpower in the healthcare sector, the University has a good blend of personnel that cuts across Academics, Laboratory Technologists, Administrative, Technical, and Support staff. While the University has given adequate attention to setting up research laboratories in line with its vision and core values, there is a vital place for Laboratory Technologists in bringing this to fruition. Therefore, an in-depth study of how these Laboratory Technologists seek information requires scholarly investigation.

### **Problem statement**

The implicit nature of information needs and the proliferation of information sources make it challenging to clearly ascertain what work-related information Laboratory Technologists require and their preferred sources. This difficulty could compromise their work efficiency, which invariably impedes laboratory-based research in health universities. It is uncertain what factors could interfere with Laboratory Technologists' behaviour in their quest for work-related information. This accounts for the perceived difficulty in accessing and properly using work-related information among professionals. Moreover, there is a scarcity of empirical investigations on the information needs and seeking behaviour of Laboratory Technologists, particularly in health-based universities with a high proclivity to laboratory-based research. Based on those as mentioned earlier, this study examined the information needs and information-seeking behaviour of Laboratory Technologists in the only federal health-based university in the South-East Region of Nigeria.

### **Objectives of the Study**

The main objective of this study is to examine the information needs and information-seeking behaviour of Laboratory Technologists in DUFUHS. To achieve this, the specific objectives of the study are to:

- i. ascertain the information needs of Laboratory Technologists in DUFUHS;
- ii. determine the frequency of information resources' utilization by the Laboratory Technologists,
- iii. determine the determinants of information-seeking behaviour among the Laboratory Technologists, and
- iv. Examine the level of information processing and use among the Laboratory Technologists.

### **Theoretical Framework**

Within the context of Information Science, discourse on information behaviour and subsequently, information-seeking behaviour, becomes more meaningful. Research on information behaviour originated around 1941 and has since proliferated (Wilson, 1999). Several models have been developed to explain the behaviour of people when seeking information from either a formal or informal information system. Some of these models are the Krikalas model of 1983; the Kuhlthau model of 1991 and 1993; the Ellis Model of 1989; the Leckie, Pettigrew and Sylvain model of 1996; the Ingwersen model of 1992 and 1996; the Wilson Model of 1981 and 1996. The study of Jooshideh, Zerehsaz, and Akhshik (2024) affirms the relevance of using models in ISB research. In providing a working strategy or framework for this present research, the Wilson Model of 1996 will be adopted.

The Wilson model of 1996 is an extension or improvement of T. D. Wilson's (1981) model

of information behaviour. At the core and beginning of Wilson's model is the presence of an information need, which users seek to meet through formal and informal systems. Accordingly, a theoretical assumption of this model, as given by Niedźwiedzka (2003, p.4), is that "information needs are secondary needs, caused by primary needs, which by definitions in psychology can be defined as physiological, cognitive, or affective". The model also suggests that particular barriers exist in the information-seeking process. These barriers necessitated the 1996 model, which has now been represented as intervening variables.

The term "intervening variables" implies that their influence might be beneficial for both preventive and information usage (Wilson, 1999). The replacement of "barriers" with "intervening variables" suggests that these factors are not always negative, hindering the search process; they could also help to support or improve the process. The model, as seen in Figure 1, reveals that these intervening variables include psychological, demographic, interpersonal, environmental variables, and source characteristics. Another distinct feature of this model is the presence of a feedback loop known as "information processing and use", which is necessary for the satisfaction of information needs. For this study, four intervening variables in the model (psychological variable, demographic variable, role-related interpersonal variable, and source characteristics) were considered, while the environmental variable was excluded. These variables will be used to address the study's objectives on determinants of ISB.

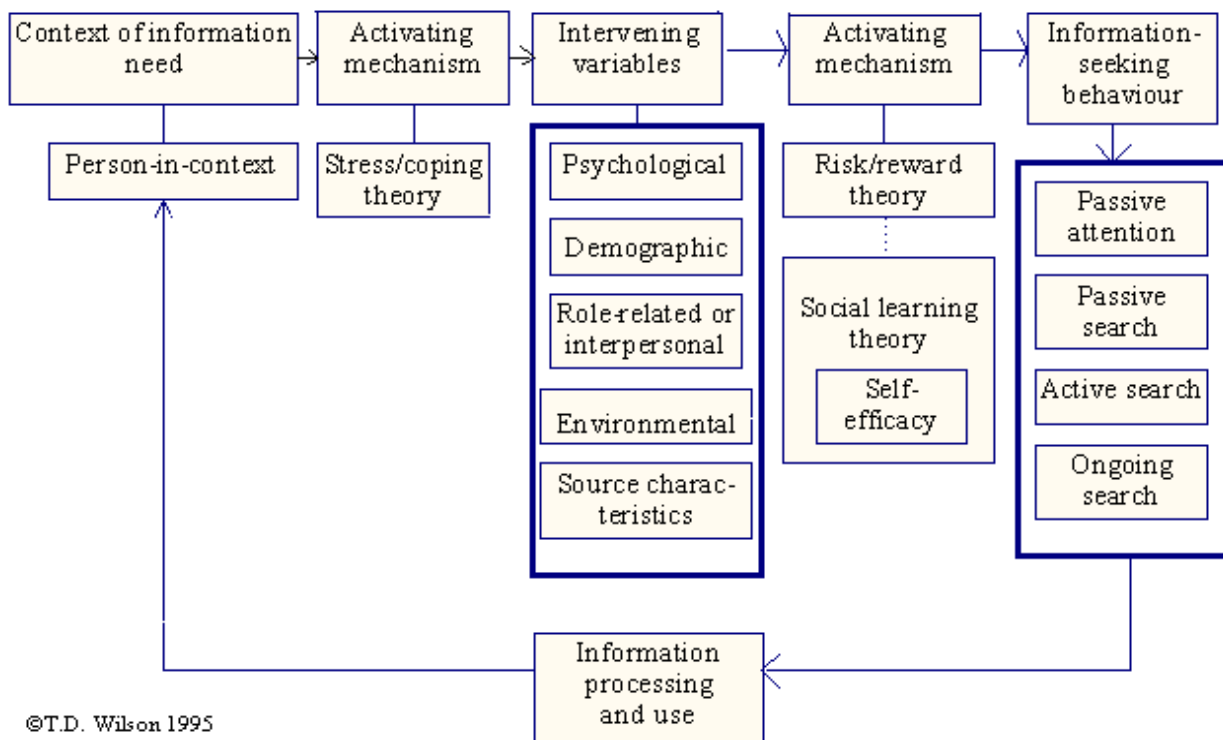


Figure 1: Wilson's (1996) Model of information behaviour (Source: Wilson, 1999)

The model was adopted for this study due to its peculiarity and relevance to the objectives. First, Wilson's model is one of the few that underscore the concept of information needs as a preliminary stage in the information-seeking process, aligning with the first objective of this study. Also, in either the passive, active, or ongoing search for information, there is usually an engagement with information sources, either formally or informally. Also, the model included

an activating mechanism that can be used to explain the preference for information sources. While the study also seeks to determine the determinants of the Laboratory Technologists' information-seeking behaviour, this is catered for in the model by the presence of intervening variables.

### Literature Review

Man, as an "infovore," is constantly in the quest for information, either out of an inherent motivation to acquire information, driven by curiosity and a penchant for exploration, or to better adapt to everyday problems. Thus, man's need for information is as old as the existence of mankind, making information a long-standing requirement. The concept of information need has received various definitions within the parlance of ISB. According to Belkin in Abdullahi, Igbिनovia and Solanke (2015, p.1), information need is defined "as an anomalous state of knowledge (ASK) or gap in the individual's knowledge in sense-making situations". As such, information need is an individual's feeling of a dearth in their state of knowledge for which they require information.

Savolainen (2017, p. 3) notes that: "...even though information need is probably the most widely used construct explaining why people engage in information seeking, this concept is still vague". Borlund and Pharo (2019) affirm that the concept of information needs remains poorly understood. However, Patel and Oza (2021) note that information need is what an individual ought to have for his work, his research, his education, his creation, etc. Taylor (1968) identified four levels of information need: visceral need, the conscious need, the formalized need, and the compromised need. Wilson (1981) suggested that instead of speaking about "information needs", we should instead address information searching performed to satisfy physiological, affective, and cognitive needs. These are considered the primary need that leads to an information need, which is regarded as a secondary need. Thus, information as a secondary order of need often arose out of the desire to satisfy the primary (Wilson, 1981). The primary needs may stem from personal needs, an individual's social role, or their career environment (Fitzgerald, 2020). For this study, a description of the needs and seeking behavior arising from the work environment of Laboratory Technologists will be delineated.

Since there seem to be limited studies that investigate the information-seeking behaviour of Laboratory Technologists, the literature will be empirically reviewed using their 'counterparts' in academia to draw inferences regarding the variables of this present study. For example, Fitzgerald (2020) revealed that the information needs of faculty members stem from the need to improve professional practice, personal inclinations, and sustain their careers through publications. This implies that the information needs of professionals, including Laboratory Technologists, are primarily work-related.

A study on ISB of professors in selected Nigerian federal universities was carried out by Nwone and Mutula (2018, p. 24). The study, as part of its objectives, examined the information needs of the professorate using a descriptive survey design for a population of 246 members of the professorate across two factors (Social sciences and Humanities) in three federal universities (University of Ibadan, University of Lagos, and Obafemi Awolowo University). The analysis of retrieved data revealed that "all the professors considered information for developing contents used for teaching, information for conducting research, and information to keep abreast of current developments in their fields of study as a 'very important' information need". This was closely followed by the need for educational information, which 86.1% of the

respondents considered very important. Regarding the information sources used by the professorate, the results showed that the majority 'always' seek job-related information from online databases (77%), electronic journals (71.5%), web portals (52.7%), and websites (50.9%). This showed that the respondents are inclined to the digital option of information sources. The study concluded that the information behaviour of the respondents is mainly defined by their need for job-related information, such as teaching and research.

Folorunso (2014) investigated the ISB of social science researchers at the Nigerian Institute of Social and Economic Research (NISER). The study surveyed 60 scholars from the research Institute using a questionnaire as a means of data collection. Out of the 60 copies of the questionnaire distributed, 58 were duly completed and subjected to descriptive analysis. The study's results showed that 91.4% of the respondents regularly used electronic information resources for research and consultancy purposes. The others used it occasionally for the same purposes. The study also revealed that 75% of the respondents initiate their information search from the Internet due to the large amount of information available, the flexibility, and ease of use. These serve as motivating factors for information source preference. The study also reveals that adequate skills and knowledge to use information resources can serve as an intervening variable or determinant. These skills are primarily developed by respondents through familiarity with the information resources, as indicated by 81% of the respondents. Other studies that show research scholars' preference for the Internet as an information source were those of Lone, Hussain Mir, and Ganie (2017), Ogunbodede and Oniovosa (2019), and Joy and Urhiewhu (2019).

Okonoko et al. (2015), through an ISB study of faculty members in a Nigerian university (Federal University of Petroleum Resources), revealed factors that could affect the ISB of the academics. The study, which adopted a survey research method, used a questionnaire as a tool for data elicitation. The questionnaire was distributed to 168 academics, achieving a 98% response rate. Analysis of data showed that these respondents' information needs were mainly academic and research-related. Their primary source for meeting these needs is books (online and print), and their demand for information usually comes from Google and other online sources. The study revealed that the factors that impeded the ISB of the respondents were poor internet facilities, irregular power supply, poor search/computer skills, and lack of time. This finding implies adjusting variables that stimulate the ISB of academics.

Haines, Light, O'Malley, and Delwiche (2010) investigated the ISB of basic science researchers and its implications for library services using a qualitative method. Consequently, semi-structured interviews were used to elicit data from the respondents, who were basic science researchers at a medical university. The outcome of the interview process shows a strong preference for online resources over print resources. This preference was due to the convenience and immediacy associated with online resources. The study posits that library services should be tailored to the information-seeking patterns of the researchers. As such, there is a need for libraries to integrate their resources and services into the work lives of their users.

An examination into the ISB of engineers and scientists working in the UK was carried out by Wellings and Casselden (2017). The study employed an online questionnaire and interview methods to elicit responses from 58 engineers and 57 scientists, resulting in a total population of 115 participants. This, however, could not be generalized to the broader population of engineers and scientists in the United Kingdom (UK). The study found that the respondents mainly used online search engines, specialist databases, and scholarly search engines to obtain

information. Also, the primary information sources used were from within their organizations (colleagues and documents). They preferred the electronic version of these sources because of their searchability. However, the study noted that the respondents lack a basic understanding of the functionality of online search engines, even though they rely heavily on them for work purposes.

The factors or barriers that could influence the ISB of researchers in science and technology were the crux of Makinde, Jiyane & Mugwisi's (2019) investigation. The study, conducted with researchers from six departments of the Federal Institute of Industrial Research Oshodi (FIRO) in Nigeria, received 114 responses out of the 165 copies of the questionnaire distributed. The analysis of the retrieved data showed that the factors responsible for the difficulty in accessing information in the Institute's library were mainly poor infrastructure (64.9%), environment (56.1%), bibliographic obstacles (37.7%), and cost of information access (28.1%). Meanwhile, the factors that affect the ISB of the respondents were trustworthiness (84.2%), accessibility (81.6%), nature of the problem (79.8%), source of information (77.2%), familiarity and prior success (74.6%), and time (55.3%). Although this study was carried out within the context of the institute's library, it also examined the possible challenges these respondents faced in searching for the information on the web environment and the results in descending order were electrical power stability (79.8%), reliability of electronic resources (42.1%), HTML documents (34.2%) and issues with referencing e-resources (32.5%). These issues in the context of this present study could be considered as determinants of ISB, as their positive value could improve the information-seeking process and vice versa. In the current dispensation, where professionals are likely to have a penchant for electronic sources, the characteristics of these sources will determine the information seeker's experience.

### **Materials and Methods**

The study adopted descriptive survey research to elicit data from Laboratory Technologists in DUFUHS, describing their current information needs and information-seeking behaviour. The population of the study comprised the 45 Laboratory Technologists in DUFUHS (henceforth known as 'the respondents'), who are on full-time appointments with the health-based university. A structured questionnaire was adopted as the research instrument to elicit data from the respondents.

The questionnaire was structured into four sections (A to D). Section A elicited data on the information needs of the respondents. Items on this scale were generated from observing the operations of the respondents. Section B elicited data on the frequency of information resources utilization by the respondents. The scale is an adaptation of the information source scale from the work of Nwone and Mutula (2018). The scale measures the information sources used by the respondents based on three categories: electronic, print, and interpersonal sources. The items are measured on a 4-point Likert scale of Always, Occasionally, Rarely, and Never, with scores ranging from 4 to 1, respectively. Section C of the questionnaire elicited data on the determinants of the respondents' information-seeking behaviour. The items on the scale were generated from the study of Niedźwiedzka (2003) and adapted to this study by placing the concepts in the context applicable to the respondents. Section D elicited data on the level of 'information processing and use' among the respondents. The items in Sections A, C, and D were measured on a 4-point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), with scores ranging from 4 to 1, respectively. Where applicable, the

criterion mean will be 2.5 based on the 4-point Likert scale used in the study.

The research instrument was given content and face validity by two experts, a Technologist from the Department of Industrial and Medicinal Chemistry and the other from the University Library. The validators considered whether the items on the questionnaire measure or cover what they should in line with the study's objectives. They also ensured that concepts were rightly used and sentences were well structured. The corrections from the experts were implemented to generate an updated version of the instrument. The analysis of the retrieved data was done descriptively using frequency and mean ( $\bar{x}$ ) scores.

### Results

A total of 45 copies of the questionnaire were distributed. Of these, 35 were completed and returned by respondents, and 34 copies were found usable for analysis. This gives a response rate of 78%. This is considered adequate for analysis since the standard acceptable for most research work is 60%.

#### Demographic information of the respondents

Table 1 shows the demographic distribution of the respondents across gender, highest educational qualification, and years of experience. The result revealed that there are more male Laboratory Technologists in the institution under investigation. Although this is not sufficient to imply that the role is gender-based, it opens up the need to examine the role of gender in scientific research. The majority of the respondents who participated in the study have a first degree in their respective science-related disciplines, which is the basic qualification required to be employed as a Laboratory Technologist. Also, the majority of the respondents have less than 5 years of experience in the job. By implication, most of the Laboratory Technologists in the institution are at the entry level.

Table 1  
Distribution of respondents by demographic characteristics

S/N	Characteristics	Frequency	%
<i>Gender</i>			
1.	Male	20	59
2.	Female	14	41
<i>Highest Educational Qualification</i>			
1.	Higher National Diploma	-	-
2.	Bachelor's degree	31	91
3.	Master's degree	3	9
<i>Years of Experience</i>			
1.	5 years and below	28	82
2.	6-10 years	5	15
3.	11-15 years	1	3
4.	Above 15 years	-	-

#### Information needs of the laboratory technologists

The study revealed that Laboratory Technologists experience several work-related information needs. Table 2 shows that all the information needs used in the analysis applied to the respondents, but to varying extents. The majority of the respondents affirmed with a mean ( $\bar{x}$ ) score of 3.5 that they need information to promote innovations and new methodologies in

scientific research, and to assist academics in getting grants and executing them. Thus, one fundamental need for information by Laboratory Technologists is to find better ways to do their job. Also, the result shows the inclination of the respondents towards grants, which could be informed by the nature of their discipline or their institutional affiliation. The information least needed, though slightly above the criterion mean, was for training in laboratory techniques and safety.

Table 2

*Information needs of the respondents*

S/N	ITEMS <i>I need information on:</i>	SA	A	D	SD	( $\bar{x}$ )
1	Where to get research specimens	14 (41.2%)	14 (41.2%)	2 (5.9%)	4 (11.8%)	3.1
2	Research support services	16 (47.1%)	14 (41.2%)	2 (5.9%)	2 (5.9%)	3.3
3	Safety measures in the laboratory	8 (23.5%)	14 (41.2%)	6 (17.6%)	6 (17.6%)	2.7
4	Quality control and assurance in the laboratory	12 (35.3%)	12 (35.3%)	4 (11.8%)	6 (17.6%)	2.9
5	Laboratory equipment handling	8 (23.5%)	12 (35.3%)	8 (23.5%)	6 (17.6%)	2.6
6	Training in laboratory techniques and safety	14 (41.2%)	10 (29.4%)	8 (23.5%)	2 (5.9%)	3.1
7	Proper documentation of laboratory results	12 (37.5%)	12 (37.5%)	4 (12.5%)	4 (12.5%)	3.0
8	Research proposals and publications	16 (47%)	10 (29.4%)	4 (11.8%)	4 (11.8%)	3.1
9	Assist academics in getting grants and executing them	20 (58.8%)	12 (35.3%)	2 (5.9%)	-	3.5
10	Research collaboration across departments and institutions	14 (41.2%)	16 (47.1%)	2 (5.9%)	2 (5.9%)	3.2
11	Promoting innovations and new methodologies in scientific research	20 (58.8%)	12 (35.3%)	2 (5.9%)	-	3.5
12	Proper storage of research specimens and materials	14 (41.2%)	16 (47.1%)	4 (11.8%)	-	3.3
13	Maintenance of laboratory equipment	10 (29.4%)	16 (47%)	2 (5.9%)	6 (17.6%)	2.9
14	Design of practical manuals	14 (41.2%)	12 (35.3%)	6 (17.6%)	2 (5.9%)	3.1
15	Ensuring data integrity	12 (35.3%)	18 (53%)	4 (11.8%)	-	3.2

### **Frequency of information resources' utilization by the laboratory technologists**

The analysis revealed that Laboratory Technologists highly utilize information resources, as the grand mean of 2.9 exceeds the criterion mean. However, the frequency of utilization varies based on resource type. The study showed that the Laboratory Technologists rely more on interpersonal sources of information, as depicted by the mean score of 3.0. In particular, these professionals meet their information needs mainly from faculty members. Interpersonal sources are followed by electronic resources ( $\bar{x}$ =2.9), primarily due to professionals' use of websites and online databases (Table 3). Though least on the list, with a mean score of 2.8, the

Laboratory Technologists are said to utilize print resources. On print resources, the professionals utilize more books and newspapers.

Table 3

*Information resources' utilization by the respondents*

S/N	Information Resources	Always	Occasionally	Rarely	Never	( $\bar{x}$ )
<i>Electronic Resources = 2.9</i>						
1	Online databases	12 (35.3%)	16 (47%)	6 (17.6%)	-	3.2
2	Electronic journals and books	15 (44.1%)	10 (29.4%)	8 (23.5%)	1 (2.9%)	3.1
3	Wikis	7 (20.6%)	13 (38.2%)	6 (17.6%)	8 (23.5%)	2.6
4	Websites	17 (50%)	11 (32.4%)	6 (17.6%)	-	3.3
5	Blogs	5 (14.7%)	9 (26.5%)	8 (23.5%)	12 (35.3%)	2.2
<i>Print Resources = 2.8</i>						
6	Journals	9 (26.5%)	11 (32.4%)	8 (23.5%)	6 (17.6%)	2.7
7	Books	13 (38.2%)	9 (26.5%)	11 (32.4%)	1 (2.9%)	3.0
8	Scientific magazines	10 (29.4%)	9 (26.5%)	9 (26.5%)	6 (17.6%)	2.7
9	Newspapers	10 (29.4%)	14 (41.2%)	10 (29.4%)	-	3.0
10	Reference materials like the Encyclopedia	10 (29.4%)	10 (29.4%)	4 (11.8%)	10 (29.4%)	2.6
<i>Interpersonal sources = 3.0</i>						
11	Colleagues	14 (41.2%)	10 (29.4%)	10 (29.4%)	-	3.1
12	Faculty members (lecturers)	16 (47.1%)	14 (41.2%)	4 (11.8%)	-	3.4
13	Conference gatherings	8 (23.5%)	18 (53%)	8 (23.5%)	-	3.0
14	Professional Associations / Societies	7 (20.6%)	11 (32.4%)	9 (26.5%)	7 (20.6%)	2.5
15	Friends	15 (44.1%)	11 (32.4%)	6 (17.6%)	2 (5.9%)	3.1
Grand Mean = 2.9						

### Determinants of information-seeking behaviour among laboratory technologists

Table 4 shows the effect of four variables (psychological, demographic, role-related or interpersonal, and source characteristics) on the ISB of the Laboratory Technologists. When considered together, these variables had an effect on the ISB of the professionals with a grand mean of 3.1. When considered separately, each of them also affected the ISB of the professionals. However, source characteristics had more effect on ISB, implying that the information sources consulted in the seeking process greatly affect the disposition or behaviour of the seeker. This is particularly because the respondents want a reliable, easy-to-access source that is also current and relevant to their needs. The source characteristic is followed by role-related or interpersonal variables, which have a mean score of 3.3. This implies that Laboratory Technologists, due to their job, are actively seeking information that will satisfactorily meet their work-related needs. While demographic variables also affected ISB, it is striking to note that gender stands out as the demographic variable with the most effect, followed by level of

education. Meanwhile, on psychological variables, Laboratory Technologists' interest and subject-based knowledge had a greater influence on their ISB.

Table 4

*Determinants of information-seeking behaviour among the respondents*

S/N	Determinants	SA	A	D	SD	( $\bar{x}$ )
<i>Psychological Variable = 2.7</i>						
1	My feelings sometimes affect how I search for work-related information.	7 (20.6%)	9 (26.5%)	10 (29.4%)	8 (23.5%)	2.4
2	My self-perception of my knowledge and skills affects my ability to search and retrieve information effectively.	7 (20.6%)	11 (32.4%)	13 (38.2%)	3 (8.8%)	2.6
3	My outlook on life and value system determined where I search for scientific information.	5 (14.7%)	11 (32.4%)	13 (38.2%)	5 (14.7%)	2.5
4	My interest and knowledge of the subject matter affect the time it takes to complete an information search.	17 (50%)	11(32.4%)	6 (17.6%)	-	3.3
5	My attitude toward life affects how I conduct myself when searching for information.	5 (14.7%)	15 (44.1%)	11 (32.4%)	3 (8.8%)	2.6
<i>Demographic Variable = 2.9</i>						
6	If I were younger or older, I would conduct myself better in my information search process.	6 (18.8%)	14 (43.8%)	12 (37.5%)	-	2.6
7	My gender affects my ability to retrieve and use information to meet my needs.	17 (50%)	14 (41.2%)	2 (5.9%)	1 (2.9%)	3.4
8	My social and economic status hinders my ability to access the information I need.	7 (20.6%)	7 (20.6%)	9 (26.5%)	11 (32.4%)	2.3
9	Higher education will better equip me to navigate through information sources and evaluate their authenticity.	19 (55.9%)	7 (20.6%)	3 (8.8%)	5 (14.7%)	3.2
10	My job experience informs my decision on where and how to get the information resources I need.	9 (26.5%)	21 (61.8%)	-	4 (11.8%)	3.0
<i>Role-related or Interpersonal Variables = 3.3</i>						
11	The nature of my job requires me to search for research-based information constantly.	16 (47.1%)	18 (52.9%)	-	-	3.5
12	My superior and colleagues expect me always to provide validated scientific information.	13 (38.2%)	11 (32.4%)	7 (20.6%)	3 (8.8%)	3.0

S/N	Determinants	SA	A	D	SD	( $\bar{x}$ )
<i>Psychological Variable = 2.7</i>						
13	Given my level of responsibility in my department, I am often seeking information from available sources.	17 (50%)	15 (44.1%)	2 (5.9%)	-	3.4
14	It is part of my job requirement to determine my work-related information needs and meet them satisfactorily.	19 (55.9%)	13 (38.2%)	2 (5.9%)	-	3.5
15	The standard of my profession determines how I gather and obtain information for work purposes.	18 (52.9%)	10 (29.4%)	4 (11.8%)	2 (5.9%)	3.3
<i>Source Characteristics Variable = 3.4</i>						
16	I prefer to fill my knowledge gap with information from a reliable source.	25 (73.5%)	7 (20.6%)	2 (5.9%)	-	3.7
17	I gather or obtain information that is only appropriate to my information needs.	17 (50%)	11 (32.4%)	2 (5.9%)	4 (11.8%)	3.2
18	In searching for information, I only search for sources that are current and relevant to my needs.	21 (61.8%)	6 (17.6%)	5 (14.7%)	2 (5.9%)	3.4
19	The ease of access to an information source will determine how often I use it.	17 (50%)	12 (35.3%)	5 (14.7%)	-	3.4
20	An incomplete information source makes me anxious and agitated.	15 (44.1%)	11 (32.4%)	7 (20.6%)	1 (2.9%)	3.2
Grand Mean 3.1						

### The Level of information processing and use among the laboratory technologists

Table 5 shows that the professionals process and use information to a high level, as implied by a grand mean score of 3.3. On the measuring scale, items 4 to 7 and 10 had mean scores of 3.4, constituting the highest mean score in the scale. However, items 2, 8, and 9 had the lowest score of 3.1. The scale revealed that the Laboratory Technologists are well able to handle or manage the information they retrieved to meet their needs

Table 5

*Level of information processing and use among the respondents*

S/N	STATEMENTS	SA	A	D	SD	( $\bar{x}$ )
1	When I retrieve information from any source/resource, I subject it to evaluation for quality control.	13 (38.2%)	17 (50%)	4 (11.8%)	-	3.3
2	Oftentimes, when I retrieve new information, I merge it with my already existing knowledge to generate new ideas.	10 (29.4%)	18 (52.9%)	4 (11.8%)	2 (5.9%)	3.1
3	Information that is useful to my work is often stored externally for preservation.	17 (50%)	11(32.4%)	3 (8.8%)	3 (8.8%)	3.2
4	When I am searching through an information source, I often take notes, highlight, make annotations, and bookmark for easy understanding and recall.	20 (58.8%)	10 (29.4%)	2 (5.9%)	2 (5.9%)	3.4
5	I am often able to put the information I retrieve into productive use.	17 (50%)	14 (41.2%)	3 (8.8%)	-	3.4
6	I easily apply the retrieved information to achieve its purpose.	14 (41.2%)	20 (58.8%)	-	-	3.4
7	My curiosity is often satisfied after completing my search for information.	18 (52.9%)	12 (35.3%)	3 (8.8%)	1 (2.9%)	3.4
8	I always get the correct information to accomplish set goals.	8 (23.5%)	22 (64.7%)	4 (11.8%)	-	3.1
9	My research team is always satisfied with how I apply the information I provide during our research activities.	9 (26.5%)	19 (55.9%)	5 (14.7%)	1 (2.9%)	3.1
10	I can better understand work-related issues and my job description with the retrieved information.	17 (50%)	13 (38.2%)	3 (8.8%)	1 (2.9%)	3.4
Grand Mean = 3.3						

### Discussion

The study found that Laboratory Technologists primarily need information to promote innovations and new methodologies in scientific research, as well as to assist academics in obtaining and executing grants. In the biomedical research setting, Grefsheim and Rankin (2007) noted that a common problem for scientists is tracking grant-related publications, which can provide essential information for scientists and, by extension, Laboratory Technologists. This gives credence to the result of this study. Promoting innovations in science-based institutions is critical to researchers and research institutions (Dahm, Byrne, Rogers, & Wride, 2021), which makes it a priority for Laboratory Technologists.

The study revealed that Laboratory Technologists frequently utilize information resources, particularly impersonal sources. This corroborates the findings of Bitagi and Ozioko (2015) that

scientists in Agricultural Research Institutes in Nigeria utilized their information resources to a range of average to very high extent. Regarding the type of information sources used, the study aligns with Haines et al. (2010), who asserted that researchers in basic sciences primarily seek information from their laboratory coworkers and colleagues from other institutions. Fitzgerald (2020) noted that impersonal contacts are the primary source scholars consult for details because they are easily accessible and knowledgeable about the subject matter. In an empirical investigation on the health information-seeking behaviour of pregnant women by Khosravi, Ebrahimidavvasi, BasirianJahromi, and SeyyedHosseini (2023), interpersonal interaction was revealed to be the most significant component contributing to health information-seeking behaviour. Also, the study of Kamada, et al. (2021) showed that instead of coming to the physical library, faculty, staff, and students of The University of Arizona College of Pharmacy and the Health Sciences prefer to seek information from their peers or colleagues. Wellings and Casselden (2017) also found that colleagues are the most used source by engineers and scientists when seeking information. The study also supports the theoretical assumption of Krikelas's (1983) model, which suggests that information users first seek information from people close by, including friends and colleagues, before searching literature like books and journals.

Contrary to the findings of this study, that of Adeyemi and Esan (2022) revealed that there is no significant relationship between the source of information and ISB. It is worth noting, however, that their study was in the context of COVID-19, which was at some point a public health emergency. This might have affected the result of Adeyemi and Esan (2022).

The study showed that four of the determinants (psychological, demographic, role-related variables, and source characteristics) as contained in Wilson's (1966) model influence the ISB of the Laboratory Technologists. However, source characteristics and role-related variables had more effect on ISB. The study corroborates that of Grefsheim and Rankin (2007), which investigated scientists and science administrators and found that these respondents prioritize the 'accuracy of information' and 'ease of access and use' when evaluating information sources for utilization. In addition, Sapa, Krakowska & Janiak (2014) affirm that the availability of information sources, specific tasks, and professional roles, among others, are factors that characterize the information-seeking behaviour of professionals. Their assertion aligns with the findings of this study, which indicate that role-related variables affected the ISB of Laboratory Technologists. The survey of Kamyar, Kazerani, Shekofteh, and Jambarsang (2023) also suggests that role-related variables affected ISB. The respondents of the study affirmed that knowing how to carry out their jobs (treat cancer) is a motivation for seeking cancer-related health information. By implication, the clarity, understanding, and desire to carry out one's roles or responsibilities in a work environment would influence the ISB of professionals.

Moreover, the study found that the Laboratory Technologists have a high level of 'processing and use' of information to achieve work-related goals. While processing and use of information are vital components of information management, the study of Kamada et al. (2021) showed that the respondents (who would include scientists) of their study were able to manage information effectively as part of their ISB. The ultimate aim of seeking information is for use (Joy & Urhiewhu, 2019); therefore, information use will be high if other elements within the information-seeking process are practical. Thus, if Laboratory Technologists can adequately manage the activities involved in seeking information, they are likely to use the information they have retrieved to meet the purpose for which it was sought.

### Conclusion

Laboratory Technologists are vital members of every science-based research team, and they have information needs that are crucial to the realization of the team's objective(s). This study thus pioneers an investigation into their information-seeking behaviour. As members of the research team, these professionals are in a constant quest for innovativeness in scientific research and provide necessary support to team members. In meeting their information needs, Laboratory Technologists first look within their immediate contact (interpersonal contact) to seek information, before accessing external sources like websites and online databases. Their choice of these external sources seems to be conditioned on the reliability, accessibility, currency, and relevance of the information these sources produce. Thus, in line with the nature of their jobs, they will constantly seek sources perceived as capable of delivering information that meets their needs. Retrieving information is merely a means to an end: the proper management and utilization of information for the collective good of team members.

### Practical suggestions of the study

Based on the study's findings and discussions, practical suggestions are recommended to improve policy and practice in the domain of ISB of Laboratory Technologies. These suggestions are:

- i. Health-based universities and related institutions should set up systems and structures that enhance information sharing between Laboratory Technologists and faculty members, and among the Laboratory Technologists to maximize the potential of interpersonal sources which Laboratory Technologists are more inclined to.
- ii. Health-based universities and related institutions should ensure their websites (which was the most utilized electronic resources) are enriched with sufficient information that will readily meet the information needs of Laboratory Technologists.
- iii. The information on institutional websites and other electronic sources should be credible and reliable, verified through a quality control mechanism, to positively influence the perception and disposition of Laboratory Technologists towards these sources.
- iv. Health-based universities and related institutions should provide Laboratory Technologists with clear and specific roles to help them navigate the information search process, to meet their work-related information needs.

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