TIK ILMEU: Jurnal Ilmu Perpustakaan dan Informasi
ISSN 2580-3662 (online) and 2580-3654 (print)
Vol. 10 No. 2 (2026)
https://journal.iaincurup.ac.id/index.php/TI/index
DOI: 10.29240/tik.v10i2.17150

Research Article

OPEN ACCESS

Electronic Database Utilization by University Students at Institution X: Awareness Level, Usage Intensity, and Encountered Barriers

[1]Sopan Sriwijayanto, [2]Taufik Asmiyanto, [3]Laksmi
[123] Universitas Indonesia, Jawa Barat, Indonesia

Corresponding email: sopan.sriwijayanto@ui.ac.id

ABSTRACT

Objective: This study examined the levels of awareness, utilization, and barriers regarding electronic databases among university students at Institution X, and identified factors associated with utilization.

Methods: A quantitative survey design with purposive sampling was applied to 100 students from nine faculties. Data were collected through an online structured questionnaire of 25 items on a 4-point Likert scale, based on the awareness, utilization, and challenges framework of Asongo et al. and complemented by the Technology Acceptance Model. The instrument was highly reliable (Cronbach's $\alpha = 0.930$). Data were analyzed using descriptive statistics, Pearson correlation, and multiple linear regression.

Results: Students reported high awareness (M = 3.04), utilization (M = 3.09), and challenges (M = 2.79). Awareness of database availability (M = 3.17) exceeded awareness of database types (M = 2.85). The main barriers were internet connectivity, off-campus access, and keyword formulation. Awareness significantly predicted utilization ($\beta = 0.633$, $p < 0.001$), whereas challenges did not ($p = 0.197$); the model explained 51.2% of the variance.

Originality: This study integrates awareness, utilization, and barriers within a single analytical framework focusing specifically on electronic databases, rather than electronic resources in general, in an Indonesian university context.

Conclusion: Awareness is a significant factor associated with database utilization, while reported barriers remain practical concerns for library services. Libraries should combine awareness programs, practical search-skills training, reliable remote access, and systematic evaluation of resource use.

ARTICLES HISTORY
Received: 03-06-2026
Revised: 06-11-2026
Accepted: 06-11-2026
Published: 25-11-2026

KEYWORDS
electronic database; information awareness; utilization constraints; information literacy; college libraries

Introduction

Modern university libraries are no longer just custodians of books, but rather institutions responsible for managing access to various sources of information in electronic form which provide an important infrastructure for learning and researching. Access to electronic databases, such as electronic journals, books, and academic databases, allows the academic world to access scholarly information promptly, efficiently, and flexibly. (Association of College and Research Libraries, 2018; IFLA, 2001; Johnson & Weber, 2018; Nicholas dkk., 2006). This kind of transformation follows suit with the requirements of the Three Pillars of Higher Education (Tridharma Perguruan Tinggi), especially concerning the carrying out of research that is science-based as well as the creation of scholarly works.

As it stands, there has been an exponential evolution in terms of the various means used in the provision of scholarly information. Scholarly articles that are produced

Copyright remains with the author(s), who grant TIK ILMEU a non-exclusive right to publish the article under the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC SA 4.0).

electronically continue to see an increase, and it has become necessary for individuals to use electronic databases in order to get some of the latest scientific findings. Some of these electronic databases include Scopus, Web of Science, ProQuest, EBSCO, and many others. In this regard, access to as well as the use of electronic databases cannot be seen just as an auxiliary skill, but rather as a primary skill that determines the quality of academic works. It is important to note that individuals without the ability to use the various databases effectively can find themselves limited as far as access to current literature is concerned, and ultimately affect the quality of their literature review and references.

In Indonesia, The Government, via the National Library of the Republic of Indonesia (Perpustakaan Nasional Republik Indonesia), has attempted to increase the accessibility of electronic scholarly resources by offering access to various international electronic databases to all universities in the country. Nevertheless, the availability of access technically is not always indicative of the frequency of use on the part of students. There is an evident mismatch between the established facilities and the actual behavior of users (Perpusnas RI Buka Akses Sumber Ilmiah Andal, Perpusnas Dorong Sivitas USI Manfaatkan Database E-Journal, n.d.). Another article by Tiara Sari also sheds light on the existing discrepancies in terms of access to technology that may impede some people from taking full advantage of these resources (*Tantangan yang Dihadapi Pustakawan di Era Digital*, 2025).

Literature Review

Despite rising institutional investments in electronic databases, some studies suggest that their use by students is not yet optimal. In the Philippines, research revealed that although students' knowledge about databases was moderate, their use of the latter was confined to basic research purposes only (Rosales, 2024). The same scenario exists in Africa in Nigeria and many other universities in which complex user interfaces, poor internet connection, and lack of training have been cited as major reasons for ineffective database usage. (Omidiji, 2024; Samuel Ogbemudia Library dkk., 2024).

In addition to technical obstacles, there are also basic obstacles resulting from potential users of the database itself. Information literacy is one of the essential elements in terms of using electronic databases. Well-informed students are able to better identify their needs and search for appropriate sources, while students with low levels of information literacy use general search engines that do not necessarily provide credible sources (Association of College and Research Libraries, 2018; Head & Eisenberg, 2011). Besides individual characteristics, institutional characteristics including the availability of training assistance, convenience of access to the system, and service promotion are also very important in order to promote the use of databases (Corrall dkk., 2013; Dadzie, 2005). Cooperation between librarians and lecturers in implementing the use of databases in class is another approach that increases usage of electronic resources among students.

There are several theoretical perspectives which can be used in explaining database usage behavior. According to the Technology Acceptance Model (TAM), ease of use and usefulness of information technology (Davis, 1989). From the point of view of digital libraries, awareness of the presence and purpose of databases is a cognitive requirement before the perception of ease of use and usefulness is formed. Consequently, awareness can be regarded as a primary factor that occurs before use.

The conceptual framework for the present study will be the one suggested by Asongo, Agoh, and Annune. It highlights three key factors: awareness, utilization, and challenges in the use of electronic information sources (Asongo dkk., 2024). The choice of this theoretical framework is justified by its ability to cover all three dimensions. Cognitive (awareness), behavioral (utilization), and situational (challenges).

Although these studies provide valuable insights into electronic resource utilization, several research gaps remain relevant to the present study. First, some previous studies

examine electronic information resources broadly rather than focusing specifically on electronic databases. Consequently, the particular practices and challenges associated with accessing and using academic databases require further investigation. Second, previous studies often emphasize individual factors, such as awareness and information literacy, or contextual factors, such as internet connectivity and institutional infrastructure, without necessarily integrating these dimensions into a single analytical framework. Third, the extent to which students' awareness translates into actual database utilization, and how technical and institutional challenges affect the effectiveness of that utilization, remains an important issue to investigate in the specific context of University X.

To address these gaps, the present study examines electronic database utilization among students at University X through three dimensions: awareness, utilization, and challenges, drawing on the conceptual framework proposed by Asongo. The framework enables the study to consider students' awareness of available databases, their actual utilization for academic purposes, and the challenges they encounter during the utilization process. Furthermore, the Technology Acceptance Model (TAM) proposed by Davis provides a complementary theoretical perspective for interpreting how perceived usefulness and perceived ease of use may help explain students' acceptance and utilization of electronic databases. By integrating these perspectives, the study seeks to provide a contextual understanding of electronic database utilization and identify factors that may influence its effectiveness at University X.

Based on the information presented above, this research intends to: (1) investigate the level of utilization of electronic databases by the students of University X, and (2) explore the factors affecting the efficiency of the utilization process.

Methods

This study employs a quantitative approach using a non-probability purposive sampling technique. A survey research approach is applied to systematically collect data from the sample in order to describe the extent of electronic database usage and to analyze the influence of awareness and challenges on the use of such databases. (Creswell, 2014; Sugiyono, 2013).

The universe of the study was made up of all active students of University X who could access the electronic databases in the library. The sampling strategy used was non-probability sampling by utilizing purposive sampling. In total, 100 respondents were recruited from nine faculties namely: Faculty of Islamic Economics and Business (n=39), Faculty of Da'wah and Communication (n=25), Faculty of Humanities (n=13), Faculty of Education and Teacher Training (n=8), Faculty of Psychology (n=6), Faculty of Sharia and Law (n=5), Faculty of Science and Technology (n=2), Faculty of Social and Political Sciences (n=1), and Faculty of Ushuluddin and Islamic Thought (n=1).

Data were obtained from a structured questionnaire delivered via the online method. The survey contained 25 statements measured on a 4-point Likert scale (1 = Strongly Disagree to 4 = Strongly Agree) under three variables: (1) awareness of electronic databases (7 statements), (2) usage of electronic databases (9 statements), and (3) problems in using electronic databases (9 statements) (Asongo dkk., 2024; Sugiyono, 2013).

The validity of the questionnaire instrument was determined based on an expert review conducted by specialists in research methodology and library and information science. The reliability of the survey was measured with Cronbach's Alpha. It is considered a reliable measure if the α value is ≥ 0.70. Results of the measurement showed that all three variables have very high internal consistency (awareness: $\alpha = 0.908$; utilization: $\alpha = 0.940$; challenges: $\alpha = 0.929$) of the questionnaire as a whole ($\alpha = 0.930$).

The data analyses were done through several steps. Firstly, descriptive statistics was done to describe the attributes of the respondents, which included the calculation of the mean, standard deviation, and distribution of the category of each variable. The score categories were

done according to the following range of scales: 1,00 – 1,75 (Very Low), 1,76 – 2,50 (Low), 2,51 – 3,25 (High), and 3,26 – 4,00 (Very High). Secondly, multiple linear regression analysis was done to analyze the effect of the independent variables (awareness of electronic databases and challenges in database usage) to the dependent variable (the degree of electronic database usage) (Adesola & Ojemola, 2021; Kairigo, 2019; Rafi dkk., 2019). Before running the regression analysis, the classical assumption test was done, which included normality test (Kolmogorov-Smirnov), multicollinearity test, and heteroscedasticity test (Ohaegbulem & Iheaka, 2024).

Findings

The sample for this study included 100 participants, out of which 71 were female participants (71%) and 29 male participants (29%). As far as the distribution of semesters is concerned, the largest percentage of participants was from their last semesters (37% from the eighth semester and 26% from the sixth semester), while 18% and 19% of the participants belonged to the fourth and second semesters respectively.

Table 1. Distribution of Respondents by Faculty

Faculty	n	%	Dominant Semester
Islamic Economics and Business	39	39,0	8
Da'wah and Communication	25	25,0	8
Humanities	13	13,0	6
Education and Teacher Training	8	8,0	4
Psychology	6	6,0	8
Sharia and Law	5	5,0	8
Others	4	4,0	-

Source: Primary data, processed (2026).

Table 2 below provides a summary of the findings of descriptive analysis carried out for the three variables. As a result, all three variables were rated to be at a high level considering the categorization range for the 1-4 Likert scale.

Table 2. Descriptive Statistics of Research Variables

Variable	Mean	SD	Min	Max	Category
Awareness of Electronic Databases	3,036	0,583	1,571	4,000	High
Electronic Database Utilization	3,092	0,534	1,778	4,000	High
Utilization Challenges	2,787	0,649	1,000	4,000	High

Source: Primary data analysis (2026).

From the pattern of individual scoring categories, it was found that the largest percentage of individuals belonged to the category of "High" awareness (52%) and database usage (58%). None of the respondents belonged to the category of "Very Low" level of database usage, which means that all the respondents showed some level of involvement with electronic databases.

Table 3. Distribution of Respondent Categories per Variable

Category	Score Range	Awareness n (%)	Utilization n (%)	Challenges n (%)	Description
Very High	3,26–4,00	33 (33%)	29 (29%)	19 (19%)	Very optimal
High	2,51–3,25	52 (52%)	58 (58%)	50 (50%)	Optimal
Low	1,76–2,50	13 (13%)	13 (13%)	26 (26%)	Less optimal
Very Low	1,00–1,75	2 (2%)	0 (0%)	5 (5%)	Not optimal

Source: Primary data analysis (2026).

Regarding the variable of awareness, the item with the highest mean value was "I am aware of the fact that the university library has electronic databases" (M = 3,17), while the one with the lowest mean was "I am aware of the types of electronic databases that the university offers" (M = 2,85). The above finding shows that although the students have an idea about the availability of the database service, there is a need for improvement in their awareness regarding the diversity of the available electronic databases.

Concerning the variable of utilization, the most highly rated items were "Use of electronic databases improves the quality of my assignments/research" and "Electronic databases allow me to get the latest scholarly journals easily" (M = 3,17 for both). However, the least rated item in this variable was "I often use electronic databases for the search of academic references" (M = 3,02), showing that the benefits of using the electronic databases have more importance in the eyes of the students than their utilization.

For the obstacles variable, the biggest obstacle faced was that of internet connectivity problems (M = 2,91), followed by difficulties accessing the databases off-campus (M = 2,84) and difficulties identifying appropriate keywords (M = 2,81). The smallest obstacle was lack of familiarity with the usage of electronic references (M = 2,70).

Table 4. Item-Level Analysis: Three Highest- and Lowest-Ranked Items for Each Variable

No	Statement Item	Mean	SD	Description
	A. Awareness of Electronic Databases			
K1	Aware that the library provides electronic databases	3,17	0,726	Highest
K7	Obtain information about databases from the library/lecturers	3,11	0,695	
K2	Aware of the types of databases available at the university	2,85	0,757	Lowest
	B. Utilization of Electronic Databases			
P7	Improves the quality of assignments/research	3,17	0,652	Highest
P8	Facilitates access to the latest scholarly journals	3,17	0,652	
P1	Frequently use databases to search for references	3,02	0,603	Lowest
	C. Challenges in Utilizing Electronic Databases			
C1	Internet connectivity issues when accessing databases	2,91	0,818	Highest
C6	Difficulties accessing databases from outside the campus	2,84	0,801	
C9	Unfamiliarity with using digital reference sources	2,70	0,859	Lowest

Source: Primary data analysis (2026).

Before performing the regression analysis, the researcher determined the Pearson correlations for the variables involved. It was found that there is a positive and strong correlation between awareness of electronic databases and database usage ($r = 0,710$, $p < 0,001$). The positive but weak correlation was found between challenges and usage ($r = 0,241$, $p = 0,016$) and between awareness and challenges ($r = 0,213$, $p = 0,033$). The positive direction of the correlation between challenges and usage means that the more students use the electronic databases, the more aware they are about different problems they face.

A Kolmogorov-Smirnov test of normality was performed for all three variables. Challenges were found to have met the assumption of normality ($D = 0,131$, $p = 0,058$); however, the awareness ($D = 0,156$, $p = 0,014$) and utilization variables ($D = 0,202$, $p < 0,001$) deviated from normality. Nevertheless, based on the Central Limit Theorem, since $n = 100$, linear regression is quite robust against violation of the normality assumption **(Ohaegbulem & Iheaka, 2024; Osborne & Waters, 2002)**. The problem of multicollinearity was ruled out due to the low correlation between the two independent variables ($r = 0,213$, which is considerably lower than 0.80).

Multiple linear regression analysis was done using utilization of electronic databases as the dependent variable and two independent variables – awareness of electronic databases and utilization challenges. The findings of the multiple linear regression analysis are provided in Table 5.

Table 5. Results of Multiple Linear Regression Analysis

Variable	β (Coefficient)	SE	t-value	p-value	Sig.
Constant	0,956	0,236	4,053	< 0,001	***
Awareness of Electronic Databases (X_1)	0,633	0,067	9,501	< 0,001	***
Utilization Challenges (X_2)	0,078	0,060	1,299	0,197	ns

*Note: R^2 = 0,512; R^2adj = 0,502; F(2,97) = 50,922, p < 0,001; *** p < 0,001; ns = not significant.
Source: Primary data analysis (2026).

The regression model obtained is as follows:

$$Y = 0,956 + 0,633X_1 + 0,078X_2$$

The coefficient of determination R^2 of 0,512 shows that 51,2 percent of the total variation in the electronic database utilization is attributed to the awareness of electronic databases and utilization challenges. The test of significance of the overall regression model gives F(2,97) = 50,922 (p < 0,001), which suggests that the regression model is statistically significant.

Partially, the awareness of electronic databases independent variable (X_1) has a positive and statistically significant relationship with electronic database utilization (β = 0,633, t = 9,501, p < 0,001). This implies that there is an increase in the utilization score by 0,633 for a unit increase in the awareness score, other things remaining equal. On the other hand, utilization challenges variable (X_2) does not have any statistically significant effect (β = 0,078, t = 1,299, p = 0,197).

The independent-samples t-test demonstrated that there is no significant difference in the level of use of the database between the male students (M = 3,015) and female students (M = 3,124) with t = −0,919 (p = 0,360). The analysis based on semesters, on the other hand, revealed the tendency of increasing usage of the databases by students as they progress through their study: semester 2 (M = 2,938), semester 4 (M = 3,160), semester 6 (M = 3,017), and semester 8 (M = 3,219).

Discussion

Level of Electronic Database Utilization among University Students

The findings indicate that students at Institution X generally reported a high level of electronic database utilization, with a mean score of 3,092 (SD = 0,534). Overall, 87% of respondents were categorized as having high or very high utilization levels. These findings suggest that electronic databases have an established role in students' academic information practices. However, the overall utilization score needs to be interpreted alongside the individual questionnaire items to understand whether students' reported use reflects consistent engagement with scholarly information resources.

At the item level, students reported relatively high agreement that electronic databases helped them improve their assignments and research and provided access to recent scholarly journal articles, with both items obtaining a mean score of 3,17. In comparison, the item concerning frequent use of electronic databases to obtain academic references had a lower mean score of 3,02. Although the difference between these scores is modest, it suggests that students' recognition of the academic value of electronic databases may be more established than their reported habitual use of these resources. Thus, a high overall utilization score does not necessarily mean that students use electronic databases consistently across all academic activities.

This interpretation is relevant to Alordiah who examined awareness, knowledge, and utilization of online digital tools for literature reviews among academic staff in tertiary institutions in southern Nigeria. Their findings established a significant relationship between awareness, knowledge, and utilization, highlighting the importance of distinguishing users' familiarity with digital resources from their actual use. Although their study focused on

academic staff and free online digital tools rather than university students and electronic databases, the distinction provides a useful conceptual basis for interpreting the present findings (Alordiah dkk., 2023). Similarly, Bentil demonstrated that the management and use of electronic resources in academic libraries are interconnected through resource selection, access provision, publicity, training, and evaluation. Their findings indicate that the utilization of electronic resources should be understood in relation to the institutional practices that support users' engagement with them (Bentil dkk., 2022).

The present findings therefore suggest that the relevant question is not merely whether students use electronic databases, but also how consistently and effectively they incorporate these resources into their academic work. Students may recognize the value of scholarly databases while still relying on other information sources for some assignments or research activities. Nevertheless, the current questionnaire results do not establish which alternative sources students use or whether their reported database use leads to more effective academic outcomes. These issues would require additional data.

Another consideration is the distinction between self-reported utilization and objectively recorded usage. Questionnaire responses provide information about students' perceptions and reported practices, but they do not directly measure the number of database sessions, search queries, full-text downloads, or successful information retrievals. Consequently, the findings demonstrate a generally high level of reported utilization rather than independently verified usage intensity. Future assessments could combine questionnaire responses with database usage statistics to establish whether students' reported practices correspond with recorded activity.

Awareness as a Significant Factor Associated with Utilization

Awareness was positively and significantly associated with electronic database utilization. The Pearson correlation analysis showed a strong positive relationship between awareness and utilization ($r = 0{,}710$, $p < 0{,}001$). In the regression analysis, awareness also had a statistically significant coefficient ($B = 0{,}633$, $SE = 0{,}067$, $t = 9{,}501$, $p < 0{,}001$). The reported regression model explained 51,2% of the variance in utilization ($R^2 = 0{,}512$). Taken together, these findings indicate that students reporting greater awareness also tended to report higher utilization of electronic databases.

The item level findings provide further insight into the nature of students' awareness. Awareness of the availability of electronic databases obtained a mean score of 3,17, whereas awareness of the different types of databases received a lower mean score of 2,85. This distinction is important because knowing that electronic databases are available does not necessarily mean that students understand the differences between databases or know which resource is most appropriate for a particular academic task. Awareness may therefore involve more than recognizing the existence of electronic databases. It may also encompass familiarity with their subject coverage, content, access procedures, and potential applications in coursework and research.

The relationship identified in this study is consistent with Alordiah, whose findings showed that awareness and knowledge were significantly associated with the utilization of online digital tools for literature reviews (Alordiah dkk., 2023). The relevance of this comparison lies in the shared finding that awareness and use are connected, although the populations and resources examined differ. The present study extends this discussion to students' utilization of electronic databases in a university setting, where access to scholarly information is closely related to academic assignments and research activities.

Evidence concerning library training further suggests that awareness should be accompanied by practical guidance. Frandsen examined library training as a means of promoting electronic resource use (Frandsen dkk., 2017). Their findings indicated that training sessions could increase the use of electronic resources, although the effect appeared to be short-lived and training alone might not sustain long-term utilization. This qualification is

important for interpreting the implications of the present findings. If awareness is associated with utilization, libraries should not rely exclusively on one-time promotional activities or introductory sessions. Instead, awareness initiatives may need to be reinforced through repeated instruction and opportunities to apply search skills in authentic academic tasks.

For Institution X, these results suggest that electronic database promotion should move beyond informing students about the availability of subscribed resources. Students could also be introduced to the differences between general scholarly search platforms and subject-specific databases, the types of content available through particular platforms, and the circumstances in which each resource is most useful. Practical instruction could cover the formulation of search terms, the use of Boolean operators, the application of filters, and the assessment of retrieved sources. Such instruction could be integrated into information literacy sessions, research methodology courses, thesis preparation workshops, and faculty-specific orientation activities.

Nevertheless, the statistical results should not be interpreted as proof that awareness causes higher utilization. Because the study uses cross-sectional survey data, the direction of the relationship cannot be established. Greater awareness may encourage students to use databases, but repeated use may also increase students' familiarity with the resources available to them. In addition, the R^2 value of 0,512 represents the proportion of variance explained by the regression model as a whole. It should not be attributed to awareness alone. Accordingly, the evidence supports awareness as a significant factor associated with utilization within the model, rather than establishing a causal effect.

Barriers to Electronic Database Utilization

Despite the generally high reported utilization, students identified several difficulties in using electronic databases. Internet connectivity received the highest mean score among the reported barriers (M = 2,91), followed by access to databases outside the campus environment (M = 2,84) and the formulation of appropriate keywords (M = 2,81). These findings indicate that students' engagement with electronic databases may be constrained by both technological conditions and the skills required to retrieve relevant academic information.

Internet connectivity is a particularly important consideration because electronic databases depend on access to online platforms and network infrastructure. Unstable or slow connections may interrupt searches, delay the retrieval of full-text articles, and make database use less convenient. Difficulties with off-campus access may also limit students' ability to use institutional subscriptions when working away from university facilities. These findings suggest that the availability of electronic databases does not automatically ensure convenient access under all circumstances.

The reported barriers are consistent with issues discussed in previous research on electronic resource management and use. Bentil identified access provision, publicity, training, and evaluation as interconnected dimensions of electronic resource management in academic libraries (Bentil dkk., 2022). Similarly, Izuagbe examined the relationship between system design characteristics and faculty members' expectations regarding online databases for research. The study highlighted the relevance of system quality and information quality to users' expectations of database performance (Izuagbe, 2021). Although Izuagbe's research focused on faculty members rather than students, it supports the broader interpretation that electronic database utilization depends not only on user awareness but also on the quality and accessibility of the systems through which information is delivered.

Oyadeyi also identified irregular power supply and slow internet connectivity among the challenges affecting the widespread use of subscription databases in Nigerian academic libraries (Oyadeyi dkk., 2021). Their research examined database subscriptions and utilization from the perspective of academic libraries, whereas the present study examines students' reported experiences. Despite this difference, the findings point to a shared practical concern: investments in electronic databases need to be accompanied by conditions that enable users

to access and benefit from them. For Institution X, this means that database promotion should be complemented by attention to connectivity, authentication procedures, and the availability of clear guidance for remote access.

The mean score for difficulties in formulating keywords also deserves attention. Effective database searching requires users to translate an information need into search terms that are sufficiently specific to retrieve relevant materials. Depending on the database and research topic, this may involve identifying synonyms, combining concepts, using Boolean operators, and refining results through filters. Ikenwe and Solomon, in their study of undergraduate students at Ambrose Alli University in Nigeria, examined the relationship between students' search skills and their use of electronic information resources (Ikenwe & Solomon, 2024). Their findings identified a significant relationship between search skills and resource use, supporting the relevance of search competence when considering students' engagement with electronic information resources.

For Institution X, the keyword-related finding suggests that students may benefit from instruction that emphasizes the practical process of searching rather than simply demonstrating how to access a database. For example, librarians could provide exercises in which students develop search strategies from actual assignment topics, identify alternative keywords, combine search terms, and evaluate the relevance of retrieved records. These activities would directly address a difficulty reported by respondents and could help students make more effective use of available databases.

The statistical relationship between the challenges measure and utilization, however, requires careful interpretation. The correlation analysis showed a positive association between challenges and utilization ($r = 0{,}241$, $p = 0{,}016$). In contrast, the regression coefficient for challenges was not statistically significant after the other variables in the model were considered ($B = 0{,}078$, $SE = 0{,}060$, $t = 1{,}299$, $p = 0{,}197$). These results are not necessarily contradictory because the correlation analysis examines the relationship between two variables, whereas the regression coefficient evaluates the association between challenges and utilization conditional on the other variables included in the model.

The positive bivariate correlation should not be interpreted as evidence that encountering barriers increases database utilization. One possible explanation is that students who engage with electronic databases more often have more opportunities to encounter technical or searching difficulties. However, this remains a possible interpretation rather than an established explanation. The cross-sectional data do not determine whether students' utilization leads to greater exposure to barriers, whether barriers affect utilization, or whether other factors are involved. The regression result indicates that the challenges measure did not provide statistically significant evidence of an independent association with utilization in the specified model at the 0,05 significance level.

This finding does not mean that the reported barriers are unimportant. The descriptive results still identify connectivity, off-campus access, and keyword formulation as practical issues experienced by students. Rather, the results suggest that these barriers should not be presented as statistically significant independent predictors of utilization on the basis of the current regression analysis. Their implications for library services remain relevant and warrant further investigation, particularly through more detailed measures of access conditions and search behavior.

Gender and Semester Differences in Utilization

The analysis did not identify a statistically significant difference in electronic database utilization by gender. Male respondents recorded a mean utilization score of 3,015, while female respondents recorded a mean of 3,124. The difference was not statistically significant ($t = -0{,}919$, $p = 0{,}360$). Although the mean score for female respondents was slightly higher, the available evidence does not support the conclusion that utilization differed significantly by gender in this sample.

This result suggests that gender did not significantly differentiate students' reported utilization in the present analysis. However, a nonsignificant statistical result does not prove that the two groups are equivalent in every aspect of database use. It only indicates that the analysis did not detect a statistically significant difference on the utilization measure used in this study. Further research could examine whether gender is associated with specific practices, such as database selection, search strategies, or preferences for different information sources, rather than relying exclusively on an overall utilization score.

The semester level results showed mean utilization scores of 2,938 for second-semester students, 3,160 for fourth-semester students, 3,017 for sixth-semester students, and 3,219 for eighth-semester students. Eighth-semester students recorded the highest mean, whereas second-semester students recorded the lowest. Nevertheless, the pattern was not consistently increasing across semesters because the mean for sixth-semester students was lower than that for fourth-semester students. The descriptive findings therefore do not establish a linear relationship between semester progression and database utilization.

One possible explanation is that students' information needs differ according to their coursework, assignments, and research responsibilities. Students preparing research proposals or theses may have different requirements for scholarly information than students primarily completing coursework. However, the current data do not directly establish that these differences explain the observed semester means. Moreover, claims about statistically significant differences between semesters would require the results of an appropriate omnibus test, such as analysis of variance when its assumptions are satisfied, or a suitable alternative. Without those results, the semester-level findings should be treated as descriptive.

The sample composition also warrants consideration. Of the 100 respondents, 37% were in the eighth semester and 26% were in the sixth semester. Furthermore, students from the Faculty of Islamic Economics and Business accounted for 39% of respondents. This distribution means that the findings reflect the experiences of the students who participated in the study and may not represent all faculties and semesters equally. Future research could use stratified sampling to improve representation across academic disciplines and study levels, thereby enabling more robust comparisons between student groups.

Implications for Academic Library Management

The findings have several implications for the management of electronic databases at Institution X. First, the positive relationship between awareness and utilization highlights the importance of sustained user education and communication. Libraries should ensure that students are informed not only about the availability of electronic databases but also about their subject coverage, access procedures, and practical applications for academic work. Because awareness alone does not establish effective use, these initiatives should be accompanied by opportunities for students to practice searching and retrieving scholarly information.

Second, the reported difficulties involving internet connectivity and off-campus access suggest that the management of electronic resources should include continuous attention to access conditions. Libraries and university information technology units could review the reliability of access arrangements, clarify remote authentication procedures, and provide accessible troubleshooting guidance. Such measures would address the practical barriers identified by respondents without assuming that technological improvements alone would resolve every difficulty associated with database use.

Third, the keyword-related barrier supports the inclusion of practical search-skills instruction in information literacy services. Ikenwe and Solomon provide relevant evidence concerning the relationship between students' search skills and the use of electronic information resources (Ikenwe & Solomon, 2024). At Institution X, librarians could work with lecturers to incorporate database-search exercises into assignments, research methodology

courses, and thesis preparation. This approach would connect database instruction to students' actual information needs rather than treating it as a separate or one-time activity.

Fourth, the findings highlight the importance of evaluating electronic resources through multiple indicators. Oyadeyi examined return on investment in subscription databases in Nigerian academic libraries and discussed the relationship between subscription expenditure and utilization (Oyadeyi dkk., 2021). In Institution X, evaluation could consider usage statistics, subscription costs, disciplinary relevance, user feedback, and the availability of alternative resources. Low usage should not automatically be interpreted as evidence that a database is unnecessary, because it may also reflect limited awareness, access difficulties, or a mismatch between the resource and users' information needs.

A more comprehensive evaluation would distinguish between access, awareness, utilization, and effective use. Access concerns whether students can reach the resource. Awareness concerns whether they know about its availability and purpose, utilization concerns whether they report using it, and effective use concerns whether they can retrieve relevant and credible information for their academic tasks. These dimensions are related but not interchangeable. Assessing them separately would give library managers a stronger basis for deciding whether to prioritize resource promotion, user training, access improvements, or subscription evaluation.

Overall Interpretation and Contribution of the Study

Overall, the findings indicate that students at Institution X reported generally high electronic database utilization, while also identifying differences in awareness and practical access conditions. Awareness showed a strong positive bivariate association with utilization and remained statistically significant in the reported regression analysis. By contrast, although students identified connectivity, off campus access, and keyword formulation as prominent difficulties, the challenges measure did not show a statistically significant independent association with utilization in the regression model.

These findings suggest that electronic database utilization should not be understood solely in terms of resource availability or students' willingness to use digital information. Instead, it involves the relationship between users' awareness, their ability to search for scholarly information, and the technological and institutional conditions that support access. The contribution of this study lies in examining reported utilization, awareness, and encountered barriers together within the context of students at Institution X. This provides a basis for understanding both the factors statistically associated with utilization and the practical issues that students report when accessing electronic databases.

Conclusion

This study examined electronic database utilization among university students at Institution X, focusing on awareness, usage intensity, and perceived barriers. The findings indicate that students reported relatively high levels of electronic database utilization, while awareness was positively and significantly associated with utilization. Awareness also emerged as a significant predictor in the regression analysis, with the overall model explaining 51.2% of the variance in utilization. Although perceived barriers were positively correlated with utilization in the bivariate analysis, their regression coefficient was not statistically significant after accounting for the other variables in the model. These findings highlight the importance of distinguishing between simple associations and the independent contribution of individual factors.

The findings suggest that improving electronic database utilization requires more than providing access to digital resources. Academic libraries should combine targeted awareness initiatives with practical search-skills training, reliable access arrangements, and systematic evaluation of database use. Particular attention should be given to helping students identify

appropriate databases, formulate effective search queries, and access resources both on and off campus. These measures should be evaluated regularly to determine whether they address students' information needs and improve their use of scholarly resources.

The findings should be interpreted in light of the study's reliance on self-reported data, cross-sectional design, and sample distribution across semesters and faculties. Future research could strengthen the evidence by combining questionnaire responses with database usage statistics, directly examining students' search behavior, and using sampling strategies that provide broader representation of the student population. Longitudinal or intervention-based studies could further investigate whether sustained awareness initiatives and practical search-skills training are associated with measurable changes in database utilization over time.

Declarations

AI Disclosure

I acknowledge that I used ChatGPT (OpenAI) to assist in structuring the initial draft and exploring ideas for the literature review. However, all analysis, data verification, and scholarly responsibility remain entirely with me as the author.

Author Contribution Statement

Author 1 is responsible for data collection, data analysis, and drafting the initial manuscript. Author 2 contributed to the conceptualization of the research, the determination of the methodology, and the critical review of the manuscript draft. Author 3 provided technical guidance on the analysis, validated the research findings, and performed the final editing of the manuscript. All authors have read and approved the final version of this manuscript.

Funding Statement

This research was conducted without any financial support or specific funding assistance from any other party.

Conflict of Interest

The author declares that there is no conflict of interest regarding the research, writing, or publication of this article.

References

Adesola, A. P., & Ojemola, O. I. (2021). An Assessment of the Use of Electronic Databases by Academic Staff, Bowen University, Nigeria: *International Journal of Library and Information Services*, *10*(2), 1–15. https://doi.org/10.4018/IJLIS.20210701.oa8

Alordiah, C. O., Osagiede, M. A., Omumu, F. C., Okokoyo, I. E., Emiko-Agbajor, H. T., Chenube, O., & Oji, J. (2023). Awareness, knowledge, and utilisation of online digital tools for literature review in educational research. *Heliyon*, *9*(1). Scopus. https://doi.org/10.1016/j.heliyon.2022.e12669

Asongo, M., Agoh, J. A., & Annune, A. E. (2024). *Awareness and Utilization of Electronic Information Resources for Research Output of Academic Librarians at Joseph Sarwuan Tarka University, Makurdi, Benue State, Nigeria*. https://doi.org/10.5281/ZENODO.12624730

Association of College and Research Libraries. (2018). *Framework for Information Literacy for Higher Education*.

Bentil, W., Liew, C. L., & Chawner, B. (2022). The management and the usage of electronic resources in academic libraries: A bi-directional relationship. *Information Development*, *38*(1), 114–124. Scopus. https://doi.org/10.1177/0266666920983600

Corrall, S., Kennan, M. A., & Afzal, W. (2013). Bibliometrics and Research Data Management Services: Emerging Trends in Library Support for Research. *Library Trends*, *61*(3), 636–674. https://doi.org/10.1353/lib.2013.0005

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed). SAGE Publications.

Dadzie, P. S. (2005). Electronic resources: Access and usage at Ashesi University College. *Campus-Wide Information Systems*, *22*(5), 290–297. https://doi.org/10.1108/10650740510632208

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319–340. https://doi.org/10.2307/249008

Frandsen, T. F., Tibyampansha, D., Ibrahim, G. R., & von Isenburg, M. (2017). Library training to promote electronic resource usage: A case study in information literacy assessment. *Information and Learning Science*, *118*(11–12), 618–628. Scopus. https://doi.org/10.1108/ILS-08-2017-0082

Head, A. J., & Eisenberg, M. B. (2011). How college students use the Web to conduct everyday life research. *First Monday*. https://doi.org/10.5210/fm.v16i4.3484

IFLA. (2001). *IFLA Guidelines for Collection Development and Management*. IFLA.

Ikenwe, I. J., & Solomon, A. O. (2024). Relationship between undergraduate students search skills and usage of electronic information resources in Ambrose Alli University (AAU) Nigeria. *Folia Toruniensia*, *24*, 73–93. Scopus. https://doi.org/10.12775/FT.2024.004

Izuagbe, R. (2021). Faculty research performance expectancy of online databases: System design characteristics as facilitating conditions. *Journal of Academic Librarianship*, *47*(2). Scopus. https://doi.org/10.1016/j.acalib.2021.102318

Johnson, P., & Weber, M. B. (2018). *Fundamentals of Collection Development and Management* (4 ed.). ALA Editions, an imprint of the American Library Association.

Kairigo, W., Samuel. (2019). Big Data Analytics and Electronic Resource Usage in Academic Libraries: A Case Study of a Private University in Kenya. *European Scientific Journal ESJ*, *15*(13). https://doi.org/10.19044/esj.2019.v15n13p344

Nicholas, D., Huntington, P., Jamali, H. R., & Watkinson, A. (2006). The information seeking behaviour of the users of digital scholarly journals. *Information Processing & Management*, *42*(5), 1345–1365. https://doi.org/10.1016/j.ipm.2006.02.001

Ohaegbulem, E. U., & Iheaka, V. C. (2024). On Remedying the Presence of Heteroscedasticity in a Multiple Linear Regression Modelling. *African Journal of Mathematics and Statistics Studies*, *7*(2), 225–261. https://doi.org/10.52589/AJMSS-TJ9XI8HD

Omidiji, T. (2024). Academic use of electronic resources by undergraduates of University of Ibadan. *Journal of Library Services and Technologies*, *6*(2), 252–262. https://doi.org/10.47524/jlst.v6i2.253

Osborne, J. W., & Waters, E. (2002). *Four assumptions of multiple regression that researchers should always test*. https://doi.org/10.7275/R222-HV23

Oyadeyi, A. E., Oladokun, T. A., Shorunke, O. A., & Fasola, O. S. (2021). Return on investment (ROI) in subscription databases by Nigerian academic libraries: A survey. *Folia Toruniensia*, *21*, 63–85. Scopus. https://doi.org/10.12775/FT.2021.003

Rafi, M., JianMing, Z., & Ahmad, K. (2019). Technology integration for students' information and digital literacy education in academic libraries. *Information Discovery and Delivery*, *47*(4), 203–217. https://doi.org/10.1108/IDD-07-2019-0049

Rosales, A. C. (2024). An Empirical Study on Knowledge, Access and Utilization of Electronic Resources by University Students in Philippines. *International Journal of Research and Innovation in Social Science*, *VIII*(V), 23–42. https://doi.org/10.47772/IJRISS.2024.805003

Samuel Ogbemudia Library, Salah, H. O., Bello, S. O., Bayero University Kano, Gwarzo, S. M., & Bayero University Kano. (2024). Perception and Utilization of Electronic Resources in

Federal University Libraries in North-East Nigeria. *International Journal of Knowledge Dissemination*, *5*(2), 124–135. https://doi.org/10.70118/ijkd.0202405020.11

Sugiyono. (2013). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D* (19 ed.). Alfabeta.

Tantangan yang Dihadapi Pustakawan di Era Digital. (2025, Oktober 8). https://news.bsi.ac.id/pendidikan/tantangan-yang-dihadapi-pustakawan-di-era-digital/