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INSTITUTIONAL FACTORS AND UNDERGRADUATES' USE OF LIBRARY-BASED ELECTRONIC INFORMATION RESOURCES: EVIDENCE FROM EIGHT STATE-OWNED UNIVERSITIES IN SOUTH-WEST NIGERIA

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Abstract

University libraries in Nigeria have invested heavily in electronic information resources (EIRs), yet undergraduate use remains uneven, and most explanations have looked to the student rather than to the institution. This study examined how four institutional conditions, namely institutional policy, electricity supply, accessibility of EIRs and internet connectivity, relate to undergraduates' use of library-based EIRs in state-owned universities in South-West Nigeria. A correlational survey of 300-level science and agriculture students in eight state universities, selected through four-stage sampling, yielded 1,232 usable questionnaires (92.3%). Respondents reported using a broad range of resources, led by e-databases, e-books and educational videos, mainly for personal development, online classes and term papers. Use was typically monthly to weekly; audio and video materials were used most often and CD-ROMs least, and use of named scholarly databases was polarised. Institutional conditions were rated moderately supportive (weighted mean 2.92 of 4), highest for policy (3.01) and lowest for internet connectivity (2.81); only three in five respondents reported free campus internet log-in. Institutional factors correlated positively and significantly with EIR use ($r = .42$, $p < .001$), accounting for about 18% of its variance. Internet connectivity ($r = .40$) and accessibility ($r = .37$) showed the strongest associations, followed by electricity supply ($r = .33$) and policy ($r = .32$). The findings indicate that subscription alone does not produce use; the infrastructure that carries EIRs to the student matters at least as much. Implications for library management, university administration and state funding are discussed.

Keywords*:* Electronic information resources; Institutional factors; State universities; Nigeria

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Introduction

Academic libraries now deliver much of their content through electronic information resources (EIRs): electronic journals and books, bibliographic and full-text databases, online catalogues and digital repositories. For many undergraduates these resources are the main point of contact with the library, and log-based studies show that students are the heaviest users of scholarly platforms and the group most likely to reach databases through library links (Nicholas et al., 2009; Tenopir, 2003). In sub-Saharan Africa the move online has been supported by consortium licensing, donor-funded access programmes and national investment in research networks, on the assumption that better provision would lead to more use and, through use, to better learning.

That assumption has not held well in Nigeria. Surveys in federal, state and private universities report that undergraduates know about EIRs and value them but use them less than the investment would justify (Alabi, 2021; Mommoh & Gomina, 2023; Omidiji, 2024; Umukoro & Tiamiyu, 2017). Reviewing this body of work, Adetayo (2026) concludes that provision has been treated as if it produced use, that it has not, and that the reasons are largely contextual: weak infrastructure, high cost, low awareness and policy that is written but not enforced. Singun's (2025) systematic review of barriers to digital transformation in higher education reaches a similar conclusion for institutions generally, listing limited ICT infrastructure first among the barriers identified. Most Nigerian studies, however, have looked for the explanation in the user. Information literacy (Ukachi, 2015; among lecturers, Ajayi et al., 2023), computer self-efficacy (Ebijuwa & Mabawonku, 2019; Popoola & Adedokun, 2023), digital literacy (Umar & Dangwaran, 2023), individual experience (Ruzegea & Msonde, 2021) and psychological and social factors (Azonobi et al., 2020) have each been tested as predictors of use. The associations are usually significant but small. Ebijuwa and Mabawonku (2019), working with 1,526 undergraduates in six federal universities in South-West Nigeria, found a correlation of .13 between computer self-efficacy and use of electronic library resources. Umar and Dangwaran (2023) found high digital literacy alongside low use at Gombe State University, and no relationship between the two. Results of this kind suggest that

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something outside the student decides whether skills and good intentions turn into actual use.

This study calls that something institutional factors: the provisions a university makes, or fails to make, that allow students to reach and use the resources its library has paid for. Four are examined. Institutional policy states whether and how EIRs are to be provided, funded and used. Electricity supply decides whether the equipment through which EIRs are delivered can run at all; the World Bank (2025) puts access to electricity in Nigeria at 61% of the population in 2023, and even those with access face frequent outages because generation, transmission and distribution capacity fall short of demand (Adoghe et al., 2023). Accessibility of EIRs refers to the practical arrangements, such as access points, concurrent-user provision and notification of new resources, that connect a subscription to a student. Internet connectivity, the scarcest of the four in Africa, where only 38% of the population was online in 2024 (International Telecommunication Union [ITU], 2025), decides whether access is possible away from the library floor. In the vocabulary of the unified theory of acceptance and use of technology (UTAUT), these are facilitating conditions, the organisational and technical infrastructure that users believe exists to support use, and UTAUT places them as a direct determinant of use behaviour rather than of intention (Venkatesh et al., 2003).

State-owned universities are a suitable setting for the question. Nigeria's university system comprises federal, state and private institutions; in 2026 it counted 77 federal, 69 state and 182 private universities (National Universities Commission [NUC], 2026). State universities are established under state laws and financed mainly by state governments and internally generated revenue, so their capacity to fund subscriptions, bandwidth and power differs from that of the older federal institutions and varies from one state to another. The South-West geopolitical zone, made up of Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States, contains a substantial number of them. Yet published research on EIR use in the zone has concentrated on federal and private universities (Alabi, 2021; Ebijuwa & Mabawonku, 2019; Ukachi, 2015). Evidence from state universities is thin, and evidence that measures several institutional conditions at once, rather than listing them as challenges at the end of a use survey, is thinner still.

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The study therefore examined the relationship between institutional factors and undergraduates' use of library-based EIRs in state-owned universities in South-West Nigeria. Three research questions and one hypothesis guided it:

RQ1. Which types of library-based EIRs do undergraduates in state-owned universities in South-West Nigeria use?

RQ3. How frequently do they use library-based EIRs?

RQ4. How do they rate the institutional factors (institutional policy, electricity supply, accessibility of EIRs and internet connectivity) that support the use of library-based EIRs?

H0. There is no significant relationship between institutional factors and undergraduates' use

Literature review

Undergraduates' use of library-based electronic information resources

EIRs are information resources held in digital form and reached through a computer or mobile device, whether stored locally, as on CD-ROM, or delivered over a network, as with e-journals, e-books, online databases, online public access catalogues (OPACs) and digital repositories; they have been the subject of use studies since the early 2000s (Tenopir, 2003). The qualifier "library-based" restricts attention to resources the library provides or mediates, as distinct from the open web. The distinction is easier to state than to measure. Tlakula and Fombad (2017) found that third-year students at the University of Venda confused library e-resources with web-based sources, and Alphonce and Mwantimwa (2019) found Tanzanian students drawing far more heavily on internet resources than on CD-ROMs, e-books or e-journals. Any survey that asks students what they use has to reckon with this blurring, and we return to it when interpreting our own results.

Within those limits, the international literature is consistent on what students do with EIRs. They use them for coursework, and they reach for whatever is easiest to get. Dukić and Strišković (2015), surveying 900 students at a Croatian university, found Wikipedia and similar open web sources used more often than any library resource, and only a slight preference for electronic over printed formats. Connaway et al. (2011) showed that convenience organises information seeking generally: when a convenient

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source and a better source conflict, the convenient one usually wins. Ahmed et al.'s (2025) systematic review of undergraduates' information-seeking behaviour and EIR use brings together studies of this kind from a range of countries and institution types. Marasinghe (2025), surveying 379 distance learners at the Open University of Sri Lanka, found search engines, e-mail and e-books the most used resources and e-databases, e-theses and CD/DVDs the least, with assignments and examination preparation the main purposes.

African studies describe use that exists but is shallow. At the University of Venda, use was elementary, confined to two databases, and training consisted of a single first-year orientation (Tlakula & Fombad, 2017). At Great Zimbabwe University, adoption of e-resources remained limited despite their place in institutional strategy, which the authors attributed to poor marketing, students' lack of resources and high data charges (Mawere & Sai, 2018). In a Ghanaian health sciences library, users were aware of the library's e-resources but named Google and Wikipedia alongside ScienceDirect and PubMed among the sources they used, and the cost of personal internet data and low bandwidth were their main difficulties (Ankamah et al., 2024). Among postgraduate engineering students in Uganda, use was shaped by convenience, awareness and search skills and depressed by access restrictions and the cost of internet data (Acanit et al., 2024). In Tanzania, Ruzegea and Msonde (2021) found that level of education, information literacy competence and individual experience predicted use, and that undergraduates used e-resources more than postgraduates.

Nigerian evidence fits this picture. Alabi (2021) surveyed 370 undergraduates in three private universities in the South-West and found regular use, chiefly to find information in the student's field, to write term papers and to update knowledge, with poor connectivity and electricity failure the main obstacles. Omidiji (2024), at the University of Ibadan, found e-books, e-journals and e-newspapers the most readily available resources, used for learning, general reading and project work; 57% of respondents named slow connectivity and 48% inadequate power as problems. Mommoh and Gomina (2023) found moderate use among science and arts undergraduates at the University of Abuja and recommended funding for ICT infrastructure and bandwidth. Odewole et al. (2022) examined predictors of adoption among University of Ibadan undergraduates, and Ashiru et al. (2022) found that EIR use contributed to the academic

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performance of final-year students in Lagos colleges of education. These studies share two features. They are mostly single-institution and descriptive, and although each names infrastructural failures among its challenges, none measures those conditions as variables or tests whether they relate to the level of use.

Institutional factors as facilitating conditions

Two frameworks give the four institutional factors a theoretical home. UTAUT defines facilitating conditions as "the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system" (Venkatesh et al., 2003, p. 453). Unlike performance expectancy, effort expectancy and social influence, which act on use through intention, facilitating conditions in UTAUT act on use behaviour directly: a student may intend to use a database and still not do so if there is no power, no network and no working terminal. A meta-analysis of UTAUT studies in academic and digital libraries found facilitating conditions significantly related to intention to use library technology, with a large pooled effect (Ali & Warraich, 2024), and Alajmi and Alotaibi (2020), studying digital library use in three universities, found that traditional facilitating conditions predicted both how often and how deeply students used the system. Wilson's (1999) general model of information behaviour makes a similar point from within library and information science. Between the recognition of an information need and the act of seeking, Wilson places intervening variables, personal, role-related and environmental, that may support or impede seeking. Institutional provisions are environmental intervening variables in this sense. Both frameworks predict that, for students of comparable skill and motivation, better institutional conditions should go with more use.

Empirical work supports the prediction, though it is scattered. At the University of Benin, Umukoro and Tiamiyu (2017) found that the e-library environment, together with system, service and information quality, predicted the level of e-library use, and that non-users cited inadequate ICT infrastructure, an unreliable campus network, a shortage of skilled support staff and the absence of training. Among academic staff in Nigerian universities, accessibility and use of electronic resources had a significant perceived effect on research productivity, and the authors recommended that libraries adopt

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electronic collection development policies to make access more equitable (Ani et al., 2015). In Ghana, Bentil et al. (2022) showed that how a library manages its electronic resources, in selection, access provision, publicity, training and evaluation, and how users use them influence each other. In Namibia, Kiana et al. (2021) found library training associated with use of the digital library and with students' perceptions of its usefulness and ease of use. The four factors examined in this study are considered in turn.

Institutional policy

An institutional policy on EIRs is a formal statement of what the university intends to provide, how provision will be funded, who may use the resources and under what conditions, and how their use is to be built into teaching. Policy is the least studied of the four factors. It usually appears in the literature as a recommendation, that universities should formulate policies, rather than as something measured. Yet it matters in at least two ways. It commits recurrent funding to subscriptions, bandwidth and power, all of which are recurrent costs, and it signals to staff and students that EIRs are part of the academic programme rather than an optional extra. Adetayo (2026) lists the absence of enforcement among the contextual conditions that stop capability from becoming practice, and Bentil et al. (2022) trace usage back to institutional decisions on selection and access provision. A policy that exists on paper but is not communicated can be expected to have little effect; whether students know of a policy is therefore as relevant as whether one exists.

Electricity supply

Every EIR is delivered through equipment that needs power: servers, network switches, access points, computers and the devices students charge. Nigeria's grid does not supply that power reliably. Access to electricity stood at 61% of the population in 2023 (World Bank, 2025), and shortfalls in generation, transmission and distribution capacity leave those with access subject to regular outages (Adoghe et al., 2023). Universities respond with diesel generators and, increasingly, solar installations, which compete for the same budget as subscriptions. Students name power among their main problems in study after study (Alabi, 2021; Omidiji, 2024; Umukoro & Tiamiyu, 2017),

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but electricity is almost always recorded as a challenge item rather than measured as a condition that could be related to how much students use.

Accessibility of electronic information resources

Availability is not accessibility. A resource is available when the library has licensed it; it is accessible when an entitled student can reach it without undue effort. Accessibility depends on the number of terminals and access points, the limits placed on concurrent users, whether authentication works off campus, and whether students are told what has been acquired. Dadzie (2005) found that computer use at Ashesi University College was high because the infrastructure was in place, but that several licensed databases were little used because students did not know they existed; Tlakula and Fombad (2017) report the same awareness gap, and Acanit et al. (2024) found that access restrictions reduced use directly. Ani et al. (2015) treat accessibility as a construct in its own right, distinct from use. Adetayo's (2026) summary, that provision is not use, is largely a statement about accessibility in this sense.

Internet connectivity

Connectivity is the condition that most directly determines whether EIRs can be reached beyond the library building. Africa remains the least connected ITU region, with 38% of the population online in 2024 against a global average of 68%, and cost is a principal reason (ITU, 2025). Where the campus does not provide free or subsidised access, students fall back on personal mobile data, and the cost of data becomes a cost of using the library. Alphonce and Mwantimwa (2019), Acanit et al. (2024) and Ankamah et al. (2024) all found the cost of internet data a leading inhibitor of use; Alabi (2021) and Omidiji (2024) found poor connectivity the most frequently named problem in Nigerian private and federal universities respectively; and Umukoro and Tiamiyu (2017) recorded an unreliable campus network among the reasons students gave for not using e-library services at all.

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Summary

Three points emerge. Institutional conditions are nearly always reported as challenges and rarely measured. Their association with the level of use is seldom tested, so the literature cannot say how much difference they make or which of them makes the most. And state-owned universities in Nigeria are under-represented. The study reported here was designed to address these gaps.

Methodology

The study used a descriptive survey design of the correlational type. Data were collected once, by questionnaire, and analysed with descriptive statistics for the research questions and correlation analysis for the hypothesis.

The South-West geopolitical zone of Nigeria comprises Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States. At the time of the study there were 14 state-owned universities in the zone that had been established before 2019. The target population was 300-level undergraduates in the Faculties of Science and Agriculture of eight of these universities, in four departments common to all eight: Computer Science and Chemistry in Science, and Soil Science and Animal Science in Agriculture. The population totalled 24,649 students (Table 1). Third-year students were chosen because they have completed the general studies and library-use courses of the first two years and have had at least two academic sessions in which to use library EIRs, but are not yet absorbed by final-year projects.

A four-stage sampling procedure was followed. In the first stage, eight of the 14 universities were selected; together they cover all six states of the zone. In the second stage, the Faculties of Science and Agriculture were selected purposively because both exist in all eight universities and both require students to consult current scientific literature. In the third, two departments were selected from each faculty on the same criterion. In the fourth, 5% of the 300-level students in each department were selected giving a planned sample of 1,232 (Table 1). This exceeds the 1,023 respondents needed for a ±3% margin of error at 95% confidence in a population of 24,649. To allow for non-return, 1,335 copies of the questionnaire were distributed.

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Table 1: *Population of 300-level students and allocated sample, by university and department*

University (state)	Computer Science	Chemistry	Soil Science	Animal Science	Total
Olabisi Onabanjo University (Ogun)	823 (41)	831 (42)	599 (30)	584 (29)	2,837 (142)
Tai Solarin University of Education (Ogun)	825 (41)	815 (41)	837 (42)	827 (41)	3,304 (165)
Ladoke Akintola University of Technology (Oyo)	998 (50)	1,004 (50)	995 (50)	1,007 (50)	4,004 (200)
Osun State University (Osun)	610 (31)	714 (36)	750 (38)	774 (38)	2,848 (143)
Lagos State University (Lagos)	998 (50)	714 (36)	750 (38)	774 (39)	3,236 (163)
Ekiti State University (Ekiti)	759 (38)	628 (31)	768 (38)	764 (38)	2,919 (145)
Adekunle Ajasin University (Ondo)	691 (35)	679 (34)	689 (34)	699 (35)	2,758 (138)
Ondo State University (Ondo)	718 (36)	585 (29)	735 (36)	705 (35)	2,743 (136)
Total	**6,422 (322)**	**5,970 (299)**	**6,123 (306)**	**6,134 (305)**	**24,649 (1,232)**

Note. Figures are departmental populations of 300-level students; figures in parentheses are the allocated sample (5% of each departmental population, rounded).

Data were collected with a structured questionnaire developed for the study from the literature reviewed above. It had three sections. Section A recorded gender and age. Section B measured use of library-based EIRs with 30 items in three subscales: types of EIRs used (10 items), purposes of use (10 items) and frequency of use (10 items). Items in the first two subscales were answered on a four-point scale (strongly disagree = 1, disagree = 2, agree = 3, strongly agree = 4); frequency items were answered on a five-point scale (never = 1, occasionally = 2, monthly = 3, weekly = 4, daily = 5). Scores were summed to give a composite use score with a possible range of 30 to 130. Section C measured institutional factors with 20 items in four subscales of five items each: institutional policy, electricity supply, accessibility of EIRs and internet connectivity, answered on the same four-point agreement scale and summed to a composite with a

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possible range of 20 to 80. One item in the policy subscale ("University policies on the use of e-resources are not stated") is negatively worded

Data were analysed with IBM SPSS Statistics version 28. Frequencies, percentages, means and standard deviations answered the research questions. On the four-point scales a mean of 2.50, the scale midpoint, was taken as the criterion for agreement; on the five-point frequency scale means were read against the scale anchors, so that 3.00 corresponds to monthly and 4.00 to weekly use. Pearson's product-moment correlation tested the hypothesis at the .05 level, and zero-order correlations between the four institutional-factor subscales and the composite use score were computed to show which conditions were most closely associated with use. Because the sample was large enough for small coefficients to reach significance, effect sizes are interpreted with Cohen's (1988) conventions (r of about .10 small, .30 medium and .50 large), and the squared correlation is reported as the proportion of shared variance.

4. Results

4.1 Response rate and respondent profile

Of 1,335 questionnaires distributed, 1,232 were returned complete and usable, a return rate of 92.3%. Return rates by university ranged from 90.7% at Ladoke Akintola University of Technology to 95.0% at Ondo State University (Table 2).

Table 2: *Questionnaire distribution and return, by university*

University	Distributed	Returned and usable	Return rate (%)
Olabisi Onabanjo University	150	138	92.0
Tai Solarin University of Education	170	157	92.4
Ladoke Akintola University of Technology	215	195	90.7
Osun State University	150	137	91.3
Lagos State University	220	203	92.3
Ekiti State University	150	138	92.0
Adekunle Ajasin University	140	131	93.6
Ondo State University	140	133	95.0
Total	**1,335**	**1,232**	**92.3**

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Women made up 52.0% of respondents (*n* = 672) and men 48.0% (*n* = 620). Most respondents (63.0%) were aged 20 to 22; 16.3% were 17 to 19, 16.4% were 23 to 25 and 4.3% were 26 or older. The mean age was 21.65 years (*SD* = 2.45).

4.2 Types of library-based EIRs used (RQ1)

Table 3: *Types of library-based electronic information resources used by respondents*

Resource	SD n (%)	D n (%)	A n (%)	SA n (%)	M	SD
E-databases	100 (7.7)	168 (13.0)	490 (37.9)	534 (41.3)	3.13	0.92
E-books	107 (8.3)	191 (14.8)	517 (40.0)	477 (36.9)	3.06	0.92
Educational videos	153 (11.8)	170 (13.2)	468 (36.2)	501 (38.8)	3.02	1.00
E-journals	113 (8.7)	202 (15.6)	568 (44.0)	409 (31.7)	2.99	0.91
Digital library resources	165 (12.8)	165 (12.8)	475 (36.8)	487 (37.7)	2.99	1.01
Audio materials	171 (13.2)	162 (12.5)	508 (39.3)	451 (34.9)	2.96	1.00
Electronic catalogue (OPAC)	127 (9.8)	250 (19.3)	476 (36.8)	439 (34.0)	2.95	0.96
CD-ROM	154 (11.9)	199 (15.4)	523 (40.5)	416 (32.2)	2.93	0.97
E-abstracts	134 (10.4)	238 (18.4)	535 (41.4)	385 (29.8)	2.91	0.94
Named databases (AGORA, JSTOR, EBSCOhost, AJOL, HINARI)	149 (11.5)	280 (21.7)	470 (36.4)	393 (30.4)	2.86	0.98
Weighted mean					**2.98**	

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree; scored 1–4. Criterion mean = 2.50. Percentages are those reported by the authors and are computed on 1,292 responses .

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Table 3 shows the types of EIRs respondents reported using. All ten items exceeded the criterion mean of 2.50 and the weighted mean was 2.98, indicating that respondents reported using a broad range of resources. E-databases (*M* = 3.13), e-books (*M* = 3.06) and educational videos (*M* = 3.02) were the most widely used, followed by e-journals and digital library resources (both *M* = 2.99) and audio materials (*M* = 2.96). The OPAC (*M* = 2.95), CD-ROMs (*M* = 2.93) and e-abstracts (*M* = 2.91) ranked lower. The lowest mean (2.86) was for the item that named specific licensed databases (AGORA, JSTOR, EBSCOhost, AJOL and HINARI): 66.8% of respondents agreed that they used these, compared with 79.2% who agreed that they used e-databases in general. The gap suggests that a proportion of respondents understood e-databases more broadly than the databases their library licenses.

4.3 Frequency of use (RQ3)

Table 4 : *Frequency of use of library-based electronic information resources*

Resource	Never n (%)	Occasionally n (%)	Monthly n (%)	Weekly n (%)	Daily n (%)	M	SD
Audio materials	121 (9.4)	258 (20.0)	144 (11.1)	239 (18.5)	530 (41.0)	3.62	1.42
Educational videos	141 (10.9)	207 (16.0)	178 (13.8)	318 (24.6)	448 (34.7)	3.56	1.38
Digital library resources	221 (17.1)	250 (19.3)	158 (12.2)	201 (15.6)	462 (35.8)	3.34	1.53
E-journals	189 (14.6)	217 (16.8)	254 (19.7)	263 (20.4)	369 (28.6)	3.31	1.42
E-books	185 (14.3)	264 (20.4)	182 (14.1)	300 (23.2)	361 (27.9)	3.30	1.43
E-databases	194 (15.0)	230 (17.8)	197 (15.2)	338 (26.2)	333 (25.8)	3.30	1.41
E-abstracts	205 (15.9)	275 (21.3)	198 (15.3)	254 (19.7)	360 (27.9)	3.22	1.45

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Named databases (AGORA, JSTOR, EBSCOhost, AJOL, HINARI)	291 (22.5)	231 (17.9)	164 (12.7)	215 (16.6)	391 (30.3)	3.14	1.56
Electronic catalogue (OPAC)	243 (18.8)	262 (20.3)	306 (23.7)	211 (16.3)	270 (20.9)	3.00	1.40
CD-ROM	237 (18.3)	346 (26.8)	225 (17.4)	296 (22.9)	188 (14.6)	2.89	1.34
Weighted mean						**3.27**	

Note. Scored never = 1, occasionally = 2, monthly = 3, weekly = 4, daily = 5. Resources are ordered by mean.

The weighted mean for frequency was 3.27, between monthly (3) and weekly (4) use (Table 5). Audio materials (*M* = 3.62) and educational videos (*M* = 3.56) were used most often, with 41.0% and 34.7% of respondents respectively reporting daily use. Digital library resources (*M* = 3.34), e-journals (*M* = 3.31), e-books (*M* = 3.30) and e-databases (*M* = 3.30) followed, each used weekly or daily by about half of respondents. E-abstracts (*M* = 3.22) and the named databases (*M* = 3.14) came next; the OPAC (*M* = 3.00) and CD-ROMs (*M* = 2.89) were used least. The distributions were wide (standard deviations of 1.34 to 1.56) and, for several resources, polarised. For the named databases, 30.3% of respondents reported daily use while 22.5% reported never using them and a further 17.9% used them only occasionally. For CD-ROMs, 45.1% reported never or occasional use, and nearly two in five respondents (39.1%) used the OPAC never or only occasionally.

4.4 Institutional factors (RQ4)

Table 5 presents respondents' ratings of the four institutional factors.

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Table 5: *Respondents' ratings of institutional factors supporting the use of electronic information resources*

Item	SD n (%)	D n (%)	A n (%)	SA n (%)	M	SD
Institutional policy (subscale weighted mean = 3.01)						
There is a policy in my university that regulates the use of e-resources	89 (6.9)	170 (13.2)	596 (46.1)	437 (33.8)	3.07	0.86
The university has a policy on electronic information database subscription	75 (5.8)	314 (24.3)	491 (38.0)	412 (31.9)	2.96	0.89
University policies on the use of e-resources are not stated	84 (6.5)	309 (23.9)	543 (42.0)	356 (27.6)	2.91	0.88
University guidelines support the use of e-resources	84 (6.5)	226 (17.5)	523 (40.5)	459 (35.5)	3.05	0.89
My university always emphasises the need for students to use e-resources	103 (8.0)	154 (11.9)	575 (44.5)	460 (35.6)	3.08	0.89
Electricity supply (subscale weighted mean = 2.96)						
Constant electricity supply is available in the university library	119 (9.2)	234 (18.1)	419 (32.4)	520 (40.2)	3.04	0.98
There are alternative sources of electricity (generator or solar) in the students' hostels	133 (10.3)	208 (16.1)	530 (41.0)	421 (32.6)	2.96	0.95
Electricity supply is not a problem at my university	171 (13.2)	249 (19.3)	514 (39.8)	358 (27.7)	2.82	0.98
A stable power supply in the university would not make using e-resources difficult	127 (9.8)	200 (15.5)	579 (44.8)	386 (29.9)	2.95	0.92

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There are solar or generator charging ports in the university when there is no electricity supply	140 (10.8)	187 (14.5)	458 (35.4)	507 (39.2)	3.03	0.99
Accessibility of EIRs (subscale weighted mean = 2.91)						
E-resources are accessible in the library	94 (7.3)	160 (12.4)	615 (47.6)	423 (32.7)	3.06	0.86
Electronic information resources are easily accessible	105 (8.1)	252 (19.5)	579 (44.8)	356 (27.6)	2.92	0.89
The library gives updates on new e-resources accessible in the library	146 (11.3)	299 (23.1)	482 (37.3)	365 (28.3)	2.83	0.97
There are enough access points for e-resources in the library	138 (10.7)	299 (23.1)	491 (38.0)	364 (28.2)	2.84	0.96
E-resources are available to multiple users studying at the same time	141 (10.9)	264 (20.4)	476 (36.8)	411 (31.8)	2.90	0.97
Internet connectivity (subscale weighted mean = 2.81)						
The university has quality internet for accessing e-resources	113 (8.7)	256 (19.8)	533 (41.3)	390 (30.2)	2.93	0.92
The university has a subsidised café that students can use	160 (12.4)	288 (22.3)	473 (36.6)	371 (28.7)	2.82	0.99
There is free log-in to access the internet	212 (16.4)	301 (23.3)	437 (33.8)	342 (26.5)	2.70	1.03
There is a technical support unit in my university that helps students solve device and internet problems	140 (10.8)	357 (27.6)	454 (35.1)	341 (26.4)	2.77	0.96
There are internet-enabled computers for loan to students in my university library	171 (13.2)	295 (22.8)	408 (31.6)	418 (32.4)	2.83	1.03
Overall weighted mean					**2.92**	

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Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree; scored 1–4. Criterion mean = 2.50.

The overall weighted mean of 2.92 indicates conditions that respondents judged moderately supportive. Institutional policy received the highest subscale mean (3.01). Four in five respondents agreed that their university had a policy regulating the use of e-resources (79.9%) and that it emphasised the need for students to use them (80.1%); 76.0% agreed that university guidelines supported use and 69.9% that there was a policy on database subscription. At the same time, 69.6% agreed with the negatively worded statement that university policies on e-resource use are not stated. Taken together, the responses suggest that policies exist but are not clearly communicated to students.

Electricity supply had a subscale mean of 2.96. About three-quarters of respondents agreed that constant electricity was available in the university library (72.6%), that solar or generator charging ports were provided when there was no supply (74.6%) and that alternative sources of power were available in hostels (73.6%). Fewer, 67.5%, agreed that electricity supply was not a problem at their university, and the standard deviations on this subscale (0.92 to 0.99) were among the largest in the instrument.

Accessibility of EIRs had a subscale mean of 2.91. Agreement was high that e-resources were accessible in the library (80.3%) but lower that they were easily accessible (72.4%), that they were available to multiple users at the same time (68.6%), that there were enough access points (66.2%) and that the library gave updates on newly acquired e-resources (65.6%).

Internet connectivity had the lowest subscale mean (2.81). Although 71.5% agreed that the university had quality internet for accessing e-resources, only 65.3% reported a subsidised café, 64.0% internet-enabled computers available for loan, 61.5% a technical support unit for device and connection problems and 60.3% free log-in to the campus network. The last item had the lowest mean in the instrument (2.70) and the largest standard deviation (1.03).

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4.5 Institutional factors and use of EIRs (H0)

Table 6: *Means, standard deviations and zero-order correlations between use of library-based EIRs and institutional factors*

Variable	M	SD	1	2	3	4	5
1. Use of library-based EIRs (30 items)	92.42	18.76	—				
2. Institutional policy	15.06	2.89	.319	—			
3. Electricity supply	14.79	3.40	.333	.507	—		
4. Accessibility of EIRs	14.53	3.33	.370	.602	.629	—	
5. Internet connectivity	14.05	3.72	.401	.596	.656	.668	—
Institutional factors, composite (20 items)	**58.44**	**11.25**	**.424**				

Note. N = 1,232. All correlations are significant at $p < .001$ (two-tailed). Possible ranges: use 30–130; each institutional-factor subscale 5–20; composite 20–80.

All four subscales correlated significantly with use. Internet connectivity had the strongest association (r = .401), followed by accessibility of EIRs (r = .370), electricity supply (r = .333) and institutional policy (r = .319). The subscales were also substantially correlated with one another (r = .507 to .668), indicating that universities rated well on one condition tended to be rated well on the others. The coefficients for individual subscales should therefore be read as descriptive of their association with use, not as independent contributions.

The composite institutional-factor score (M = 58.44, SD = 11.25) correlated positively and significantly with the composite use score (M = 92.42, SD = 18.76), r = .424, $p < .001$ (Table 6). The null hypothesis was therefore rejected. By Cohen's (1988) conventions the association is of medium size; institutional factors accounted for about 18% of the variance in reported use (r^2 = .18).

Discussion

Undergraduates in these eight state universities described themselves as active users of a wide repertoire of EIRs, drawn on mainly for coursework: term papers, assignments and online classes. The repertoire and the purposes match what has been reported for private universities in the same zone (Alabi, 2021), for the University of

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Ibadan (Omidiji, 2024) and for distance learners in Sri Lanka (Marasinghe, 2025): students use EIRs for the tasks their courses set them. The prominence of personal development and online classes among the purposes is notable. It suggests that EIRs have become part of how students manage their own learning, and it probably reflects the growth of online and blended delivery in these universities, although the study did not measure that directly.

Three features of the use pattern deserve comment. First, audio and video materials were used more often than any text resource. This is consistent with Alphonce and Mwantimwa's (2019) finding that Tanzanian students drew on internet resources more heavily than on e-books, journals or audio clips, and it raises a question the instrument cannot answer: how much of this multimedia use involves resources the library provides or mediates, and how much involves the open web. The practical implication for libraries is the same either way. If students learn from video and audio, libraries that curate, license and link such material, and make it discoverable alongside text, will meet students where they already are.

Second, the licensed scholarly databases that form the core of a library's paid e-resource provision were used less than most other resources and in a polarised way: nearly a third of respondents used them daily, while two in five used them never or only occasionally. The difference between agreement on using e-databases in general (79%) and on using the named databases (67%) points in the same direction as Tlakula and Fombad's (2017) observation that students confuse library e-resources with the web, as the Ghanaian and Croatian students who listed Google and Wikipedia among their e-resources (Ankamah et al., 2024; Dukić & Strišković, 2015), and as the awareness gaps documented by Dadzie (2005) and Acanit et al. (2024). A substantial minority of the students in this sample appear not to have found their way to the resources that distinguish a library from a search engine.

Third, CD-ROMs and the OPAC were used least. The first is a format in decline, and its continued presence in instruments and collections is probably a matter of habit. The second is more serious. Low use of the catalogue suggests that students are not discovering library holdings through the library's own tools, which is consistent with a

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reliance on general search engines (Connaway et al., 2011; Nicholas et al., 2009) and with the awareness problems already noted.

The four institutional conditions were rated as moderately supportive, and the pattern across them is informative. Policy was rated highest, yet seven in ten respondents also agreed that policies on e-resource use were not stated. The most plausible reading is that policies exist at institutional level but are not communicated in a form students recognise. Adetayo (2026) identifies unenforced policy as one of the conditions that keep provision from becoming use, and Bentil et al. (2022) place publicity and training among the management activities that shape usage. A policy students do not know about cannot influence what they do.

Electricity was rated next. The campuses in this study appear better supplied than the country as a whole, where access stands at 61% (World Bank, 2025) and supply is subject to frequent interruption (Adoghe et al., 2023): roughly three-quarters of respondents reported constant supply in the library, back-up sources in hostels and charging points during outages. But one respondent in three did not agree that electricity was not a problem, and the large standard deviations show that experience varied widely, presumably between universities and between the library and the rest of the campus. The finding is consistent with the persistent appearance of power among students' problems in Nigerian studies (Alabi, 2021; Omidiji, 2024; Umukoro & Tiamiyu, 2017).

Accessibility ratings show provision concentrated in the library building. Four in five respondents agreed that e-resources were accessible in the library, but only two in three that there were enough access points or that the library told them about new acquisitions. This is the distinction between availability and accessibility drawn by Ani et al. (2015), and it echoes the awareness gap reported across African universities (Dadzie, 2005; Tlakula & Fombad, 2017).

Internet connectivity was rated lowest. Only three in five respondents reported free log-in to the campus network, and similar proportions reported a technical support unit, loanable internet-enabled computers or a subsidised café. In the absence of campus provision, students use personal mobile data, and the cost of data becomes a cost of using the library. In a region where 38% of the population is online and cost is the principal barrier (ITU, 2025), this is a large obstacle, and it matches the cost-related findings of

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Alphonce and Mwantimwa (2019) and Acanit et al. (2024) and the connectivity complaints recorded by Alabi (2021), Omidiji (2024) and Umukoro and Tiamiyu (2017).

The central finding is a positive, medium-sized association between institutional factors and use of library-based EIRs, with institutional conditions accounting for about 18% of the variance in use. Comparison with individual-level predictors is instructive, with the caveat that instruments differ across studies. Ebijuwa and Mabawonku (2019) found a correlation of .13, under 2% of variance, between computer self-efficacy and use among undergraduates in the federal universities of the same zone; Popoola and Adedokun (2023) and Ukachi (2015) report significant relationships for computer-related and information literacy skills; Umar and Dangwaran (2023) found no relationship between digital literacy and use. Set against these, the present coefficient suggests that in this setting the conditions a university provides are at least as closely tied to use as the attributes of the student. That is what UTAUT predicts in placing facilitating conditions as a direct determinant of use behaviour (Venkatesh et al., 2003), what Wilson's (1999) environmental intervening variables imply, and what Adetayo (2026) concludes from the African literature: interventions aimed at the student alone will keep underperforming while the conditions around the student are unchanged.

The ordering of the four subscales is consistent with this reading. Internet connectivity and accessibility, the conditions closest to the moment of use, had the strongest associations; electricity came next; policy, the most distal condition, had the weakest. Policy does not itself deliver a journal article to a student's screen. It works, when it works, by committing funds to connectivity, power and access points, and the strong inter-correlations among the subscales (.51 to .67) are what one would expect if policy operated through infrastructure. The ordering also agrees with Umukoro and Tiamiyu (2017), who found the e-library environment and network reliability central to use and non-use at the University of Benin, and with Alajmi and Alotaibi's (2020) finding that traditional facilitating conditions predicted both the frequency and the depth of digital library use.

Two cautions apply. The design is cross-sectional and correlational, so the direction of the relationship cannot be settled here. Students who use EIRs heavily may rate institutional conditions more favourably because they have learned where the

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working access points and reliable power are. And because both measures came from the same respondents on the same occasion, common-method variance may have inflated the coefficient somewhat. Neither caution removes the finding, but both argue for the replication and extension proposed below.

6. Implications

For theory, the results suggest that facilitating conditions should be disaggregated in low-resource settings. In the environments in which UTAUT was developed, organisational and technical infrastructure could be treated as a single background condition. Where electricity, connectivity and access points cannot be assumed, each is a separate condition with its own distribution and its own association with use, and treating them as one obscures the differences that matter for intervention.

For university libraries, the findings point to several actions. Libraries should publish their EIR policy in plain language, include it in orientation and general studies courses, and repeat it at the point of need; a policy students know about is more likely to shape behaviour than one they do not. They should move access beyond the library building through off-campus authentication, more access points and loanable devices, since the accessibility ratings show provision concentrated where students spend the least time. They should communicate new acquisitions actively and market the licensed databases by name, with discipline-specific instruction, so that fewer students stop at e-databases in the abstract. They should recognise the place of video and audio in students' learning by curating and linking such material within the discovery environment. And they should monitor usage statistics for licensed resources so that the relationship between provision and use is tracked rather than assumed (Bentil et al., 2022).

For university management, the priorities are campus-wide free or subsidised internet access with student log-in, dedicated and backed-up power for the library and ICT facilities, and a functioning technical support desk. Connectivity and accessibility were the two conditions most strongly associated with use, and connectivity was the weakest condition reported. For state governments and their higher-education agencies, the implication is that funds for EIR subscriptions should be accompanied by recurrent budget lines for bandwidth and power, and that state universities should be supported to

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take part in national research and education network arrangements, because a subscription that cannot be reached is a cost without a return.

7. Limitations and future research

The study relied on self-reported use, which may differ from actual use; future work should triangulate survey data with usage statistics from licensed platforms. The instrument's boundary between library-based and other electronic resources was not always clear to respondents, particularly for multimedia; future instruments should name the library platform in each item or ask separately about library-provided and open-web resources. One negatively worded item in the policy subscale may have been read inconsistently. The sample was drawn from two faculties and one level of study in eight of the 14 state universities in the zone, so generalisation to other disciplines, levels and institutions should be made with care. The design was correlational and single-source, and the four institutional conditions were substantially inter-correlated; multiple regression, or better, multilevel models that treat students as nested within universities, would separate institutional from individual variance and estimate the independent contribution of each condition. A mixed-methods design that adds interviews with university librarians and ICT directors would clarify how policy is translated, or not, into infrastructure. Finally, the relationship between the four conditions proposed here, in which policy acts on use through infrastructure, is a mediation hypothesis that can be tested directly.

8. Conclusion

Undergraduates in state-owned universities in South-West Nigeria use a broad range of library-based EIRs, mainly for coursework and personal development, at a frequency between monthly and weekly, with multimedia used most often and licensed scholarly databases used unevenly. They describe institutional conditions that are moderately supportive, strongest in the existence of policy and weakest in internet connectivity, and they report a gap between the policies universities have and the policies students know about. Institutional factors were positively and significantly related to use, accounting for close to a fifth of its variance, with connectivity and accessibility most closely associated. The findings support the view that in this setting the infrastructure that carries EIRs to the student matters at least as much as the subscription itself, and

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that efforts to raise use which address the student alone, through training or advocacy, will have limited effect while power, connectivity and access remain unreliable. Libraries can act on communication, access and discovery; universities and state governments must act on power and bandwidth. Together these are the conditions under which the investment already made in EIRs can begin to return its value.

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