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TOWARD A HYBRID USE OF PRINTED TEXTBOOK AND ELECTRONIC RESOURCES: AN INQUIRY OF PUBLISHING STUDIES UNDERGRADUATE STUDENTS' EDUCATIONAL RESOURCE USE AT KNUST, GHANA

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ABSTRACT

The use of electronic resources and printed textbooks by undergraduate students in Ghanaian higher education institutions started at the beginning of the 20th Century. Yet, there is inadequate in-depth exploration of the user patterns and preferences for printed textbooks and e-resources. This study aimed to explore undergraduate students' user patterns and preferences for e-resources and printed textbooks. The study engaged 300 undergraduate students from Year One to Year Four in KNUST's Department of Publishing Studies. It employed a descriptive design and a quantitative research approach. An expert-validated customised survey instrument was administered and analysed using the statistical software Jamovi (version 2.4.11) and Microsoft Excel (version 2019). The research indicated that male students had slightly higher average scores in the use of e-resources and textbooks compared to female students. It recommends the adoption of hybrid library collections that combine electronic and print materials to cater to students' academic needs and varied preferences. The growing acknowledgment of the advantages of electronic resources—such as their accessibility, interactivity, and support for different learning styles reflects a notable change in students' preferences as they navigate their academic journeys. This approach will accommodate various learning styles and enhance access to materials, potentially boosting students' engagement and success. Therefore, investing in digital infrastructure and providing training on these online resources for all students is essential.

Keywords: Electronic resources, printed textbook, higher education, hybrid library collection, KNUST.

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INTRODUCTION

The digital era is significantly reshaping the global educational resources landscape, making electronic resources increasingly accessible within academic settings. Information can now be easily accessed through various devices, including computers, smartphones, tablets, and e-readers. The emergence of electronic resources such as e-journals, e-textbooks, online periodicals, newspapers, multimedia content, and a variety of online databases in formats like PDFs has revolutionized how information is accessed and shared across fields like education, research, healthcare, and business (Devi & Kumar, 2023; Kling & Callahan, 2001; Sinha & Gautam, 2015). E-resources are defined as digital documents provided to library users through computer-based information retrieval systems (Jose, 2018). Academic resources are primarily categorized into electronic and print formats, both essential for educational purposes. Modern education requires learning resources that enhance 21st-century skills (Sari ., 2022), equipping individuals to navigate the opportunities and challenges of a technology-driven world characterized by rapid information exchange. Consequently, these resources influence curriculum content and student learning outcomes (Ross ., 2017). The quality and accessibility of electronic textbooks have improved significantly, with Ozdemir and Hendricks (2017) noting that future generations of students are expected to utilize e-resources at all educational levels. Librarians play a crucial role in promoting and managing these resources through library systems, allowing users to access them online from anywhere (Lessick ., 2013).

Integrating these resources into the academic community is vital for providing access to information and services, thereby enhancing efficiency and user satisfaction (Saikia & Chandel, 2012). The library serves as the central hub for acquiring, processing, preserving, and disseminating essential information resources for teaching, learning, and research. In higher education, the impact of electronic resources is clear, especially as mobile devices and tablets become more prevalent. However, there is a concerning trend indicating that undergraduates may not be fully utilizing the resources available in the library (Idiegbeyan-Ose ., 2019). Despite advancements, a significant gap remains in understanding how undergraduates can better optimize the library's resources. Preferences vary, with some students exhibiting a preference for print resources, others leaning towards electronic alternatives, and yet some seek a harmonious blend of both formats. Notwithstanding, the general assumption that the advent of electronic resources signals the obsolescence of print materials may not be entirely accurate (Alzahrani ., 2019; Oyewusi ., 2019).

The impact of libraries has transformed the digital or e-resources services and that has enhanced the information usage by users. This is rapidly working well because of technological advancement. (Lessick ., 2013). Despite the availability of electronic resources and library services, there remains a gap in understanding how students in African and Ghanaian academic contexts effectively utilise these resources (Alzahrani ., 2019; Oyewusi ., 2019). A worldwide preference towards electronic resources does exist in the literature (Ghafar, 2024; Rennie, 2024). However, complete research on student textbook usage and preferences either in print or electronic in Ghana, in the Faculty of Arts, Kwame Nkrumah University of Science and Technology (KNUST), is unexplored. These preferences have not been investigated in the Ghanaian academic ecosystem. Meanwhile, other studies suggest that preferences between print and electronic resources differ according to demographics and institution. Therefore, this study examines how students based on their learning experiences perceive electronic resources to

print textbooks. It also looks at factors that influence their preferences and usage. This study shows a gap in students' interaction with electronic resources compared to the traditional printed textbooks at KNUST's Faculty of Arts. This lack of in-depth research in the Ghanaian educational ecosystem calls for a comprehensive study to address this gap. This study is based on the research question: How do students use print textbooks and electronic resources and what are their preferences?

Academic Libraries and Electronic Resources

In recent years, students and lecturers have been using electronic resources in academic libraries. These digital formats offer relevant features such as search capabilities, portability, multimedia integration, collaboration tools, synchronous updates, hyperlinks, annotation features, and interactivity and this enhances the learning experience (Millar & Schrier, 2015). In a study by Walton & Bunderson (2021) it became clear that print purchase for all subject areas from 2009 to 2019 were declining making way for eBook. Hitherto the usage data showed an increase in eBook usage than print in their study. For example, Humanities recorded 35% print usage to 82% eBook usage. This confirms Blummer and Kenton (2020) statement in the study that electronic textbooks and electronic resources adoption in education is increasing. It can be deduced that there is a gradual increase in eBook use, possibly due to students' familiarity with social media platforms and their access to digital devices and internet connectivity, despite the latter being relatively expensive. Notwithstanding, the printed resources have an outstanding advantage of high levels of perceived understanding, confidence, immersion, and lower levels of fatigue for reading printed text than reading from device screen (Jeong & Gweon, 2021). Student preferences for print, digital, or hybrid resources are driven by their prior experiences, purchasing behaviours, and usage patterns (Kato *et al*., 2021).

Student Use of Print and Electronic Resources in Higher Education

In higher educational environment both print and electronic resources are used by students in their academic life. But the interest in this case is the most preferred and used. Therefore, in a study conducted by D'Ambra *et al*., (2022) they highlighted that in the learning process, electronic resource ensures retention, motivation, and student involvement. Also, student engagement is improved by the interactive nature of the materials and helps them in their learning beyond traditional academic activities (D'Ambra *et al*., 2022). A study of electronic education resources in higher education by Maslova *et al*., (2020) shows that students engage with lecture notes, assignments, and video resources in electronic format regularly. This preference suggests that they are attracted to formats that combine visual and textual information, which promotes retention of difficult concepts (Maslova *et al*., 2020). Moreover, the effectiveness of e-learning stems from the availability of a wide range of resources and the encouragement of critical thinking (Maslova *et al*., 2020). However, motivating students to independently engage with electronic resources can be difficult, as many tend to favor media content over text-based materials. This preference can hinder learning if the most valuable content is not the most visually appealing or engaging (Maslova *et al*., 2020).

Ankrah & Atuase (2018) found that students utilize electronic resources for research based on their availability, accessibility, and ease of use. They also noted that information and communication technologies (ICTs) support teaching, learning, and research objectives by providing access to electronic resources. Both print and electronic formats are significant, with distinct preferences among

students. Print materials, especially textbooks, remain popular for extended reading and in-depth study due to their advantages, such as reducing eye strain, enhancing text retention, facilitating note-taking, and offering flexibility (Watson, 2023). Approximately 57% of students prefer print resources when needed, while only 22% consistently choose print (Millar & Schrier, 2015). In contrast, electronic resources like e-books, online databases, and journals are increasingly favored for their accessibility, portability, interactive features, and vast information availability (Jamuna & Dhanamjaya, 2021). Usage frequency varies, with younger students showing higher engagement (Jamuna & Dhanamjaya, 2021). Additionally, Sabri *et al*. (2022) point out that older students tend to prefer print for specific tasks. Furthermore, computer literacy proficiency impacts the use of e-resources (Shehu *et al*., 2020). Students make choices between print and electronic resources based on their specific needs and preferences, recognizing the benefits of print alongside the advantages of e-resources in terms of accessibility and interactivity (Millar & Schrier, 2015; Ross *et al*., 2017). Despite the growing acceptance of e-resources, print continues to play a significant role, highlighting the necessity for hybrid library collections (Bah, 2024; López, 2023). It is essential to acknowledge that barriers such as infrastructure and socioeconomic challenges influence how students utilize e-resources, underscoring the need to enhance both access and digital skills (Shehu *et al*., 2020). Both print and electronic formats address diverse academic needs.

Print and E-resources Usage and Preferences in Higher Education

Recent studies have provided diverse insights into student preferences for textbooks in both print and electronic formats. However, there is conflicting evidence, as students tend to prefer print books for extended reading due to less eye strain and better text retention, while favoring e-books for shorter content (Watson, 2023). Notably, some researchers emphasize the importance of institutions offering both formats to meet the varied needs of students (Bah, 2024). Most research indicates a preference for print, with correlations between format choice and factors such as gender, age, and academic level. Although students appreciate e-books, they still acknowledge the tangible advantages of print materials for studying. This aligns with findings that many current e-textbook users express hesitance about future use, citing cost and interactivity as significant factors (Chavali & Gundala, 2022). While students recognize the unique benefits of both digital and print textbooks for learning, they do not necessarily prefer one format over the other; instead, they view them as complementary, each offering distinct advantages for comprehension (Newsum, 2016). Researchers advocate for providing both print and electronic options to cater to students' diverse preferences and needs (Bah, 2024).

Walton and Bunderson (2021) note that several academic libraries have reported equal or higher usage rates of electronic books compared to print books. A comprehensive study by López (2023) examined electronic book usage and perceptions across over 120 universities in the UK, analyzing 22,437 survey responses. The findings revealed that both print and electronic resources are utilized and preferred by individuals in various academic settings. According to Chohda & Kumar (2023), the preference for one format over the other depends on various factors, including demographic characteristics, institution, year of study, residential setting, and gender. A significant number of respondents indicated a preference for a combination of print and electronic resources for their academic work (Soni ., 2020). The availability of online resources has not entirely replaced printed materials, as a substantial majority still

prefer print over electronic options (Sari ., 2022; Soni ., 2020). However, textbooks can be cumbersome, costly, and not always easily accessible (Ross ., 2017). In contrast, electronic resources provide written or visual content that can be accessed online, offering portability, accessibility, and the potential for updates. Nonetheless, students may face challenges when using electronic resources, as computer literacy is essential. For those unable to afford access, the cost of electronic resources can pose a significant barrier (Kato ., 2021).

Theoretical Framework

Printed textbooks and electronic resources have become increasingly significant in the current higher education landscape. This transition highlights the influence of technology on how students' access and engage with educational materials. The Technology Acceptance Model (TAM), developed by Davis in 1989, offers a robust theoretical framework for analyzing and predicting students' preferences and behaviors regarding these resources (Alshammari & Rosli, 2020). The key components of TAM perceived ease of use (PEOU) and perceived usefulness (PU)—are essential for understanding how individuals interact with technology and can be effectively applied to the context of resource utilization by students at the Kwame Nkrumah University of Science and Technology (KNUST) in Ghana. Legris . (2003) argue that the ease of using a technology and its perceived effectiveness in enhancing task performance are the primary factors shaping users' attitudes toward technology adoption. This perspective reflects how students perceive the navigability and usability of electronic resources, such as e-books and online databases. User-friendly interfaces, accessibility, and search capabilities enhance PEOU, making e-resources more appealing to users. PU, in contrast, focuses on the perceived academic advantages of utilizing these resources (Bryan & Zuva, 2021). The availability of current content and the flexibility to access resources anytime and anywhere render e-resources valuable for research and learning. Students' choices between printed and electronic resources are influenced by their perceptions of the ease of use and usefulness of these materials. For e-resources, favorable perceptions regarding their utility in completing assignments or studying for exams increase students' likelihood of using them (Nikolopoulou ., 2023). In contrast, printed textbooks are appreciated for their tangibility, ability to maintain focus, and suitability for in-depth reading and note-taking (Han ., 2021).

Positive attitudes toward the use of hybrid resources arise from the combined advantages of both formats. While printed materials provide reliability and physical engagement, electronic resources offer enhanced interactivity and convenience, catering to diverse learning preferences. External factors, such as system quality and institutional policies, also affect the core constructs of TAM. For instance, the reliability and efficiency of e-resource platforms influence PEOU and PU, while institutional initiatives to promote digital literacy shape students' attitudes and intentions. This theoretical framework lays the groundwork for exploring the relationship between printed and electronic resources in higher education, contributing to the broader discussion on resource management and adoption in academic institutions. In the context of KNUST, this framework allows for an examination of the patterns and preferences of undergraduate students in utilizing these resources.

MATERIALS AND METHODS

Research Design

The study utilises a descriptive survey design within a quantitative research framework. This approach is consistent with the research objective of exploring undergraduate students' knowledge, preferences, challenges, and perceptions regarding the electronic and print resources available in KNUST's Faculty of Art. Following the quantitative methodology, a questionnaire was used to gather data from 300 undergraduate students. The collected responses were coded, recorded, and analysed using Microsoft Excel and Jamovi 2.4.11 statistical software. The research was conducted between April and July 2024.

Design and Validation of Data Collection Instrument

For this study, a tailored questionnaire was created to investigate the use of printed textbooks and electronic resources, specifically designed to align with the study's objectives. The questionnaire aimed to capture essential aspects of printed books and electronic resources in the context of Publishing Studies undergraduate students' educational resource usage. The development process began by identifying key themes related to electronic resources and printed textbooks, including background information, textbook usage, electronic resource usage, and perceived benefits and challenges. Each area was customized to reflect the study's goals and the unique experiences of students with electronic resources and print textbooks. In formulating the items, we drew on established concepts and validated methods from existing questionnaires and relevant literature, ensuring that the instrument incorporated evidence-based insights while remaining specific to this research context. By referencing previous studies, we integrated reliable and pertinent item structures while adapting questions to address the unique nuances of this setting. The finalized questionnaire consists of four main sections, each corresponding to a different aspect of the hybrid use of printed textbooks and electronic resources by undergraduate students:

Section 1: Use of Textbooks - This section includes items that assess how frequently students use textbooks for coursework and the factors that influences their choice between textbooks and electronic resources.

Section 2: Use of Electronic Resources - This section evaluates the use of electronic resources for academic purposes, the types of electronic resources utilised, and the comparisons between electronic resources and print textbooks.

Section 3: Perceived Benefits - This section addresses the advantages of using electronic resources for academic work.

Section 4: Challenges of Electronic Resources - This section provides an overview of challenges associated with using electronic resources for academic purposes.

Each section was meticulously crafted, with questions adapted based on established best practices from prior studies. This approach ensured that the questionnaire was culturally relevant and specific to the topic being investigated. A pre-test was conducted with a sample from the target population to refine question wording and confirm that the items were easily understood. This pre-testing phase also helped identify areas for improvement, ensuring the instrument's clarity and suitability for the intended respondents. The instrument was reviewed by potential senior experts for their input. The completed instrument was then administered to students through Google Forms and print versions with the help of research assistants. Follow-ups were made to encourage students to respond to the questionnaire. Though over 400 questionnaires were disseminated with the Google form, 300 copies were returned and used for the analysis.

Participants and Sampling

A total of 300 students, 62 first years, 37 second years, 80 third years and 121 final years undergraduate students in the Department of Publishing Studies participated in this case study (Source: Researchers' fieldwork, 2024). A random sampling technique was used to ensure a fair representation, guaranteeing the inclusion of students from various academic levels (years of study). The sample size was determined using appropriate statistical methods to provide sufficient power for the analysis.

Data Analysis

Data analysis was conducted using Microsoft Excel and Jamovi (version 2.4.11). Microsoft Excel is known for its ability to organise and manage data as well as basic statistical analysis (Kumar, 2023). It allows researchers to efficiently handle datasets, perform calculations, and create visual representations of data essential for analysis (Kirkby ., 2024). Jamovi 2.4.11 is a powerful statistical software which has user-friendly interface for performing tasks (Eqbal & Ansari, 2024). It is suitable for researchers with no or limited programming skills. It also, provides a range of statistical tests and visualisations for easy access and meta-analysis (Mohamed ., 2024; Ntho ., 2024; Pahwa ., 2023). This is beneficial for the descriptive survey design employed in the study. Allowing for a thorough analysis of the data. Using Jamovi provides access to more statistical methods, such as regression analysis, which was used in the study to explore the relationship between e-resource usage and academic levels.

Both tools are well-suited for quantitative research methodologies, including the descriptive survey design applied in this research. They enable the analysis of numerical data to identify patterns and preferences regarding electronic and print resources among students. The integration of Excel for data management and Jamovi for statistical analysis ensures that the research findings are grounded in robust statistical principles. The data collected were coded and analyzed using Microsoft Excel and Jamovi 2.4.11 statistical software.

RESULTS AND DISCUSSION

Results

The sample consisted of 155 male students and 145 female students, spread across different academic years: Year 1 (62 students), Year 2 (37 students), Year 3 (80 students), and Year 4 (121 students). The average score for electronic resource usage was 5.53, with a standard deviation of 1.04. In comparison, the average score for printed textbook usage was 2.83, with a standard deviation of 1.6. Male students had slightly higher average scores for both e-resources (5.57 ± 1.02) and textbook usage (2.88 ± 1.63) than female students (e-resources: 5.49 ± 1.07, textbooks: 2.77 ± 1.57), but these differences between genders were not statistically significant.

Table 1: Respondents' engagement with E-resources and Textbooks

							Skewness		Kurtosis	
	Mean	Median	Mode	SD	Min	Max	Skewness	SE	Kurtosis	SE
E-resources Usage	5.53	6.00	6.00	1.04	2	6	-2.356	0.141	4.517	0.281
textbook Usage	2.83	2.00	2.00	1.60	1	6	0.804	0.141	0.513	0.281

Note: SD= Standard Deviation; Min=Minimum; Max= Maximum; SE=Standard Error.

Table 1 offers detailed information about how respondents interact with e-resources and textbooks. The average score for e-resources usage is 5.53, indicating a relatively high level of engagement, which is important for understanding how respondents use electronic resources. The skewness of -2.356 shows a negative skew, meaning that most respondents report high engagement levels, while fewer report low usage. The standard deviation of 1.04 indicates low variability in responses, which suggests that the engagement patterns among respondents are quite consistent. In terms of textbook usage, the average score is 2.83, which reflects a moderate level of engagement with textbooks. The positive skewness of 0.804 indicates a rightward skew, meaning that more respondents tend to report lower usage levels. The standard deviation of 1.60 suggests greater variability in responses, which indicates a wider range of reported usage levels for textbooks.

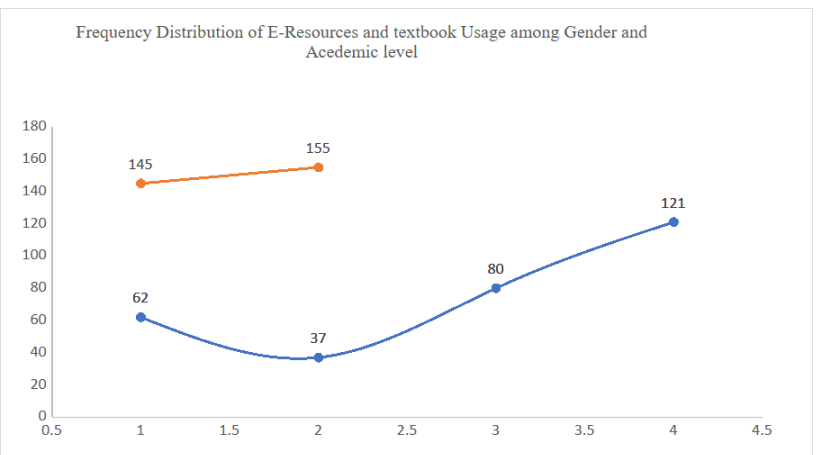


Figure 1: Respondents Gender and Academic Level

Figure 1 is a scatter plot that visually represents the respondents' gender and academic levels based on the questionnaire. It provides useful information about the makeup of the respondent group by clearly showing the gender distribution and the number of participants in each of the four academic years. The plot indicates that there are slightly more male respondents than female ones, with different response rates across the academic levels. The orange line represents the gender data, with the point at Y=145 showing that there were 145 female respondents and the point at Y=155 indicating 155 male respondents who took part in the survey. The green line illustrates

the distribution of respondents by academic year, with specific points for each level: Year 1 had 62 respondents, Year 2 had 37, Year 3 had 80, and Year 4 had the highest number at 121 respondents.

Table 2: E-Resources and Textbook Usage across various Variables

		E-Resources Usage	**Textbook Usage**
Variables	**Levels**	m (±SD)	m (±SD)
Gender	Male	5.57(1.02)	2.88(1.63)
	Female	5.49(1.07)	2.77(1.57)
	t/F; p	-0.648;0.518	-0.640;0.523
	Df	298	298
Academic Level	Year 1	5.65(0.870)	2.90(1.931)
	Year 2	5.68(0.747)	3.54(1.923)
	Year 3	5.40(1.239)	2.60(1.308)
	Year 4	5.51(1.058)	2.72(1.427)
	t/F; p	1.01;0.391	2.55;0.059
	df1; df2	3;131	3;113

The examination of e-resources usage and textbook usage across various variables in Table 2 above showed the following. In terms of gender, the male students demonstrated slightly higher mean scores for both e-resources usage (5.57 ± 1.02) and textbook usage (2.88 ± 1.63) whiles, their female counterparts, showed a mean score of 5.49 ± 1.07 for e-resources and 2.77 ± 1.57 for textbooks. However, the t-tests indicated no significant gender-based differences in either e-resources or textbook usage, with p-values of 0.518 and 0.523, respectively.

In the case of academic levels, the mean scores varied across different years for both e-resources and textbook usage. Notably, while no significant differences were observed in e-resources usage, a slightly significant difference was found in textbook usage (F = 2.55, p = 0.059), suggesting a potential variation in usage patterns between academic levels.

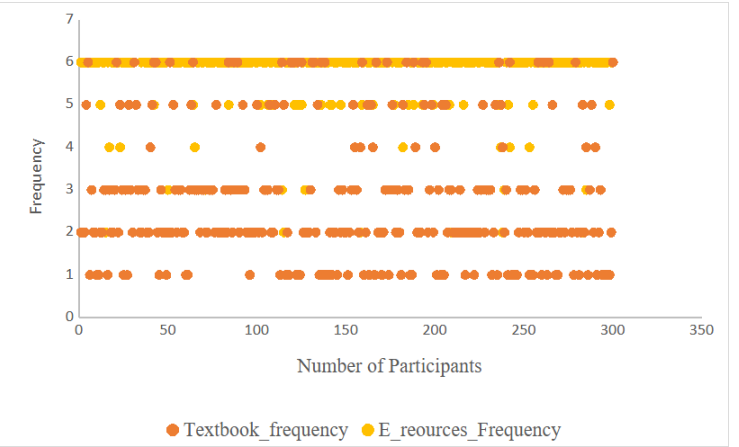
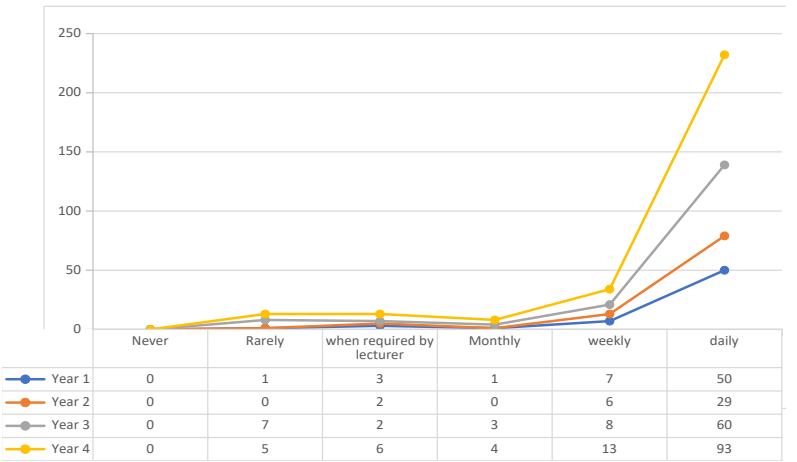


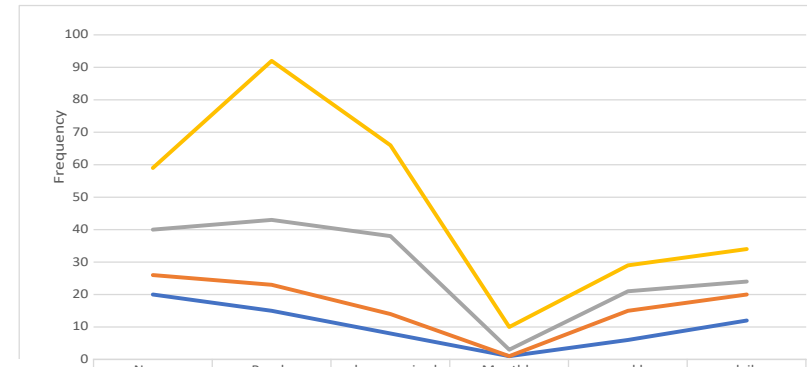
Figure 2: Visualisation of Usage frequency of E-resources and Textbooks

Figure 2 displays a dot plot distribution of participants on their frequency of using textbooks (orange dots) and e-resources (yellow dots). The y-axis indicates frequency values on a Likert-type scale from 1 (least frequent) to 6 (most frequent), while the x-axis represents individual participants (N ≈ 320). The visual suggests that e resources are used at a higher level than that of the textbook recording a higher frequency of 'most frequent' usage. This leads to a higher mean usage than that of textbook.



	Never	Rarely	when required by lecturer	Monthly	weekly	daily
Year 1	0	1	3	1	7	50
Year 2	0	0	2	0	6	29
Year 3	0	7	2	3	8	60
Year 4	0	5	6	4	13	93

Figure 3 (A): E-Resources usage across Academic Level



	Never	Rarely	when required by lecturer	Monthly	weekly	daily
Year 1	20	15	8	1	6	12
Year 2	6	8	6	0	9	8
Year 3	14	20	24	2	6	4
Year 4	19	49	28	7	8	10

Figure 3 (B): Textbook Usage across Academic Level

The data visualisations (Figures 3A & 3B) show significant variations in e-resource and textbook usage across academic years. In Year 1, a majority (50 out of 62) of students engaged with e-resources daily, while for textbooks, 12 students demonstrated daily textbook usage, suggesting a higher prevalence of daily engagement with e-resources compared to textbooks in Year 1. 29 students reported using e-resources daily, while 8 students indicated daily textbook usage, showing a consistent but slightly lower trend for textbooks. Year 3 students maintained a high level of daily use for both e-resources and textbooks, with 60 out of 80 students, with 4 students. This suggests that both resources are widely integrated into students' academic routines. However, Year 4 had the highest rates, with 93 out of 121 students using e-resources daily and 10 students engaging with textbooks daily, which indicates an increase in the use for both resources in the final year. The least use of e-resources was found in the "Never" and "Rarely" categories, with no students reporting that they never used e-resources across all academic years. Similarly, no students indicated that they 'never' used textbooks in Year 1. Also, none of the students fell into the "Rarely," "Monthly," or "Never" categories in Year 2, which suggests a more consistent usage pattern compared to other years.

The findings indicate that Year 2 has the lowest usage of both e-resources and textbooks, as there were no reports of students using them "Rarely," "Monthly," or "Never." Year 4 stands out with the highest engagement for both e-resources and textbooks, recording the largest daily usage, which suggests a disparity in resource engagement between Year 2 and Year 4 among the academic cohorts for both resources. A correlation can be observed in the prevalence of daily usage across academic years for both e-resources and textbooks. As students' progress through their level of education, there is a consistent trend of higher daily engagement, especially in Year 4. This may indicate a positive correlation between familiarity with academic resources and increased daily use as students advance in their studies. Furthermore, the influence of academic requirements on resource usage is clear, especially in Year 3, where 24 students used textbooks as required by their lecturers.

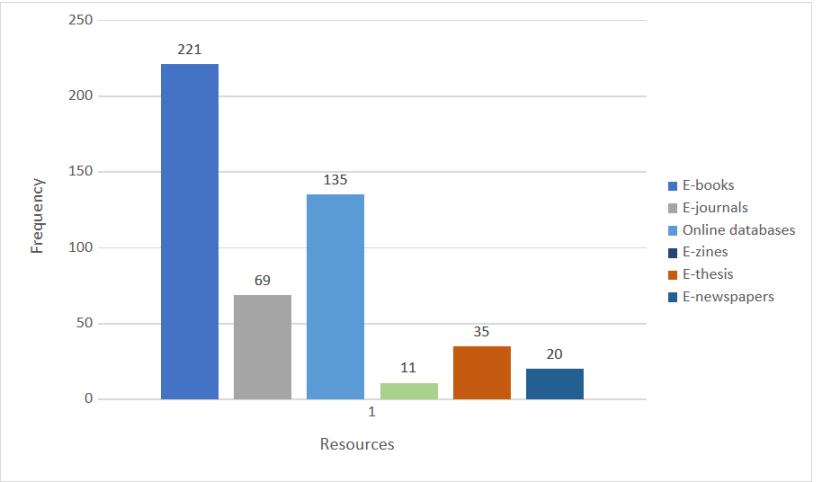


Figure 4: Types of Electronic Resources used by Students for Academic Work

Figure 4 offers a detailed overview of the electronic resources' students use for academic purposes. E-books are the most commonly used resource, with a total of 221 uses, underscoring their key role in students' research and study. Following e-books, online databases are also widely utilised, with 135 uses, emphasising their importance in providing access to various academic materials. E-journals are another significant resource, with 69 users, although they are used less frequently than e-books and databases.

E-zines and e-newspapers are used moderately, with 35 and 20 uses, respectively, indicating that they are supplementary resources for students. E-theses are the least utilised, with only 11 instances, suggesting they play a specialised role in certain research areas. Overall, the data emphasises the primary reliance on e-books and online databases, highlighting their essential role in supporting academic work.

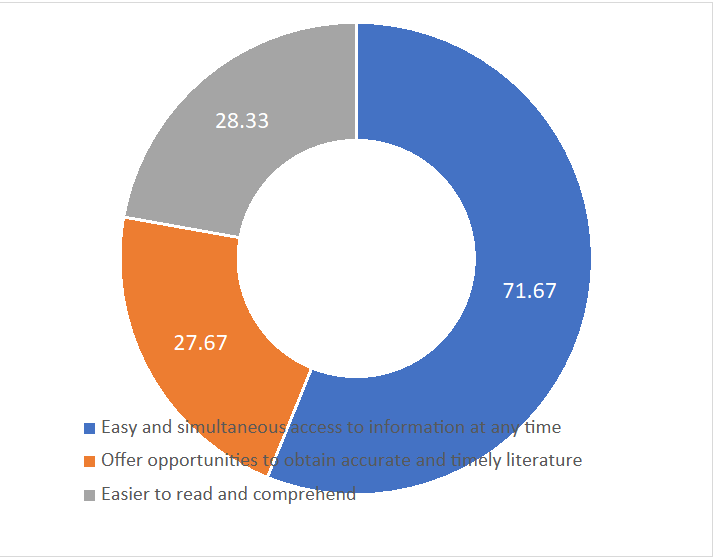


Figure 5: Electronic Resources Usefulness compared to Print Textbooks

Figure 5 shows how respondents perceive the usefulness of electronic resources compared to print textbooks. It presents data on three aspects of electronic resources: ease of access to information, availability of up-to-date literature, and ease of reading and comprehension. 71.67% participants indicated that electronic resources provide easy and simultaneous access to information at any time, highlighting their convenience and immediacy. However, 27.67% of respondents valued electronic resources for their ability to offer opportunities for accuracy, timely literature, and ensuring up-to-date and reliable academic content. Finally, according to the chart, 28.33% of respondents found electronic resources easy to read and understand, attributing this ease to their positive perceptions of such resources.

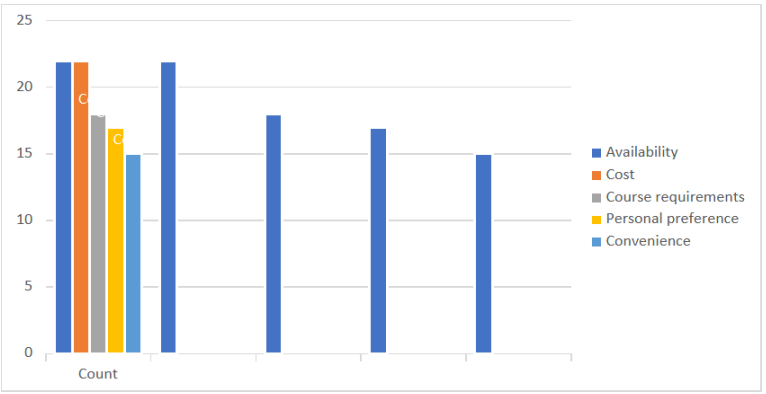


Figure 6: Factors Influencing Student's E-resources Choice

Figure 6 outlines several key factors which influence students' choices, including availability, cost, course requirements, personal preference, and convenience. It

shows that availability is the most important factor, as it has the highest count, indicating that students primarily choose electronic resources for their easy accessibility. Cost is also significant, with a high count suggesting that affordability greatly impacts students' decisions to use e-resources. Additionally, course requirements play a notable role, indicating that many students select e-resources based on their specific academic needs.

Personal preference and convenience, mentioned less frequently, are still relevant, indicating that some students make their choices based on their individual preferences and the ease of accessing these resources. Overall, the figure revealed that practical factors such as availability and cost are crucial for students when selecting electronic resources. However, academic needs and personal convenience also influence their decisions.

Regression Analysis

Table 3 Model Fit Measures

			Overall Model Test			
Model	**R**	**R^2**	**F**	**df1**	**df2**	**p**
1	0.335	0.112	9.29	4	294	< .001

Normality Test (Shapiro-Wilk)	
Statistic	**p**
0.677	< .001

Table 4 Model Coefficients - Continue e-resource

Predictor	Estimate	SE	t	p
Intercept [a]	3.7582	0.3201	11.739	< .001
E-resources Usage	0.3171	0.0526	6.029	< .001
2. Academic level:				
Year 2 – Year 1	0.0636	0.1959	0.324	0.746
Year 3 – Year 1	0.0794	0.1601	0.496	0.620
Year 4 – Year 1	-0.0300	0.1477	-0.203	0.839

[a] Represents reference level

Table 4 indicates that future usage of e-resources is predicted based on academic levels. The overall model test confirms a significant relationship between e-resources usage and the dependent variable ($p < 0.001$). With an R-value of 0.335 and an R^2 of 0.112, the model shows a moderate but statistically significant association. Specifically, the 'E-resources Usage' variable positively impacts the dependent variable (estimate = 0.3171, $p < 0.001$), meaning that for each increase in e-resources usage, there is an expected increase of 0.3171 units in the dependent variable. This suggests that while e-resources usage is important, other factors should also be considered for a comprehensive

understanding of what affects the dependent variable. Promoting e-resources could lead to meaningful improvements, such as investing in better access and providing effective training for users. When examining academic levels (Year 2 - Year 1, Year 3 - Year 1, and Year 4 - Year 1), these do not significantly predict the continuity of e-resources usage, as their coefficients are not statistically significant. This indicates that the transition between academic years does not inherently affect how students engage with e-resources. For educational institutions, this means that efforts to enhance e-resources usage should focus on user engagement and resource accessibility rather than academic levels. It is also important to note that the data violates the assumption of normality. The key takeaway is that e-resources usage is a crucial predictor for continued engagement.

Discussion

The study investigated the patterns and preferences of undergraduate students in the Department of Publishing Studies at the Faculty of Art, KNUST, in their use of electronic resources. The results reveal that print and electronic resources play an important role in student academic activities. However, electronic resources are increasingly preferred due to their accessibility and portability (Jamuna & Dhanamjaya, 2021), while printed resources remain essential for encouraging reading and detailed note-taking. Despite the historical dominance of printed textbooks in education, their use by students is driven by necessity as dictated by instructors (Sari ., 2022; Soni ., 2020). Moreover, printed textbooks are primarily used for assignments that require extensive reading and detailed note-taking. Students (57%) use only printed textbooks, while 22% use them regularly. Also, electronic resources have recently gained recognition and usage due to their accessibility, portability, presence of collaborative tools and interactive features (Jamuna & Dhanamjaya, 2021; Millar & Schrier, 2015). Moreover, the results revealed that the mean score for electronic resources (5.53) outweighs that of the print resources' mean score of 2.83. This shows a gradual shift towards electronic resources. Based on preferences and academic requirements, it guides students on which formats to use (López, 2023; Millar & Schrier, 2015; Ross ., 2017).

Printed resources are preferred because they are tangible and easy to take notes on. They remain important for academic engagement, such as in-depth reading, annotation and long study sessions (Han ., 2021). This confirms findings by Watson (2023) and Jeong & Gweon (2021), who noted that students prefer printed textbooks due to comprehension, focus, and reduced eye strain. Moreover, students' choices are influenced by both individual and institutional factors such as cost, availability, course requirements, and access to digital devices, which is consistent with the conclusions drawn by Kato . (2021) and Chavali & Gundala (2022). These factors suggest that student preferences are not binary but situational, reinforcing Newsum's (2016) assertion that both formats are complementary rather than competitive. Electronic resources are favoured for their accessibility and interactivity, as confirmed by (Jamuna & Dhanamjaya, 2021; Millar & Schrier, 2015; Ross ., 2017). Preferences for resource formats are influenced by demographic factors such as age, course, and level of study. In addition, the results suggest that younger students have a higher commitment to electronic resources (Jamuna & Dhanamjaya, 2021), while older students prefer printed materials for certain assignments (Sabri ., 2022). Despite the benefits of electronic resources, barriers such as limited access, infrastructure constraints and socio-economic factors hinder the use. The data revealed that there is a need to improve students' skills and access to electronic resources to optimise their academic experience. Furthermore,

electronic resources offer unique features that enhance the learning experience, such as searchability, multimedia integration, and interactivity (Millar & Schrier, 2015). Nevertheless, printed resources are of great value in academic tasks due to their reliability and ease of use (Ozdemir & Hendricks, 2017). The use of print and electronic resources is consistent with the literature, which suggests that students benefit from having access to both formats to meet their different academic needs (Ankrah & Atuase, 2018). In addition, the findings highlight the importance of maintaining hybrid library collections to satisfy different preferences and optimise access to resources (Bah, 2024; López, 2023). Not only that, but students are also increasingly appreciating the benefits of electronic resources, particularly their accessibility and portability, which help academic activities and ensure collaborative learning (Millar & Schrier, 2015). Online information, with its searchable content, multimedia elements, and interactive features, improves the learning experience. These resources have the potential to support diverse learning styles and up-to-date information for the academic environment (Ozdemir & Hendricks, 2017). The regression analysis offers insights into the use of electronic resources based on academic levels. The data shows that electronic resources are currently being used and will continue to be used in the future. (Ozdemir & Hendricks, 2017). The model test confirms a meaningful relationship between e-resources use and the dependent variable, with a statistically significant association ($p < 0.001$). The model's R-value of 0.335 and R^2 of 0.112 indicate a moderate but statistically significant relationship. This indicates that the use of e-resources will continue. Specifically, the variable 'E-resources Usage' has a positive impact, with an estimate of 0.3171 and a p-value of less than 0.001. This means that for each increase in e-resources usage, there is an expected increase of 0.3171 units in the dependent variable. Indicating a direct and significant relationship between e-resources usage and the continuity of usage. However, concerning the academic levels (Year 2 - Year 1, Year 3 - Year 1, and Year 4-Year 1), these do not significantly predict the continuous use of e-resources, as their associated coefficients are not statistically significant.

This data provides key insights into electronic resources and textbook usage across different academic years within the Faculty of Arts at KNUST. In Year 1, most students engaged with e-resources daily, while daily textbook usage was lower. Year 2 showed a consistent but slightly lower pattern for textbooks. Year 3 sustained a high daily usage pattern for both e-resources and textbooks. This indicates an integration of both types of resources into the academic system. However, Year 4 exceeded other years for both e-resources and textbooks, showing an increase in usage across f resources in the final academic year. The least frequent use of e-resources was observed in the categories of "Never" and "Rarely," with no students reporting never using e-resources across all academic years. Similarly, for textbooks, no students in Year 1 reported 'never' using them. In Year 2, none fell into the "Rarely," "Monthly," or "Never" categories, indicating a more consistent user pattern compared to other years. Year 2 emerges as the year group with the least dominant use of both e-resources and textbooks, as evidenced by non-reported instances in the categories of "Rarely," "Monthly," or "Never." Year 4 stands out with the highest engagement for both e-resources and textbooks, recording the largest daily use. This suggests differences in resource engagement between Year 2 and Year 4 cohorts for both resource types. A correlation can be observed in the prevalence of daily usage across academic years for both e-resources and textbooks. As students' progress in their academic journey, they engage daily with the academic resources, especially in year 4. It indicates

a positive correlation between awareness of academic resources and an increase in daily use by students as they progress. It also shows that the impact of academic requirements on resource engagement is obvious, especially in year 3 for textbooks, where 24 students engaged with them when required by lecturers. The data comprises a comprehensive study of the use and preferences of electronic resources and print textbooks within the academic community of the Kwame Nkrumah University of Science and Technology (KNUST), particularly within the Faculty of Arts. It underscores the global trend towards electronic resources and the evolving role of libraries in enhancing digital collections and services to optimise information retrieval. The research question focused on investigating resource usage patterns among students in the Faculty of Arts at KNUST, assessing students' perceptions of the benefits, challenges and future preferences of electronic resources compared to print textbooks within the faculty, and examining the correlation between students' preferences and use of textbooks, both print and electronic. This highlights the prevalent preference for electronic resources due to their accessibility and ability to provide timely information, increasing reliance on digital media in educational institutions. However, they also reflect the different priorities of users, including comprehensibility, which influences their overall perception of usefulness. The data showed that availability, cost, and course requirements are the main reasons for choosing electronic resources, emphasising students' practical and academic priorities (Chavali & Gundala, 2022; Kato ., 2021). The findings suggest that improving the accessibility, affordability and relevance of electronic resources can significantly improve their uptake and use by students. These findings could help institutions to develop better support systems to encourage student use of digital academic resources by addressing these key factors.

CONCLUSIONS

This study provides an insight into the evolving resource use among undergraduate students in the Faculty of Arts at Kwame Nkrumah University of Science and Technology (KNUST). The findings reveal an interplay between electronic resources and traditional print textbooks, highlighting their benefits and challenges with each format. The increasing recognition of the benefits of electronic resources, such as accessibility, interactivity, and support for diverse learning styles, indicates a significant shift in students' academic resource preferences. However, the study also shows barriers to using electronic resources, including the need for computer literacy and financial constraints. These challenges underscore the urgent need for educational institutions to improve student skills and access to digital resources, thereby improving the academic experience. The regression analysis further illustrates the positive correlation between the use of electronic resources and academic progress, suggesting that familiarity with these resources impacts their continued use. The students' academic progress improves when they engage with both electronic and print resources. This indicates an increase in the integration of these resources into their academic system. Ultimately, this study argues that implementing hybrid library collections provides students with diverse preferences and ensures that electronic and print resources are available to support their academic endeavours. This will help students' learning styles and make it easier for everyone to access materials for academic involvement and success. Investing in digital infrastructure and training on these online resources is important for all students. By removing the identified barriers and fostering an environment conducive to accessing resources, higher education institutions in Ghana could enhance student engagement and learning outcomes, contributing to a

more informed and resourceful academic community. Finally, research could explore how different digital tools and platforms can be optimised to enhance student engagement and learning outcomes in a post-COVID educational era.

Theoretical Contributions

This study builds on the Technology Acceptance Model (TAM) by investigating how students in a developing country use educational resources. It shows that students' views on how easy and useful they find electronic resources influence their decision to use them as compared to print textbooks. The research confirms that students' attitudes towards educational technology depend on the accessibility, their academic level, the availability of infrastructure and their socio-economic background.

Practical contributions

This study provides actionable insights for librarians, educators, and academic resource managers. It shows that while electronic resources are gaining ground due to their accessibility and interactivity, print textbooks continue to play a critical role in in-depth study and extended reading. The study reveals specific usage patterns across academic levels and genders, providing a basis for targeted resource planning and user support.

Political contributions

The study makes a compelling case for adopting hybrid library strategies in higher education institutions in Ghana and similar settings. It supports policies that promote equal access to print and electronic resources. It includes investment in ICT infrastructure, subsidised internet access and inclusive digital learning environments. It also calls for the institutionalisation of measures to promote digital literacy as part of academic induction processes.

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Declaration of Conflict of Interest

There is no conflict of interest.

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