

Student Satisfaction with Library Services, Study Habits and Academic Achievement at Daraga Community College

April Denise N. Loverses^{1*}; Ma. Lindie D. Masalinto²

^{1,2} University of Perpetual Help System Laguna, Philippines

Corresponding Author: April Denise N. Loverses*

Publication Date: 2026/05/22

Abstract: This study examined the relationship between student satisfactions with library services, study habits and academic achievement at Daraga Community College. Specifically, it assessed the level of student's satisfaction in terms of library resources, facilities and staff services; the level of study habits in terms of time management, study environment and study techniques and the level of academic achievement based on academic performance and academic standing. A descriptive-correlational research design was employed in this study. Data were collected from 368 students selected through stratified random sampling from a total population of 8,065 enrolled students for the Academic Year 2025-2026. A structured questionnaire was used as the primary instrument and data were analyzed using weighted mean, standard deviation and person correlation coefficient. The finding revealed that students were generally satisfied with library services, library staff services receiving the highest rating and library resources the lowest. Study habits were found to be at a satisfactory level, with time management as the strongest aspect. In terms of academic achievement, students demonstrated a high level of performance. However, the results showed no significant relationship between library staff services and time management. Additionally, no significant relationship was found between student satisfaction and academic achievement, as well as between study habits and academic achievement. The study concludes that while library services and study habits contribute to the overall learning experience, they do not significantly influence students' academic achievement in this context. Based on the findings, an action plan was proposed to enhance library services, improve facilities and strengthen programs that support effective study habits and academic success.

Keywords: *Student Satisfaction, Library services, Study Habits and Academic Achievement.*

How to Cite: April Denise N. Loverses; Ma. Lindie D. Masalinto (2026) Student Satisfaction with Library Services, Study Habits and Academic Achievement at Daraga Community College. *International Journal of Innovative Science and Research Technology*, 11(5), 1133-1140. <https://doi.org/10.38124/ijisrt/26may1007>

I. INTRODUCTION

An academic institution's library is widely regarded as its intellectual center, as it provides essential resources that support research, teaching and learning. As a repository of knowledge, it houses a wide range of books, journals, reference materials and online resources that assist students in achieving their academic goals. In addition, libraries offer space for research, study and collaboration, enabling students to work independently or collectively with peers (Kim, Bosh & Lee, 2022). In an era where technology has transformed access to information, libraries remain indispensable by offering both digital and traditional resources that caters to diverse need.

Student satisfaction with library services plays a significant role in determining the extent to which these services contribute to learning outcomes. Various factors

such as accessibility of facilities, availability of up to date materials, staff responsiveness and conduciveness of the learning environment can influence student satisfaction levels. Pinho, Franco and Mendes (2022) noted that students are more likely to utilize library resources when they perceive the library as responsive to their academic needs, which in turn supports positive study habits and academic achievement. Low satisfaction often results in underutilization of library services limiting their potential academic benefits. Student satisfaction serves as an important indicator in evaluating the effectiveness of library services as part of an institutions academic support system.

Students' satisfaction with library services refers to delivery is an indication that an institution is able to meet their expectations and needs Tseh (2022). However, students are dissatisfied when the services are below their expectations, and if the gap between expected service

deliveries is high, they tend to communicate the negative aspects given, since they expect to see value for their time and money. Students' dissatisfaction can result in noticeable adverse or negative reactions. According to Mbagwu et al. (2022) there should be proper and adequate planning with the available library services because for any school library service to be effective and satisfy the needs of the students, it must be properly planned. Library services in schools should be well organized in the aspect of cataloguing, classification, shelving as these will facilitate the use of library by students and ultimately improve their reading habits.

Study habits refers to the routines and strategies they use to get ready for their academic obligations, are equally important in the academic journey. Effective time management, task organization, note-taking, lesson review, and use of learning resources are some examples of study habits, according to Tus et al. (2022). Students who practice effective study habits are able to get the most out of all the resources at their disposal, including the library. In turn, the library can strengthen these practices by offering a supportive learning environment, pertinent materials, and trustworthy academic assistance. Strong study habits help students perform better academically, finish assignments, and get ready for tests. On the other hand, even though they have access to enough resources, students with bad study habits may still struggle.

Academic achievement refers to which is frequently assessed using grades and other performance indicators. It shows not only intelligence but also self-control, drive, and the efficiency of the learning support networks. Good study habits and the capacity to access and utilize relevant learning resources are generally associated with high academic achievement. On the other hand, low achievement can occasionally be linked to issues implementing successful learning strategies or dissatisfaction with the support services that are available, like libraries, according to Mulaudzi (2023).

Daraga Community College had been existence for twenty years. However, the role of academic libraries in supporting higher education was formally recognized as an essential component of teaching, learning and research. The Daraga Community College Library functioned as a central academic resource that offered free and equitable access to print and digital collections, study facilities and equitable access to print and digital collections, study facilities and library services to support student's educational need. Its mission was to assist students in developing effective study habits, information literacy skills and independent learning competencies that contributed to improve academic performance. The library envision itself as a learner centered academic environment that promotes intellectual growth, academic excellence and lifelong learning.

Despite the crucial role of Daraga Community College Library in supporting student's academic and research needs, there had been no recent formal assessment of user satisfaction regarding its services, resources and facilities. Although informal feedback might have been gathered over time, no comprehensive data- driven evaluation had been

conducted to systematically identify the strengths and weaknesses of the library. Existing studies on library services were limited in their focus on student's personal experiences and levels of satisfaction particularly within the context of academic libraries. Moreover, there is a lack of empirical examining the combined influence of student satisfaction with library services and study habits on academic achievement. At Daraga Community College, no prior study had specifically investigated the interrelationship between student satisfaction with library services, study habits and academic achievement. This absence of localized and integrated research created a significant gap in understanding how library services contributed to students learning behaviors and academic outcomes.

As higher education institutions increasingly emphasized outcome based learning, it become essential to evaluate student's satisfaction with library services and determine how these services related to study habits and academic achievement. This study sought to assess the relationship between student satisfaction with library services, study habits and academic achievement at Daraga Community College. The findings of this study were expected to provide valuable insights that could guide the improvement of library services, support the development of effective academic support strategies and enhance students overall academic experience. Furthermore, the results may serve as a reference for similar community College aiming to strengthen the role of their libraries in promoting academic success.

II. METHODOLOGY

This study utilized a descriptive correlational research design to determine the relationship among student satisfaction with library services, study habits, and academic achievement at Daraga Community College. A structured questionnaire was used as the main data collection tool, covering three areas: library services (resources, facilities, and staff), study habits (library use, time management, study environment, and techniques), and academic achievement (academic performance and standing). The respondents were selected from a total population of 8,065 students enrolled in the Academic Year 2025–2026. Using a 95% confidence level and 5% margin of error, a sample of 368 students was obtained through stratified random sampling to ensure proper representation of each year level. The instrument was validated by experts and tested for reliability using Cronbach's alpha, with a value of 0.70 or higher considered acceptable. A 4-point Likert scale was used to measure responses.

Ethical considerations were observed by securing approval from the College Administration and Head Librarian. Data were gathered, organized, and analyzed using appropriate statistical tools. Descriptive statistics such as weighted mean and standard deviation were used to determine the levels of the variables, while Pearson's product moment correlation was applied to examine the relationships among student satisfaction, study habits, and academic achievement. All analyses were conducted at an appropriate level of significance to ensure accurate and reliable results.

Ethical standards were strictly observed, including the acquisition of institutional permission, informed consent, and assurances of confidentiality, anonymity, and voluntary participation. Data were collected via an online survey platform and subsequently encoded and processed for analysis. Descriptive statistics, including weighted mean and standard deviation, were used to assess the levels of technology adoption, analytics utilization, and service innovation. Inferential analyses comprised Pearson’s product moment correlation to determine the relationships among variables and multiple regression analysis to evaluate the predictive effects of smart library technology adoption and data analytics utilization on service innovation practices. All

statistical analyses were conducted at an appropriate level of significance to ensure the robustness and reliability of the findings.

III. RESULTS AND DISCUSSION

This section presents the results of the study and situates the findings within the context of existing literature. It examines the levels of student satisfaction with library services, study habits and academic achievement at Daraga Community College as well as the relationships and predictive effects among these variables. The results are analyzed using appropriate statistical techniques and are interpreted in relation to prior empirical studies.

Table 1. The Level of Student Satisfaction with Library Services offered by Daraga Community College

Indicator	Weighted Mean	Verbal Interpretation	Rank
1. Library resources	2.70	Satisfied	3
2. Library facilities	2.90	Satisfied	2
3. Library staff services	3.05	Satisfied	1
Overall Weighted Mean	2.88	Satisfied	

Table 1 showed the overall level of student satisfaction with library services of Daraga Community College. The overall (WM=2.88) indicated that students generally were satisfied with the library services. Among the three areas, library staff services ranked 1st with (WM=3.05) showing that students are most satisfied with the assistance and services provided by the staff. This was followed by library facilities with (WM=2.90) which means students were also satisfied with the physical environment and study spaces. Lastly, Library resources ranked 3rd with a (WM=2.70) indicating that while students were satisfied, this area has the lowest rating compared to the other two. Overall, this implies that the results show that students have a positive perception of the library services, with staff services being the strongest area.

books and resources is also made simpler by well-organized shelves and obvious signage. A well-kept library conveys the idea that the school is concerned about its students' educational needs. Students may be motivated to take their studies seriously by this concern. Studying in a visually appealing setting can also help students feel less stressed. Overall satisfaction is significantly influenced by these minor details.

The finding supported the study of Peng et al. (2022), who claimed that student satisfaction was also impacted by the library's physical layout. Students could concentrate better on their studies without interruptions in a neat, well-ventilated, and peaceful environment. They enjoy studying when there are enough tables, cozy chairs, and adequate lighting. In a comfortable setting, students are more inclined to stay and study. According to Highland (2023), finding

Students' satisfaction with library services can be significantly impacted by how library employees treat them. Waters (2023) asserts that staff members and librarians who are friendly and eager to assist students in feeling free to ask questions will encourage them to do so. Students are more comfortable experimenting with various resources when they are aware that they can receive assistance. According to Berger (2025), welcoming environments fostered by excellent customer service entice students to come back. Students save time and experience less stress when staff members help them locate resources. Students can also feel appreciated and respected when they have positive interactions with staff. They feel more a part of the school because of this personal connection. They consequently see the library as a welcoming and encouraging environment.

Table 2. The Level of Study Habits Among Students who Utilize Library Services at Daraga Community College

Indicator	Weighted Mean	Verbal Interpretation	Rank
1. Time management	3.04	Satisfied	1
2. Study environment	2.94	Satisfied	3
3. Study techniques	2.95	Satisfied	2
Overall Weighted Mean	2.98	Satisfied	

Table 2 shows the overall summary of the level of study habits among students who utilize library services at Daraga Community College. The overall (WM=2.98) indicated that students demonstrate a satisfactory level of the study habits. This means that while students generally

practice positive study behavior, there is still room for improvement. Among the three indicators. Time Management ranked 1st with the (WM=3.04), showing that students are relatively better at organizing and managing their study time. Study Techniques ranked 2nd (WM=2.94)

indicating that students moderately apply effective learning strategies. Meanwhile, study Environment ranked 3rd (WM=2.95), suggesting that environment factors slightly lag behind the other areas. Overall, the findings imply that students who utilize library services have acceptable study habits, with time management as their strongest area and study environment as the aspect that may need further enhancement.

Swargiary (2023) highlights that structured study routines, appropriate techniques and conducive environment collectively contribute to effective learning habits, though each component may vary its impact.

Another key aspect of study habits is having a suitable study environment. According to Swargiary (2023), a quiet and comfortable place can help students concentrate better. Removing distractions such as phones or social media allows them to focus on their lessons. Having proper lighting, ventilation, and enough space to write or read also improves their productivity. Students who choose a consistent place for studying often find it easier to get into the habit. A clean and organized study space can also reduce mental clutter as per Rogers and Hart (2021). This helps them think clearly while studying. The right environment plays a big role in making study sessions more effective.

Table 3. The Level of Academic Achievement who frequently Utilize the Library Services at Daraga Community College: Academic Performance

Indicator	Weighted Mean	Verbal Interpretation	Rank
1. The respondents consistently perform well in my major subjects	3.26	Highly Satisfied	1.5
2. The respondents able to meet the academic requirements of my courses.	3.26	Highly Satisfied	1.5
3. The respondents submit academic requirements on time	3.25	Highly Satisfied	3
4. The respondents participate in class discussions and academic activities.	3.20	Satisfied	4
Average	3.24	Satisfied	

Table 3 presented the academic performance of students who frequently used the library services, measured through self-assessed indicators. The overall (WM= 3.24 indicates High level of academic achievement. This suggested that students generally perform well in their studies and actively engage with their academic responsibilities. Among the indicators, “The respondents consistently perform well in my major subjects” and “The respondents able to meet the academic requirements of my courses” both ranked 1.5 with a (WM=3.26). Showing that students feel confident in handling core subjects and meeting course expectations. “The respondents submit academic requirements on time” ranked 3rd (WM=3.25), indicating strong, though slightly lower, consistency in timely submission of task. Lastly, “The respondents actively participate in class discussion and academic activities” ranked 4th (WM=3.20), suggesting that while students are engaged, participation could still be enhanced. Overall, the findings indicated that students who frequently utilized library services demonstrate high academic achievement, with their strongest performance in meeting course requirements and excelling in major subjects.

This is supported by the study of Mariano et. al. (2022) found that access to library resources supports consistent academic performance, especially in major subjects and course completion .Another support is the study of Ferrer (2024), academic performance level is strongly associated with students study habits, time management and engagement with library resources. Students who allocate sufficient time for studying, review course materials consistently and seek academic support when needed tend to achieve higher performance levels. Lasig el al. (2025) also emphasized that student’s performance levels are influenced by their ability to apply theoretical knowledge to practical context, collaborate effectively with peers and demonstrate critical thinking skills.

Academic performance level refers to the categorization of students achievement based on the quality of their academic work, often classified as excellent, very good, satisfactory or needs improvement (Alenzuela et al., 2024). This sub- variable offers a quantitative perspective on student learning, providing insights into how effectively students understand, apply and synthesize course content.

Table 4. Relationship Between the Level of Student Satisfaction and Level of Study Habits of Daraga Community College Students

Student satisfaction	Study Habits		
	Time management	Study environment	Study techniques
Library resources	r=-0.042 Negligible correlation p=0.422	r=-0.031 Negligible correlation p=0.556	r=0.040 Negligible correlation p=0.448
Library facilities	r=0.024 Negligible correlation p=0.652	r=0.021 Negligible correlation p=0.685	r=-0.014 Negligible correlation p=0.796
Library staff services	r=0.142** Low correlation p=0.007	r=-0.067 Negligible correlation p=0.202	r=-0.012 Negligible correlation p=0.814

****Significant @ 0.01**

As shown on Table 4 the relationship between students' satisfaction with library services and their study habits across three dimensions: Time Management, Study Environment and Study Techniques. The results indicated the correlations between student satisfaction and study habits are negligible. For example, satisfaction with library resources shows very small correlations with time management ($r = -0.042$), study environment ($r = -0.031$) and study techniques ($r = 0.040$), all with p-values greater than 0.05, indicating no significant relationship. Similarly, satisfaction with the library facilities shows negligible correlations with all study habits dimensions. The only statistically significant relationship was observed between satisfaction with library staff services and time management

($r = 0.142$, $p = 0.007$), indicating a low but significant positive correlation. This suggests that students who were more satisfied with library staff tend to manage their study time slightly better. Overall, the findings imply that while most aspects of student satisfaction with library services do not strongly influence study habits, supportive library staff may play a modest role in enhancing student's time management skills.

Swargiary (2023) emphasizes that library staff support and guidance can positively influence student's organizational and time management skills, even if other factors have limited impacts.

Table 5 Relationship Between the Level of Student Satisfaction and Level of Academic Achievement of Daraga Community College Students

Student satisfaction	Academic Achievement	
	Academic Performance	Academic Standing
Library resources	$r=-0.006$ Negligible correlation $p=0.913$	$r=0.002$ Negligible correlation $p=0.973$
Library facilities	$r=0.025$ Negligible correlation $p=0.635$	$r=-0.003$ Negligible correlation $p=0.960$
Library staff services	$r=-0.029$ Negligible correlation $p=0.581$	$r=-0.026$ Negligible correlation $p=0.619$
Significance level @ 0.05		

Table 5 shows the relationship between the level of student satisfaction with library services and the level of academic achievement of Daraga Community College students, measured in terms of academic performance and academic standing. The results shows all computed coefficient (r values) are very close to zero, indicating negligible relationships between the variables. Specifically, library resources ($r=-0.006$) for academic performance and ($r=0.002$ for academic standing, library facilities ($r=0.025$) and ($r=-0.003$), and the library staff services ($r=-0.029$) and ($r=-0.026$) all demonstrate minimal or no linear association with students' academic achievement.

Moreover, all corresponding p-values are greater than the 0.05 significant level, indicating that the relationships are not statistically significant. This means that there is insufficient evidence to conclude that student's satisfaction

with library resources, facilities and staff services has a meaningful effect on academic performance or academic standing. The null hypothesis, therefore, is accepted.

Overall, the findings suggest that while students may be satisfied with various aspects of the library, such satisfaction does not significantly influence their Academic achievement. This implies that other factors beyond library services may play a more important role in determining students' academic success.

The study of Lorente (2022) and Mariano et.al supports the findings, report that while library satisfaction may support the learning process, it does not necessarily translate into direct improvements in measurable academic outcomes such as academic performance and Academic standing.

Table 6 Relationship between the Level of Study Habits and Level of Academic Achievement of Daraga Community College Students

Study Habits	Academic Achievement	
	Academic Performance	Academic Standing
Time management	$r=-0.047$ Negligible correlation $p=0.369$	$r=0.020$ Negligible correlation $p=0.702$
Study environment	$r=0.024$ Negligible correlation $p=0.640$	$r=-0.006$ Negligible correlation $p=0.912$

Study techniques	$r=-0.093$ Negligible correlation $p=0.076$	$r=-0.067$ Negligible correlation $p=0.202$
Significance level @ 0.05		

Table 6 presents the relationship between the level of study habits and the level of academic achievement of Daraga Community College students, measured in terms of academic performance and academic standing. The results reveal that all computed correlation coefficients (r values) are very low and close to zero, indicating negligible relationships between the variables. Specifically, time management ($r=-0.047$) for academic performance and ($r=0.020$) for academic standing, study environment ($r=0.024$) and ($r=-0.006$) and study techniques ($r=-0.093$) and ($r=-0.067$) all shows minimal or no linear association with academic achievement. Furthermore, all p- values are greater than the 0.05 level of significance, which indicated that the relationships are not statistically significant. This means that there is no sufficient evidence to conclude that students study habits significantly influence their academic performance or academic standing. Hence, the null hypothesis is accepted. Overall, the findings suggest that although study habits are generally considered important for learning, in this study they did not show a significant relationship with academic achievement. This implies that other factors may have a stronger influence on students' academic success in Daraga Community College

This is supported by the study of Pancho & Reyes (2021) suggest that study habits improve learning engagement and comprehensive, but external factors such as curriculum difficulty, assessment methods and personal aptitude may mediate measurable academic results.

IV. CONCLUSIONS

This study concludes that students of Daraga Community College demonstrate a generally satisfactory level of satisfaction with library services, study habits, and academic achievement. Library services are perceived as adequate in supporting students' academic needs, particularly in terms of accessibility of resources, availability of learning spaces, and assistance provided by library staff. Students also exhibit moderately effective study habits, especially in time management, concentration, and use of learning resources, which contribute to their overall academic performance. Academic achievement is likewise found to be at a satisfactory level, indicating that students are able to meet the basic academic requirements of their programs.

However, the findings reveal that there is no significant relationship between student satisfaction with library services, study habits, and academic achievement. This suggests that while these factors are individually important, they do not directly influence one another in a statistically significant manner within the context of this study. The absence of significant correlations indicates that other external factors such as personal motivation, teaching quality, or socio-economic conditions may play a more substantial role in shaping students' academic outcomes.

Hence, it is recommended that the library continue enhancing the quality of its services by improving resources, facilities, and user support systems to maintain student satisfaction. At the same time, programs that promote effective study habits, such as study skills workshops and academic support services, should be strengthened. Although no direct relationship was established, fostering a supportive learning environment remains essential. Collaborative efforts among the library, faculty, and administration are encouraged to holistically support student success and further improve academic achievement at Daraga Community College.

ACKNOWLEDGMENT

The authors express their heartfelt appreciation to all individuals who contributed to the successful completion of this study. Special thanks are extended to the administrators, faculty members, and students of Daraga Community College who willingly participated in the data gathering process and shared their time, experiences, and insights. Their cooperation and honest responses greatly contributed to the realization of this research.

The authors also acknowledge the guidance and support of their research advisers, instructors, and colleagues who provided valuable suggestions and constructive feedback throughout the conduct of the study. Their expertise and encouragement significantly improved the quality and credibility of this research work.

Furthermore, the authors express their gratitude to their families and loved ones for their unwavering support, understanding, and motivation. This study was completed without external funding, and all efforts were made possible through dedication, perseverance, and the support of those who believed in the value of this research.

COMPETING INTERESTS

The authors declares that there are no financial or personal relationships that could have influenced the work reported in this study. The authors further confirm that no competing interests exist.

REFERENCES

[1]. Abu, S. O., Agada, G., & Yusuf, S. (2022). Effect of librarians and supportive staff behavior on students' use of library. *Timbou-Africa Academic Publications International Journal*, 8(8), 1–15.

[2]. Abdulghani, H. M. (2024). The impact of study habits and personal factors on the academic Achievement performances of medical students. *BMC medical education*, 24(1), 888. <https://doi.org/10.1186/s12909-024-05889-y>

- [3]. Abas, W. A. H. W., & Mustapha, M. F. (2025). ULIB: Library Management System with Data Analytics. *International Journal of Research and Innovation in Social Science*, 9(10), 4249–4260. <https://doi.org/10.47772/ijriss.2025.910000350>.
- [4]. Adewojo, A. A., Olatunji, O. M., & Olalere, P. M. (2025). Effects of AI-driven tools on reference services and staff roles in academic libraries. *Reference Services Review*, 54(1), 15–30. <https://doi.org/10.1108/rsr-02-2025-0008>.
- [5]. Adigun, G. O., Ajani, Y. A., & Enakrire, R. T. (2024). The Intelligent Libraries: Innovation for a Sustainable Knowledge System in the Fifth (5th) Industrial Revolution. *Libri*, 74(3), 211–223. <https://doi.org/10.1515/libri-2023-0111>.
- [6]. Alarape, A. A. (2024). Perception, Competency and Use of Big Data Analytics among Librarians from University Libraries in Osun State. *International Journal of Research and Innovation in Social Science*, VIII(VI), 986–997. <https://doi.org/10.47772/ijriss.2024.806075>.
- [7]. Aryee, R., & Tetteh, E. O. A. (2024). Library resources constraints, frustration, and user behavior: An empirical library operations study. *Brain and Behavior*, 14(7), e3627. <https://doi.org/10.1002/brb3.3627>.
- [8]. Band, D. (2024). Emerging technologies and trends in library: a study. *Journal of Emerging Technologies and Innovative Research*, 11(4).
- [9]. Cheung, H. C., Lo, Y. Y. M., Chiu, D. K., & Kong, E. W. (2023). Development of smart academic library services with Internet of Things technology: a qualitative study in Hong Kong. *Library Hi Tech*, 43(1), 398–422. <https://doi.org/10.1108/lht-06-2023-0219>.
- [10]. De Leon, L. C. R., Flores, L. V., & Alomo, A. R. L. (2024). Artificial Intelligence and Filipino Academic Librarians: Perceptions, Challenges and Opportunities. *Journal of the Australian Library and Information Association*, 73(1), 66–83. <https://doi.org/10.1080/24750158.2024.2305993>.
- [11]. Desmarchelier, B., Djellal, F., & Gallouj, F. (2025). *Innovation in libraries: A service-oriented perspective*. Research Policy. <https://www.sciencedirect.com/science/article/pii/S0048733324001598>.
- [12]. Dione, B., & Rajaratnam, R. S. (2025). The Prospects Analysis for Transmogrification of Knowledge: Libraries Morphing for the Future Adaptation to Digital Dynamics. *Journal of Computer and Communications*, 13(04), 68–86. <https://doi.org/10.4236/jcc.2025.134005>.
- [13]. Esposo-Betan, S. S. & Santos, J. F. (2018). The use of augmented reality (AR): transforming the way library orientation is conducted in academic library. *PAARL Research Journal*, 5(1).
- [14]. Garoufallou, E., & Gaitanou, P. (2021). Big Data: Opportunities and Challenges in Libraries, a Systematic Literature Review. *College & Research Libraries*, 82(3), 410. doi:<https://doi.org/10.5860/crl.82.3.410>.
- [15]. Hamad F, Fakhuri H, Abdel Jabbar S (2022). Big data opportunities and challenges for analytics strategies in Jordanian academic libraries. *New Review of Academic Librarianship* 28(1): 37–60.
- [16]. Hazarika, H. J. (2025). From AI to IoT: emerging tech trends for libraries from ICICT 2025. *Library Hi Tech News*, 42(5), 19–22. <https://doi.org/10.1108/lhtn-04-2025-0057>.
- [17]. Hotsonyame, G. N. (2025). Integration of Emerging Technologies by Academic Libraries: A Literature review. Research Square. <https://doi.org/10.21203/rs.3.rs-6576779/v1>.
- [18]. Ikwanusi, N. U. F., Adepoju, N. P. A., & Odionu, N. C. S. (2023). Developing predictive analytics frameworks to optimize collection development in modern libraries. *International Journal of Scientific Research Updates*, 5(2), 116–128. <https://doi.org/10.53430/ijrsu.2023.5.2.0038>
- [19]. Jabeen, M. (2025). Assessing the readiness for the adoption of artificial intelligence and related technologies in academic libraries of Pakistan. *The Journal of Academic Librarianship*, 51(6), 103161. <https://doi.org/10.1016/j.acalib.2025.103161>.
- [20]. Jiao, H., Wang, T., Libaers, D., Yang, J., & Hu, L. (2024). The relationship between digital technologies and innovation: A review, critique, and research agenda. *Journal of Innovation & Knowledge*, 10(1), 100638. <https://doi.org/10.1016/j.jik.2024.100638>.
- [21]. Kalota, F., Boamah, B. F., Allam, H., Schisler, T., & Witty, G. (2025). Beyond Books: student perspectives on emerging technologies, usability, and ethics in the Library of the Future. *Publications*, 13(3), 32. <https://doi.org/10.3390/publications13030032>.
- [22]. Khan, A. U., Ma, Z., Li, M., Zhi, L., Hu, W., & Yang, X. (2023). From traditional to emerging technologies in supporting smart libraries. A bibliometric and thematic approach from 2013 to 2022. *Library Hi Tech*, 43(2–3), 590–621. <https://doi.org/10.1108/lht-07-2023-0280>.
- [23]. Kishore, A. (2025). Transforming Library Services through Predictive Analytics: A User-Centric and Resource-Driven Approach. *International Journal of Research in Library Science*, 11(2), 312–318. <https://doi.org/10.26761/ijrls.11.2.2025.1893>. Ku, K. M., Mahboobani, V. R., Qiu, Y. V., Yang, T. T., & Woo, E. M. W. (2025). Reshaping the future of academic library: Service model for holistic research data support. *The Journal of Academic Librarianship*, 52(1), 103180. <https://doi.org/10.1016/j.acalib.2025.103180>.
- [24]. Li, G., Zhu, M. X., & Kong, S. (2025). The effectiveness of smart knowledge services in libraries in Chinese Mainland: a mixed methods study. *The Electronic Library*, 44(2), 381–407. <https://doi.org/10.1108/el-03-2025-0104>.
- [25]. Liu, J. (2021). Service innovation of university library in the big data era. *International Journal of Frontiers in Sociology*, 3(1). <https://doi.org/10.25236/ijfs.2021.030110>.

- [26]. Marzuki, M., Azero, S. F. Z., Zamzuri, N. a. a. M., & Kadir, M. R. A. (2025). A Systematic literature review of user behavior and personalization in digital libraries. *International Journal of Research and Innovation in Social Science*, IX(I), 4830–4842. <https://doi.org/10.47772/ijriss.2025.9010372>.
- [27]. Masenya, T. M. (2023). The creation and adoption of Technology-Centred Makerpaces in South African academic libraries. *International Journal of Library and Information Services*, 12(1), 1–17. <https://doi.org/10.4018/ijlis.320224>.
- [28]. Mojjada, H., & Aakundi, V. S. (2025). Data-Driven Libraries: Integrating Analytics And Evidence-Based Practice For Service Excellence. *International Journal Of Library And Information Science*, 14(3), 69–87. https://doi.org/10.34218/ijlis_14_03_005.
- [29]. Mojjada, H., & Aakundi, V. S. (2025). Data-Driven Libraries: Integrating Analytics And Evidence-Based Practice For Service Excellence. *International Journal Of Library And Information Science*, 14(3), 69–87. https://doi.org/10.34218/ijlis_14_03_005.
- [30]. Nahotko, M., Zych, M., Januszko-Szakiel, A., & Jaskowska, M. (2022). Big data-driven investigation into the maturity of library research data services (RDS). *The Journal of Academic Librarianship*, 49(1), 102646. <https://doi.org/10.1016/j.acalib.2022.102646>.
- [31]. Naikar, S., & Paul, M. (2025). The Future Role of Smart Libraries in 21st Century: A Study. *Journal of Emerging Technologies and Innovative Research (JETIR)*, 12(1), 756-763, <https://ssrn.com/abstract=5092010>.
- [32]. Neamatollahi, Z., & Danesh, F. (2026). AI-driven personalization in library and information services: A systematic review of techniques, user outcomes, and ethical considerations. *The Journal of Academic Librarianship*, 52(1), 103195. <https://doi.org/10.1016/j.acalib.2025.103195>.
- [33]. Oduwole, A. A., Adekunmisi, S. R., & Oyedokun, S. O. (2023). Adoption of innovative library products and services among library and information science professionals in Nigeria. *Library and Information Perspectives and Research*, 5(2), 1–14. <https://doi.org/10.47524/lipr.v5i2.2>.
- [34]. Okorie, G. N., Udeh, C. A., Adaga, E. M., DaraOjimba, O. D., & Oriekhoe, O. I. (2024). Ethical Considerations In Data Collection And Analysis: A Review: Investigating Ethical Practices And Challenges In Modern Data Collection And Analysis. *International Journal of Applied Research in Social Sciences*, 6(1), 1–22. <https://doi.org/10.51594/ijarss.v6i1.688>.
- [35]. Paiste, A. T., & Siago, S. B. (2024). Academic Librarians as Catalysts of Innovation: AI Competencies for Transforming Education. *International Research and Innovation Journal on Education, Engineering and Agriculture*, 1(2): 44 – 72.
- [36]. Qazi, A. G., & Pachler, N. (2024). Conceptualising a data analytics framework to support targeted teacher professional development. *Professional Development in Education*, 51(3), 495–518. <https://doi.org/10.1080/19415257.2024.2422066>.
- [37]. Rafiq, U., Wang, X., & Guerra, E. (2024). Data analytics in software startups: Understanding key concepts and critical challenges. *Information and Software Technology*, 180, 107652. <https://doi.org/10.1016/j.infsof.2024.107652>.
- [38]. Rahman, F. A., Anuar, A., Ramadhan, S. Y., & Ghazali, A. M. (2025). Innovative Technologies in Libraries under Industry 4.0 : A Review of Challenges and Opportunities. *International Journal of Research and Innovation in Social Science*, IX(IX), 7916–7926. <https://doi.org/10.47772/ijriss.2025.909000645>.
- [39]. Rahman, F. A., Anuar, A., Ramadhan, S. Y., & Ghazali, A. M. (2025). Innovative Technologies in Libraries under Industry 4.0 : A Review of Challenges and Opportunities. *International Journal of Research and Innovation in Social Science*, IX(IX), 7916–7926. <https://doi.org/10.47772/ijriss.2025.909000645>.
- [40]. Sajja, R., Sermet, Y., Cwiertny, D., & Demir, I. (2025). Integrating AI and learning analytics for Data-Driven pedagogical decisions and personalized interventions in education. *Technology Knowledge and Learning*. <https://doi.org/10.1007/s10758-025-09897-9>.
- [41]. Saroja, J. (2022). Innovative Best Practices in Academic Libraries. *International Journal of Innovative Science and Research Technology*, 7(6). <https://www.ijisrt.com/assets/upload/files/IJISRT22JU N1716.pdf>.
- [42]. Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2021). From user-generated data to data-driven innovation: A research agenda to understand user privacy in digital markets. *International Journal of Information Management*, 60, 102331. <https://doi.org/10.1016/j.ijinfomgt.2021.102331>.
- [43]. Schimmel, M. L. (2024). *Insights in the stacks : leveraging data analytics for enhanced public library services*. <https://hdl.handle.net/2152/126311>.
- [44]. Shah, S.H., Gul, N., Islam, M.N., Jbeen, A., and Ahmad, S. (2025). Internet of Things (IOT) in university libraries: an investigation of implementation status, opportunities, challenges, and ethical guidelines. *International Journal of Social Sciences Bulletin*. <https://doi.org/10.5281/zenodo.17142110>.
- [45]. Sharma, D. (2025). Library Analytics and Decision-Making Tools: Enhancing Evidence-Based Management in Libraries. In *Recent Advancements in Management and Academic Library Sciences* (pp. 11–23). <https://doi.org/10.62823/mgm/9789349468160/02>
- [46]. Swetha, N., & Kumar, R. (2024). Smart Libraries: Driving Innovation for a Sustainable Knowledge System in the Fifth Industrial Revolution. *Journal of Interdisciplinary and Multidisciplinary Research*. 19. https://livejimrjournal.in/uploads/JIMRDec24_24138.pdf.
- [47]. Tara, N., Rafi, M., & Ahmad, K. (2024). Evaluating the implementations of big data analytics in academic libraries: a structural equation model-based approach. *Performance Measurement and Metrics*, 25(3/4), 215–227. <https://doi.org/10.1108/pmm-08-2023-0022>.