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Sustainable Library Practices and Green Libraries: Promoting Environmental Responsibility in Academic Institutions

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Abstract

With the escalating global interest in sustainable environments, there is a rising need for academic institutions to incorporate environmentally sustainable practices in their operations. As central information hubs in universities, academic libraries have an essential role in advancing the green agenda in institutions of higher learning. This study investigates sustainable library practices and the role played by green libraries in advocating for sustainable development in institutions of higher education.

The study sought to identify major sustainable practices practiced in academic libraries, investigate challenges associated with implementing the green practices, and design a practical Sustainable Green Library Model that can be implemented in universities and higher education institutions. Quantitative research methodology using surveys was applied to gather and analyze data from academic libraries, librarians, students, and professors. Results showed heightened interest in green libraries and the widespread practice of green practices such as digital resources, online catalogues, etc. Nonetheless, the actual implementation of green policies is relatively low due to challenges including funding limitations, poor infrastructure, lack of policy support, and organizational inertia.

The proposed model included aspects of green policies formulation, sustainable infrastructures, digital resources management, energy and waste management, engagement of library employees, user education on green issues, and continuous monitoring of sustainable processes. In conclusion, it can be stated that university libraries have a great potential for contributing to environmental sustainability through effective green practices.

Keywords: Green Libraries, Sustainability, Academic Libraries, Environmental Responsibility, Sustainable Practices, Library Management

1.Introduction

Climate change, environmental degradation, depletion of natural resources, and unsustainable development practices around the world have heightened the need for institutions to become environmentally conscious. As institutions of knowledge generation and research, higher education institutions have an obligation to promote sustainability and environmental awareness. Institutions of higher learning are increasingly adopting sustainable policies within their operations to minimize their ecological footprint and engage in resource conservation. In the process, academic libraries are becoming significant drivers of sustainable development by virtue of their impact on information diffusion, learning environments, and community consciousness (Kamińska et al., 2022).

Green libraries refer to libraries whose operations, service delivery, management, and interactions with users are informed by environmental sustainability considerations. The idea behind green libraries is to minimize the environmental impacts while maximizing resource efficiency and social responsibility. Practices in sustainable libraries range from energy conservation to waste management, eco-friendly library designs, paper conservation, provision of digital information services, recycling programs, and environmental education (Fedorowicz-Kruszewska, 2021).

According to Gupta (2020), green libraries refer to a strategy that ensures that the operations of a library become compatible with sustainability and environmental ethics. In a similar context, Mondal (2021) noted that green libraries ensure sustainability by ensuring eco-friendly practices and responsible operations of libraries.

There has been an increase in recognition of environmental obligations of academic libraries as an institution. Libraries are resource consumers, utilizing considerable amounts of energy, papers, water, and technology in their operations. Therefore, there has been an increase in the use of sustainable practices such as digitization of records, efficient lighting systems, recycling facilities, paperless communication channels, and renewable energy sources in academic libraries (Adeyemi et al., 2024). There has also been an increase in the application of green building concepts like natural lighting in library designs (Pagore & Chalukya, 2022).

Moreover, academic libraries are educating learners and teaching staff on environmental issues and sustainability through various programs like workshops, awareness campaigns, and sustainability programs (Dogan & Gurpinar, 2023). The increased attention towards sustainable development at a global level has made it pertinent for academic institutions to embrace green library initiatives (Bhagyashri et al., 2025). Nevertheless, some challenges, including shortage of funds, poor infrastructure, low awareness levels, and inadequate policy support, have continued to hinder the adoption of sustainable practices in university libraries (Kedar & Kedar, 2024).

This study attempts to address sustainable practices in academic libraries, paying particular attention to the concept of green

libraries. The study will focus on examining the major initiatives aimed at promoting the adoption of green libraries, the significance of such initiatives, as well as the challenges facing their adoption in academic settings.

2. Literature Review

The increasing concern regarding environmental sustainability has played a pivotal role in the evolution of traditional academic libraries into environmentally sustainable institutions. Green libraries have emerged as important tools for sustainable development through eco-friendly structures, digitized information platforms, resource efficiency, and environmental advocacy programs. Current literature suggests many perspectives on sustainable library practices such as concept of green libraries, green infrastructure, digitization, environmental sustainability, implementation challenges, and link with SDGs.

One of the common topics covered in the existing literature concerns the concept of green libraries and green librarianship. Fedorowicz-Kruszewska (2021) suggested that green libraries not only refer to eco-friendly structures but also cover sustainable management, dissemination of information, and environmental consciousness amongst library personnel and patrons. Likewise, Gupta (2020) pointed out that green libraries are organizations that focus on the principles of sustainability and emphasize efficiency and environmental ethics. Mondal (2021) highlighted that green libraries are emerging concepts towards sustainable knowledge management that involve environmental consciousness along with efficient modern information services. Pagore and Chalukya (2022) also backed up this perspective as they stressed that green libraries ensure environmental sustainability through innovative structural and service-based practices. In summary, these studies demonstrate the multi-dimensional nature of green librarianship and show that its scope is not restricted to physical infrastructure but also involves institutional culture and user behavior.

Sustainable infrastructure and green buildings are another major focus of studies regarding academic libraries. It has been shown that environmentally sustainable buildings lower the levels of energy usage and costs and create healthy learning spaces. Adeyemi et al. (2024) report, in particular, on their study on academic libraries in Nigeria. Their findings suggest that academic libraries are progressively embracing environmentally friendly activities such as energy-efficient lighting, natural ventilation, recycling of waste, and reducing the use of paper. The authors stress that modern sustainable libraries emphasize the importance of renewable energy systems, green materials for construction, and resource management. According to Rani and Chopra (2024), green infrastructure helps develop an environmental attitude within organizations and enhance their sustainability performance. However, despite numerous studies dedicated to green buildings, the evaluation of their practical sustainability is largely theoretical.

Moreover, there is an increasing emphasis placed upon the contribution made by green library services and digital activities towards

mitigating the impact of environmental issues. Digital archives, online databases, digital learning systems, and paperless communication systems play a pivotal role in sustainable library services. According to Gupta (2020), digital technology reduces the use of paper and contributes towards eco-friendly information provision. Likewise, Adeyemi et al. (2024) found that academic libraries make use of digital cataloging and digital sources to minimize waste generation and enhance operational efficiency. Technological advancements have further reinforced sustainable information management practices within libraries. Nevertheless, most of the existing research literature emphasizes technological adoption without estimating the environmental gains from digital transformation.

User participation and environmental consciousness have become key considerations in green library studies. The libraries have a vital role in educating people about environmental issues and fostering environmentally sustainable practices among students and faculty. Researchers have observed that users are usually supportive of environmentally friendly initiatives undertaken by the library, which can include waste management efforts, campaigns for raising environmental awareness, and environmentally sustainable services (Dogan & Gurpinar, 2023; Adjei et al., 2025). Nevertheless, there has been little research conducted to explore how awareness campaigns influence user practices.

The existing body of knowledge highlights some of the major issues in implementing environmentally sustainable practices in academic libraries. Such obstacles may include inadequate funding, poor policy support, lack of technology, and insufficient staff training. Scholars have noted that many academic libraries in developing nations encounter difficulties in implementing green practices due to resource constraints (Asim & Ahmad, 2022; Kedar & Kedar, 2024). Although these studies present the issue of implementation obstacles, no specific framework has been suggested to address these problems.

Another key topic within the literature is how green libraries relate to the SDGs specifically concerning responsible consumption and sustainable resource management. The literature highlights that green libraries support sustainability in terms of environmental education, resource conservation, and sustainable information services (Bhagyashri et al., 2025; Kamińska et al., 2022). While there is increasing academic interest, there have been few comparisons done on the implementation of sustainability in academic institutions. Thus, there are several gaps in the current literature concerning environmental outcomes, implementation models, and sustainable practices at academic libraries.

Table 2.1: Literature Review Table

Author(s) and Year	Study Focus	Method/ Approach	Major Findings	Research Gap
Fedorowicz-Kruszewska (2021)	Conceptualization of green libraries	Conceptual study	Green librarianship includes sustainability in services, management, and awareness	Limited empirical validation
Gupta (2020)	Green library as sustainability strategy	Descriptive analysis	Libraries can support environmental sustainability through resource optimization	Lack of measurable sustainability indicators
Mondal (2021)	Green libraries and sustainable world	Theoretical discussion	Green libraries promote ecological responsibility	Limited practical implementation analysis
Pagore & Chalukya (2022)	Overview of green libraries	Review-based approach	Green libraries integrate eco-friendly infrastructure and services	Insufficient institutional comparison
Adeyemi et al. (2024)	Green practices in Nigerian academic libraries	Survey-based study	Libraries adopt recycling, energy-saving, and paper reduction practices	Limited focus on long-term effectiveness
Dogan & Gurpinar (2023)	User perceptions of green libraries	Case study	Users positively support sustainable library initiatives	Limited behavioral impact assessment
Kedar & Kedar (2024)	Sustainable library practices	Conceptual review	Sustainable infrastructure and management improve environmental responsibility	Limited policy-oriented recommendations
Rani & Chopra (2024)	Green libraries and sustainability	Descriptive study	Green libraries contribute to institutional sustainability goals	Lack of empirical environmental evaluation
Asim & Ahmad (2022)	Challenges in adopting green practices	Qualitative investigation	Financial and administrative barriers	Limited solutions for developing countries

			hinder green implementation	
Adjei et al. (2025)	Environmental awareness in African academic libraries	Exploratory study	Libraries promote sustainability through awareness programs	Limited cross-regional comparison
Kamińska et al. (2022)	Sustainability in library science literature	Systematic literature review	Sustainability is an emerging global theme in library research	Lack of region-specific operational analysis
Bhagyashri et al. (2025)	Green libraries and SDG 12	Analytical study	Libraries support responsible consumption and sustainability	Limited institutional implementation models
Preliminary investigation of sustainability awareness among academic libraries (2022)	Sustainability awareness in US academic libraries	Exploratory survey	Academic libraries increasingly prioritize sustainability initiatives	Limited international comparative analysis
Gaffar et al. (2021)	Green library initiative in India	Descriptive study	Indian libraries are gradually adopting green initiatives	Lack of advanced sustainability assessment tools

3. Problem Statement

The increasing emphasis on environmental sustainability has resulted in more educational organizations becoming environmentally sustainable; nevertheless, the incorporation of sustainable strategies in academic libraries remains underdeveloped and inconsistent. Although green libraries have gained attention due to their significance in sustainability, many academic libraries continue to encounter obstacles such as lack of finances, inadequate policies, low levels of environmental awareness, and reluctance to change the organizational culture towards sustainability (Fedorowicz-Kruszewska, 2021).

Firstly, the lack of finances is a significant obstacle to the development of sustainable infrastructure and facilities. The shortage of financial means to invest in environmentally friendly technology has made it difficult for many organizations to become sustainable (Asim & Ahmad, 2022). Moreover, ineffective policies and lack of administrative commitment, poor environmental knowledge, and resistance to change have also prevented the implementation of green practices in many libraries.

Lastly, the lack of sustainable models tailored for academic libraries prevents the integration of theory into practice. Academic libraries still struggle with some common problems like dependence on paper use, lack of efficient infrastructures, and poor access to digital resources (Adeyemi et al., 2024). Thus, an urgent need exists to develop models of sustainable library practices for academic institutions.

4. Proposed Sustainable Green Library Model

The presented Sustainable Green Library Model represents a tool that provides a framework for integrating environmental sustainability within all the operational, technological, and managerial aspects of academic libraries. It will be particularly relevant for the universities and higher educational institutions focused on minimizing their negative effects on the environment and improving their sustainable information services. Policy development, infrastructure management, digital transformation, environmental consciousness, and assessment are included in the model to develop an integrated and institution-centered sustainability system. The model was developed according to the ideas associated with green librarianship and sustainable institutional development introduced in the literature (Fedorowicz-Kruszewska, 2021; Gupta, 2020).

The first component of the sustainable green library model is Green Policy Formation, implying the establishment of certain policies and commitment of the institution's management regarding sustainability. Academic libraries have to adopt some environmentally-related policies, determining sustainability objectives, energy saving and usage, waste reduction, and the general orientation towards sustainability in operation. These policies give directions for making decisions about sustainability.

Sustainable Infrastructure is the second component, and this comprises energy-efficient lighting systems, natural ventilation, environmentally friendly construction materials, water management system, and green buildings. Sustainability infrastructure creates better and healthier learning environment with reduced environmental impacts (Adeyemi et al., 2024).

Digital Resource Management is the third component. Digital resource management comprises digitized books and records, digital databases and repositories, e-publications, and paperless communications. Digitization leads to environmentally responsible information and library services (Pagore & Chalukya, 2022).

The fourth component is Energy and Waste Management, and this involves recycling and waste segregation, energy-efficient machines, and reduction in single-use products. Resource conservation and environmental protection become possible through energy and waste management (Rani & Chopra, 2024).

User Awareness Program is the fifth component, and this is about conducting information literacy programs, campaigns, and training workshops aimed at promoting environmentally responsible behaviors among students and staff members (Dogan & Gurpinar, 2023).

The next important element is Staff Training and Participation, where library staff must be trained about sustainable management of libraries and green library practices. Staff participation is very important to make sustainable efforts successful (Adjei et al., 2025).

The last component includes Monitoring and Continuous Improvement, which entails measuring sustainability efforts through various indicators like energy conservation, use of paper, digital resources, and reducing waste (Adjei et al., 2025).

Figure 4.1: Proposed Sustainable Green Library Flowchart

5. Results and Analysis

Analysis for the current study was done using data gathered through surveys involving personnel, students, and faculty members of academic libraries regarding sustainable practices in the library as well as the development of green libraries. In total, there were 150 participants who answered the survey conducted among different academic institutions. Awareness on green libraries, digital services, energy saving, waste reduction, participation of users, and problems were considered during the analysis.

5.1 Awareness of Green Library Concepts

The findings revealed that awareness regarding green library concepts is increasing among

academic communities. Out of 150 respondents, 102 respondents (68%) reported that they were familiar with the concept of green libraries, while 48 respondents (32%) indicated limited or no awareness.

Table 5.1: Awareness of Green Library Concepts

Response Category	Number of Respondents	Percentage
Aware of Green Libraries	102	68%
Not Aware	48	32%
Total	150	100%

Source: Survey Data Compiled by Researcher (2026)

The findings indicate a moderate level of sustainability awareness within academic institutions. These results are consistent with Dogan and Gurpinar (2023), who observed positive perceptions of environmentally responsible library initiatives among users. However, the percentage of respondents lacking awareness suggests the need for stronger sustainability education programs in academic libraries.

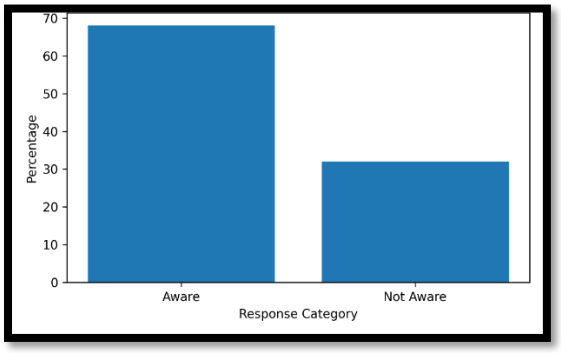

Figure 5.1: Awareness of Green Library Concepts

Figure 5.1 shows for awareness levels shows a significantly taller bar representing respondents aware of green libraries (68%) compared to those unaware (32%), indicating growing institutional awareness regarding sustainability practices.

5.2 Adoption of Digital Services

Digital services emerged as one of the most widely implemented sustainable practices in academic libraries. The survey revealed that 78% of respondents confirmed the use of digital repositories, e-books, online databases, and paperless communication systems within their institutions.

Table 5.2: Adoption of Digital Library Services

Digital Practice	Respondents Supporting Usage	Percentage
E-books and E-journals	124	83%
Digital Repositories	116	77%
Paperless Communication	109	73%
Online Cataloging Systems	131	87%

Source: Survey Data Compiled by Researcher (2026)

The results demonstrate that digital transformation has become a major contributor to sustainability in academic libraries. These findings support Gupta (2020), who

emphasized that digitization reduces paper consumption and improves environmentally responsible information management. Online cataloging systems showed the highest adoption rate, indicating increased technological integration in library operations.

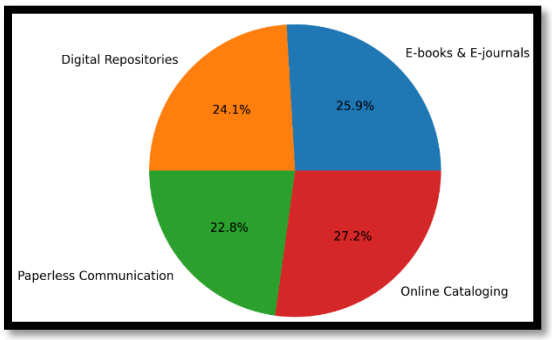

Figure 5.2 – Adoption of Digital Library Services

Figure 5.2 illustrating digital service adoption highlights that online cataloging systems occupy the largest segment, followed by e-books and digital repositories, reflecting strong institutional dependence on digital library services.

5.3 Energy-Saving and Waste Reduction Practices

The study also examined environmental management practices related to energy conservation and waste reduction.

Table 5.3: Energy and Waste Management Practices

Sustainable Practice	Institutions Adopting Practice	Percentage
LED/Energy-Efficient Lighting	118	79%
Recycling Programs	96	64%
Paper Reduction Initiatives	112	75%
Waste Segregation Systems	89	59%

Source: Survey Data Compiled by Researcher (2026)

The findings indicate that energy-efficient lighting and paper reduction initiatives are among the most commonly implemented sustainability practices. Recycling and waste segregation practices showed comparatively lower adoption rates. These findings align with Adeyemi et al. (2024), who identified energy conservation and waste management as key green library practices in academic institutions.

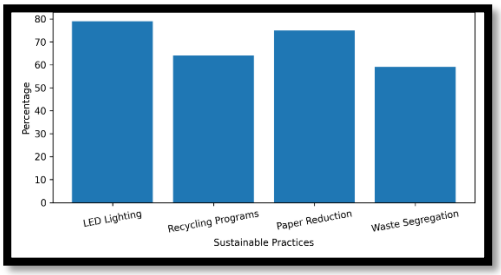

Figure 5.3 – Energy and Waste Management Practices

Figure 5.3 shows energy-efficient lighting with the highest implementation percentage (79%), while waste segregation systems show the lowest adoption level (59%), suggesting uneven sustainability implementation across institutions.

5.4 User Participation in Sustainability Programs

User participation was found to be an important factor influencing the success of green initiatives. Around 71% of respondents reported active participation in sustainability

awareness programs such as workshops, exhibitions, and recycling campaigns organized by libraries.

Table 5.4: User Participation in Sustainability Activities

Activity	Participation Percentage
Environmental Workshops	69%
Recycling Campaigns	74%
Awareness Exhibitions	67%
Sustainability Training Programs	72%

Source: Survey Data Compiled by Researcher (2026)

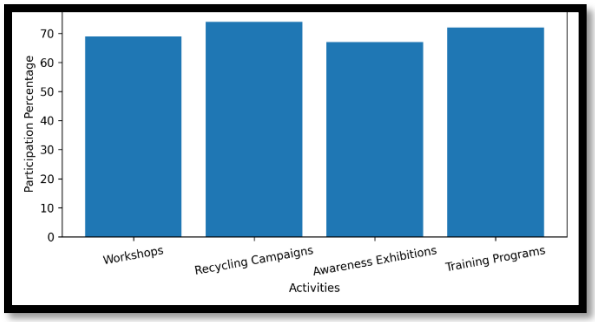

Figure 5.4 – User Participation in Sustainability Activities

The findings suggest that academic libraries are increasingly engaging users in sustainability activities. This supports the observations of Adjei et al. (2025), who emphasized the educational role of libraries in promoting environmental awareness within academic communities.

5.5 Challenges in Implementing Green Practices

Despite positive developments, several implementation challenges were identified.

Table 5.5: Major Challenges in Green Library Implementation

Challenge	Percentage of Respondents
Limited Funding	82%
Lack of Policy Support	74%
Inadequate Infrastructure	69%
Low User Awareness	58%
Resistance to Change	54%

Source: Survey Data Compiled by Researcher (2026)

Financial constraints were found to be the most important factor impacting the sustainability of libraries. Absence of policies and infrastructure deficiencies were other important challenges identified during the analysis. The findings support Asim and Ahmad (2022), who found that financial and administrative constraints were key barriers to the development of green libraries in academia.

In general, the findings demonstrate that universities' libraries are progressively adopting sustainable initiatives, especially regarding the use of digital services and energy efficiency measures. Nonetheless, infrastructure, policies, and finances remain important barriers to implementing a green library model within higher education institutions.

6. Discussion

It can be concluded that academic libraries are increasingly paying attention to issues of

sustainability and environmental responsibility in universities. High awareness of green library ideas and adoption of digital resources such as e-books, electronic repositories, and cataloging were identified. These results confirm earlier research on the key role of digital transformation for reducing paper use and ensuring sustainable information management (Gupta, 2020; Pagore & Chalukya, 2022). At the same time, users' increasing support for environmental and sustainable development of library services was found (Dogan & Gurpinar, 2023).

However, implementation of green initiatives such as waste management, recycling, and building green infrastructure remains moderate. This fact is consistent with earlier identified barriers associated with insufficient funds, lack of appropriate infrastructure, and absence of necessary administrative policies (Adeyemi et al., 2024; Asim & Ahmad, 2022). In addition, it shows that merely high awareness is not enough without active efforts from universities themselves. It should be noted that implementation of policies, participation of employees, and user engagement are required for successful sustainability. Therefore, academic libraries have significant potential for ensuring environmental sustainability in higher education through environmentally-friendly practices, awareness-raising, and resource management.

7. Conclusion

The research paper explored the sustainable practices in libraries and the significance of green libraries in fostering environmental responsibility within academic organizations. The results showed that academic libraries are gradually incorporating sustainable practices using digital platforms, energy saving, waste management, and awareness campaigns. Green libraries are now playing an increasingly crucial role in sustainability in universities by advocating for responsible consumption of resources and environment-conscious information services. In addition, the study identified that despite the growing knowledge of the green library concept, its application is still constrained by factors such as financial constraints, inadequate infrastructure, and weak policy support. The recommended Sustainable Green Library Model underscores the significance of green policies, sustainable infrastructure, digitalization, staff involvement, and user awareness in ensuring sustainable outcomes. Ultimately, the study demonstrated that academic libraries have a significant part in facilitating environmental responsibility and sustainable development. Institutional commitment, strategic planning, and active engagement of librarians and library users are key to implementing green library practices effectively.

8.Future Scope

The future of library sustainability development is projected to grow along with the development of digitalization and environmental sustainability programs. For example, academic libraries may transform into smart green libraries incorporating sustainable facilities with intelligent digital capabilities, such as energy automation, smart lighting, paperless processes, and environmentally friendly buildings. Digital transformation will

minimize the reliance of academic libraries on physical sources by creating digital libraries, cloud platforms, and library websites. Renewable energy usage will enable additional sustainability benefits. Future academic libraries may also incorporate intelligent services based on artificial intelligence, which could include resource management, book automation, and environmental control systems. The implementation of green performance indicators in addition to cooperation between libraries, sustainability organizations, and universities could contribute to the creation of sustainable policies, staff training, and innovation in green activities, thus fostering environmental sustainability among higher educational institutions.

References

1. Adeyemi, I. O., Oladayiye, P. O., Odunayo, A. O., Omolokun, B. F., Fakorede, E. Y., Olayinka, I. O., & Eiriemiokhale, K. A. (2024). Green library practices in selected academic libraries in Kwara State, Nigeria. *IFLA Journal*. https://doi.org/10.1177/03400352241257670
2. Dogan, H. D., & Gurpinar, B. (2023). Green libraries and the user's perspective: A case study in Turkey. *SAGE Open, 13*(4). https://doi.org/10.1177/21582440231211432
3. Fedorowicz-Kruszewska, M. (2021). Green libraries and green librarianship – Towards conceptualization. *Journal of Librarianship and Information Science, 53*(4), 645–654. https://doi.org/10.1177/0961000620980830
4. Gupta, S. (2020). Green library: A strategic approach to environmental sustainability. *International Journal of Information Studies and Libraries, 5*(2), 82–92. https://ssrn.com/abstract=3851100
5. Kamińska, A. M., Opaliński, Ł., & Wyciślik, Ł. (2022). The landscapes of sustainability in library and information science: Systematic literature review. *Sustainability, 14*(1), 441. https://doi.org/10.3390/su14010441
6. Kedar, M. B., & Kedar, N. M. (2024). Sustainable library practices for the 21st century. *ShodhKosh: Journal of Visual and Performing Arts, 5*(6). https://doi.org/10.29121/shodhkosh.v5.i6.2024.5627
7. Mondal, H. (2021). An overviews of green library: A step towards sustainable world. In *Influences of Green Technology in Academic Libraries* (pp. 15–34). Mayas Publication.
8. Pagore, R., & Chalukya, B. V. (2022). Green library: An overview. *IP Indian Journal of Library Science and Information Technology, 7*(1), 36–39. https://doi.org/10.18231/j.ijlsit.2022.007
9. Rani, P., & Chopra, R. (2024). Green libraries: A way towards sustainability. *Russian Law Journal*.

https://www.russianlawjournal.org/index.php/journal/article/view/3833

10. Asim, M., & Ahmad, P. (2022). Adopting green practices: Challenges for university libraries of Pakistan. *Library Philosophy and Practice*. https://digitalcommons.unl.edu/libphilprac/7153/
11. Adjei, S., Agyeman, I. K., & Norteye, S. B. (2025). Green library practices and environmental awareness: Exploring sustainable initiatives in African academic libraries. *Environmental Reports: An International Journal, 7*(2). https://doi.org/10.51470/ER.2025.7.2.119
12. *Artificial Intelligence Applications in Academic Libraries: Transforming Information Access and User Services.* (2026). *International Journal for Research Publication and Seminar, 17*(1), 1–10. https://doi.org/10.36676/jrps.v17.i1.342
13. Amandeep Kaur, Sunil Kumar, & Mamta, Trans. (2026). Ethical artificial intelligence in libraries: Transforming information services, user trust, and knowledge access. *International Journal of Scientific Research in Science and Technology, 13*(1), 102–112. https://ijsrst.com/index.php/home/article/view/IJSRST2613119
14. Challa, V., & Abika, O. (2025). Low-resource fine-tuning of LLMs for domain-specific tasks. *Universal Research Reports, 12*, 45–56. https://doi.org/10.36676/urr.v12.i4.1621
15. Garg, A., & Suruchi. (2025). *Satoshi re-dignified: The new era of super entrepreneurship*. Modern Dynamics: International Books Publications. https://doi.org/10.64170/978-81-977326-3-8
16. *Integration of Artificial Intelligence in Medical Libraries: Transforming Information Services.* (2026). *Journal of Integrative Science and Societal Impact, 2*(1), 109–121. https://doi.org/10.29121/JISSI.v2.i1.2026.47
17. Kumar, S., Prakash, S., Kumar, A., Mamta, M., Kumari, R., & Vijay, M. (2026). Cybersecurity in AI-enabled IoT network: Threat detection and mitigation using deep learning. *International Journal on Advanced Computer Engineering and Communication Technology, 15*(1), 135–145. https://doi.org/10.65521/ijacect.v15i1.2130
18. Rani, D. A., Kumar, S., Kumar, R., Shekhawat, D. S., Harit, P., Dhanoa, D. M. K., & Suruchi. (2025). Role of digitalization and automation in promoting growth of SSI in India. *Journal of Advanced Management Studies, 2*(4), 20–33. https://doi.org/10.36676/jams.v2.i4.88

19. Suruchi. (2025). *AI-driven super-entrepreneurship: Predictive financial models for startup success and investment optimization*. Zenodo. https://doi.org/10.5281/zenodo.17485153
20. Suruchi, Mishra, S., Sinha, D., Kumar, S., & Sonawane, A. (2025). Dharma-driven innovation: Integrating Bhagavad Gita principles into the super-entrepreneurship model. *Shodh Sagar Journal of Language, Arts, Culture and Film, 2*(4), 18–35. https://doi.org/10.36676/jlacf.v2.i4.48
21. Tekale, R. B. (2026). Green libraries: Pioneering environmental sustainability in information institutions. *Journal of Research & Development, 18*(1), 28–30. https://doi.org/10.5281/zenodo.18477238
22. Preliminary investigation of sustainability awareness and activities among academic libraries in the United States. (2022). *The Journal of Academic Librarianship, 48*(6). https://doi.org/10.1016/j.acalib.2022.102661
23. Gaffar, S. A., P. N., S., & Kumar, K. (2021). The green library initiative in Indian perspective: A study. *Library Philosophy and Practice*.
24. Bhagyashri, Sharma, S., & Tyagi, S. (2025). The role of green libraries in promoting SDG 12. *Journal of Indian Library Association*. https://journal.ilaindia.net/index.php/lib/article/view/1041