

Implementation of Artificial Intelligence in the Library of SRR & CVR Government Degree College: A Pilot Study

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ABSTRACT

Artificial intelligence (AI) is increasingly permeating all sectors of society, significantly influencing higher education and academic library services. Within higher education institutions, AI is emerging as a transformative force, reshaping teaching and learning practices, research activities, information management, and administrative operations, thereby redefining information needs and modes of access. This growing impact has led to an accelerating global trend toward the adoption of AI in academic libraries. Despite the expanding use of AI in library services worldwide, its implementation within Government Degree College libraries in India remains limited and insufficiently explored. This paper presents the findings of a pilot study conducted at SRR & CVR Government Degree College (Autonomous), Vijayawada, with the objective of examining levels of AI awareness, stakeholder perceptions, institutional preparedness, implementation challenges and future prospects for AI integration in academic libraries. Data were collected from 245 respondents, including students, faculty members, library professionals and administrators, using a structured questionnaire. Descriptive statistical analysis reveals high levels of AI awareness and generally positive perceptions, alongside moderate institutional readiness and significant infrastructural, technical and skill-related challenges. The study further validates the research instrument and establishes a strong empirical foundation for a comprehensive large-scale investigation into AI adoption in academic libraries.

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KEYWORDS: Artificial Intelligence, Academic Libraries, Government Degree Colleges, Pilot Study, Library Automation.

INTRODUCTION

Artificial Intelligence (AI) has become a transformative technology in the field of Library and Information Science, influencing the organization, retrieval and dissemination of information. AI-based applications such as chatbots, intelligent discovery systems, recommendation tools, automated metadata generation and data analytics are

increasingly being integrated into academic libraries, particularly in developed countries, to enhance service efficiency and user engagement.

Academic libraries play a crucial role in supporting teaching, learning and research in higher education institutions. The adoption of AI has the potential to improve service delivery, personalize user experiences and optimize library operations. However, despite global advancements, the adoption of AI in academic libraries remains uneven. In developing countries like India, especially in Government Degree Colleges, AI integration faces several challenges, including limited infrastructure, financial constraints, lack of technical expertise and absence of supportive policy frameworks.

The erstwhile Krishna District of Andhra Pradesh, comprising urban and semi-urban institutions, provides a suitable context to study these challenges. Government Degree College libraries in this region largely rely on conventional systems despite increasing digitalization and growing user expectations. Limited empirical research on AI readiness and adoption in such institutions highlights a significant research gap.

To address this gap, the present study conducts a pilot investigation at SRR & CVR Government Degree College (Autonomous), Vijayawada. The study examines awareness, stakeholder perceptions, institutional preparedness, implementation barriers and future prospects of AI adoption in academic libraries. The findings aim to assess the feasibility of AI integration in resource-constrained environments and support evidence-based policy formulation and strategic planning for AI-enabled library services in Indian higher education.

OBJECTIVES OF THE STUDY

1. To assess awareness of AI among library stakeholders in Government Degree College.
2. To examine perceptions towards AI-based library services.
3. To evaluate institutional readiness for AI adoption.
4. To identify challenges in implementing AI in college libraries.
5. To explore future prospects of AI integration in libraries in Government Degree College.

REVIEW OF LITERATURE

The application of Artificial Intelligence (AI) in libraries has attracted increasing scholarly attention, especially in academic libraries. Studies highlight AI's ability to enhance cataloguing efficiency, improve information retrieval accuracy and provide personalized information services. AI-based tools such as machine learning algorithms, chat-bots, recommendation systems and automated metadata generation support faster decision-making, efficient management of digital collections and improved user engagement (Cox et al.; Breeding). These technologies help libraries adapt to changing user expectations and expanding digital resources.

Research from technologically advanced academic settings reports successful implementation of intelligent discovery systems and virtual reference services, resulting in improved service quality and enhanced staff productivity (García-Febo et al.; Tzoc). AI-driven analytics are also recognized as valuable for collection development, usage analysis and evidence-based decision-making, enabling libraries to plan services more effectively (Nitecki; Zhang). Additionally, several studies emphasize that AI adoption is reshaping librarian

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competencies and redefining professional roles, requiring new digital and analytical skills (Rubin; Cox and Pinfield).

Despite these benefits, the literature consistently identifies major challenges to AI adoption. These include lack of technical expertise, insufficient training, limited funding, infrastructural constraints, ethical concerns and organizational resistance to change (Asemi et al.; Jantti; Kumar and Singh). Such challenges are more pronounced in developing countries due to persistent gaps in technological infrastructure and institutional support (Chakraborty; Singh).

Importantly, while existing research largely focuses on university and research libraries, empirical evidence from government-run degree college libraries, particularly in semi-urban and rural areas, remains limited. This gap underscores the need for context-specific studies. The present pilot study addresses this gap by providing empirical insights from a Government Degree College library in Andhra Pradesh.

METHODOLOGY

A pilot study using mixed method of combining both qualitative and quantitative survey design is conducted. The sample comprised 245 respondents selected through stratified purposive sampling and total enumeration. Data is analyzed using descriptive statistics—mean, median, mode and standard deviation—to assess response patterns and instrument reliability.

DATA COLLECTION

A mixed-methods approach is adopted, combining both quantitative and qualitative data collection:

- **Quantitative:** Surveys are conducted among students and faculty to evaluate awareness, usage and satisfaction with AI-enabled library services.
- **Qualitative:** Interviews with library professionals and administrators provide insights into operational changes, challenges and perceived benefits of AI tools.

Sample

SRR & CVR Government Degree College (A), Vijayawada has 2,122 students, 150 faculty members, four library professionals and eight administrators. Using stratified purposive sampling, 245 respondents are selected, comprising 10% of students (212), 20% of faculty (30), one library professional and two administrators.

Table-1: Distribution of Sample Respondents				
Sl. No.	Participant Group	Population	Sampling %	Sample Size
1	Students	2122	10%	212
2	Faculty	150	20%	30
3	Library Professionals	4	20%	1 (round to 1)
4	Academic Council	8	20%	2
Source: Field Survey, December 2025				

Table-1 presents the distribution of respondents selected for the pilot study through stratified purposive sampling and total enumeration. Students form the largest group, reflecting their role as primary library users, followed by faculty members representing instructional and research needs. Library professionals and academic administrators, though fewer, are included proportionally to capture operational and policy perspectives. This balanced stakeholder representation strengthens the study's assessment of AI adoption in academic libraries.

Tools & Techniques

A five-point Likert scale is employed to collect both quantitative and qualitative data from the respondents, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

Data Analysis

Primary Data is analyzed by using descriptive statistics—mean, median, mode and standard deviation—to assess response patterns and instrument reliability.

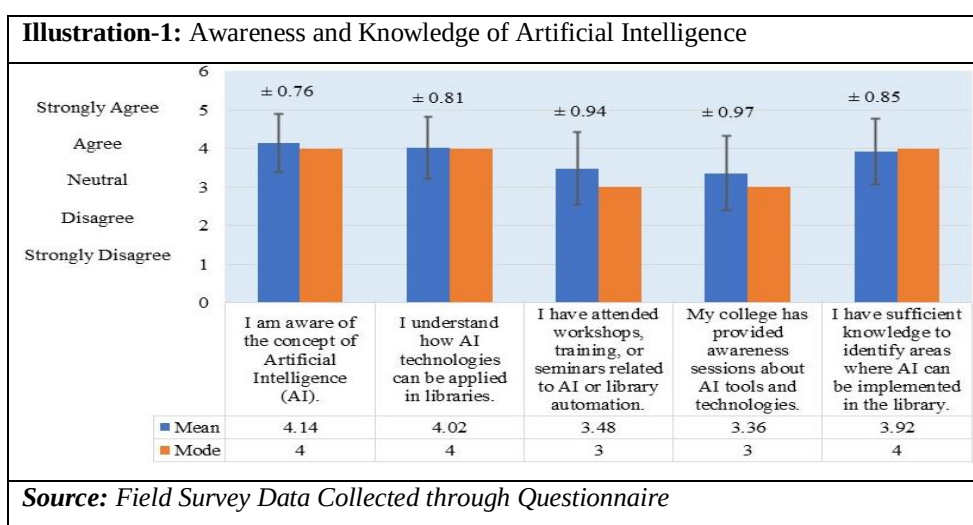
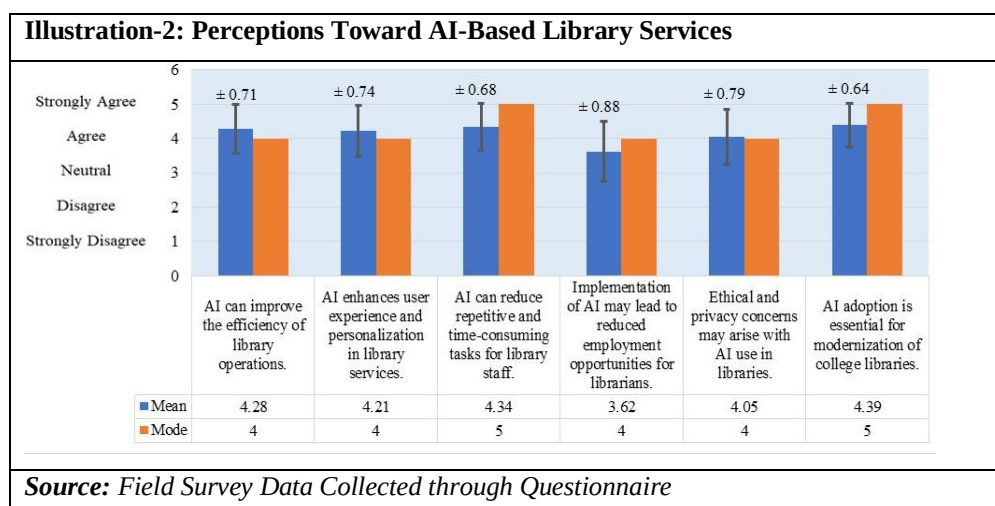


Illustration-1 indicates a high level of awareness and understanding of Artificial Intelligence among respondents, with strong agreement on AI concepts and library applications. However, lower mean scores for training and institutional awareness programs suggest limited formal exposure, indicating the need for more structured capacity-building initiatives. Moderate standard deviation values suggest variation in experiences among respondents. Overall, the findings indicate adequate theoretical knowledge, but insufficient hands-on training and institutional support, emphasizing the need for structured capacity-building programmes.



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Illustration-2 shows a strong positive perception of AI-based library services. High mean scores indicate agreement that AI enhances efficiency, user experience, reduces repetitive tasks and supports library modernization. Ethical and privacy concerns are recognized, while fears of reduced employment opportunities for librarians remain moderate and less influential.

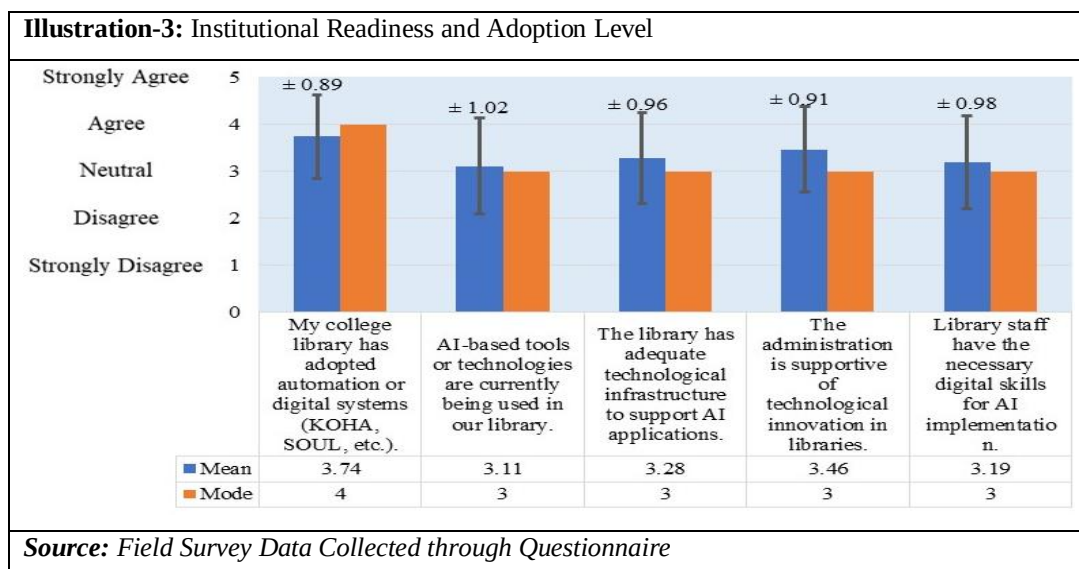


Illustration-3 indicates moderate institutional readiness for AI adoption in the college library. While basic automation systems are in place ($M = 3.74$), the use of AI-specific tools remains limited ($M = 3.11$). Infrastructure adequacy and administrative support show only average levels, and staff digital skills are insufficient. Overall, the findings highlight a gap between existing digital foundations and readiness for advanced AI implementation.

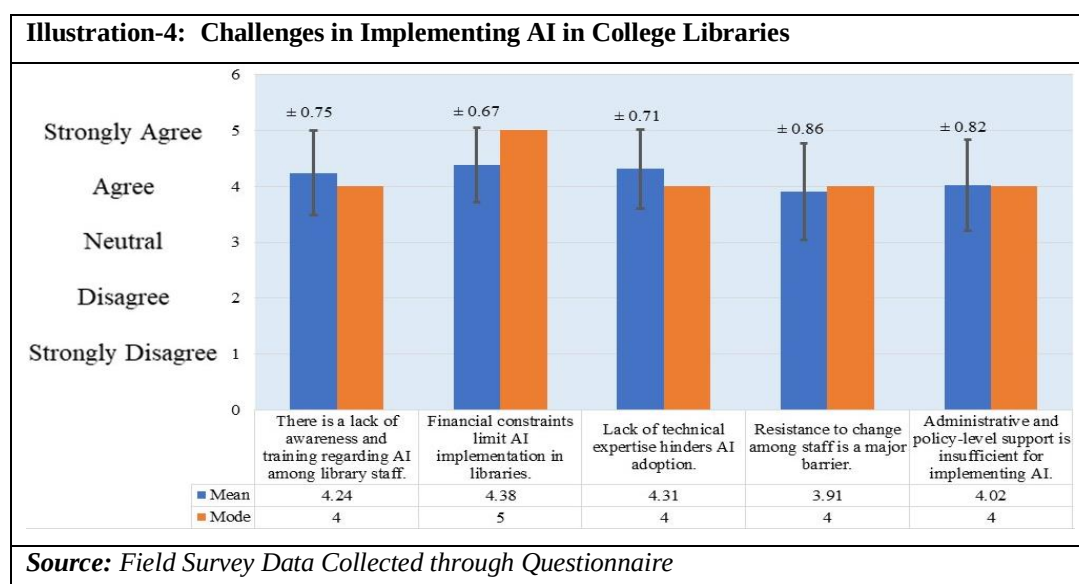
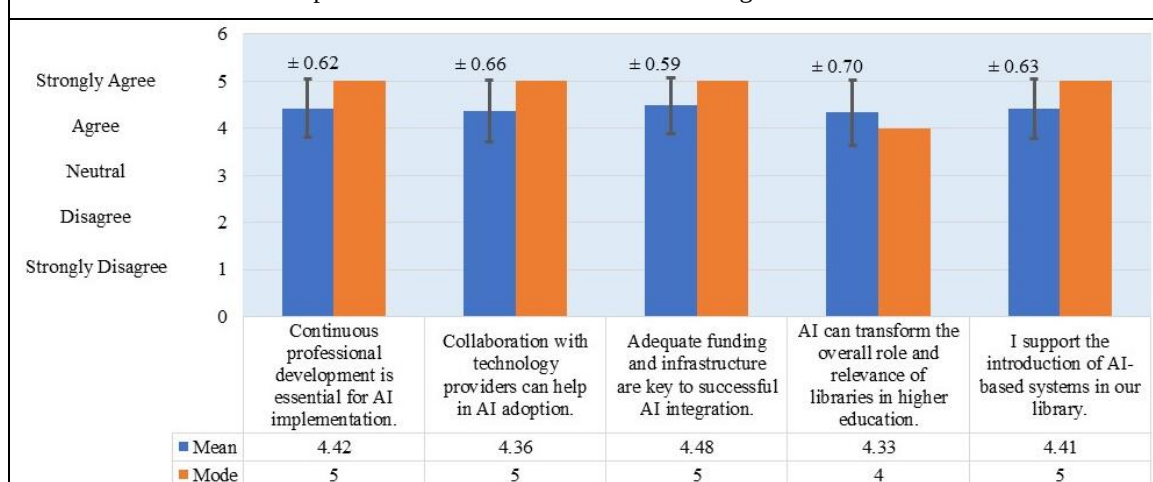


Illustration-4 reveals that financial constraints ($M = 4.38$) and lack of technical expertise ($M = 4.31$) are the most significant barriers to AI implementation in college libraries. Insufficient training and limited administrative support further hinder adoption. Resistance to change, though present, is comparatively less critical. Overall, structural and resource-related challenges outweigh attitudinal barriers.

Illustration-5: Future Prospects and Recommendations for AI Integration

Source: Field Survey Data Collected through Questionnaire

Illustration-5 reflects strong optimism regarding the future of AI integration in academic libraries. Respondents strongly agree that adequate funding ($M = 4.48$) and continuous professional development ($M = 4.42$) are essential for successful implementation. High support for AI adoption and collaboration with technology providers further indicates readiness for future integration.

Key Findings of the Pilot Study

- Foundational Digital Awareness Exists:** The study reveals adequate awareness of Artificial Intelligence and its relevance to academic libraries among stakeholders, indicating compliance with NAAC's emphasis on digital literacy and technology-enabled learning environments.
- Positive Stakeholder Perception toward Digital Transformation:** There is strong stakeholder consensus that AI-enabled library services contribute to quality enhancement, improved access to information and institutional modernization, aligning with UGC's vision of technology-driven higher education.
- Partial Institutional Readiness:** While basic library automation systems are operational, limited AI-specific applications indicate that institutions are at an early stage of digital maturity, as defined under NAAC's criteria for ICT-enabled infrastructure.
- Capacity and Resource Gaps:** Inadequate funding, insufficient technical expertise and limited professional development opportunities emerge as key constraints, reflecting challenges in achieving equitable digital transformation across government institutions.
- Strategic Readiness for Future Adoption:** Stakeholders express strong support for AI integration, suggesting institutional willingness to adopt emerging technologies, if supported through structured governance and policy intervention.

RECOMMENDATIONS

- Capacity Building as a Quality Indicator:** Regular faculty and library staff development programs on AI and emerging technologies should be institutionalized, in alignment with NAAC's emphasis on continuous professional development.

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2. **Strengthening ICT Infrastructure:** Government Degree Colleges should enhance digital and AI-ready infrastructure to meet NAAC and UGC benchmarks for ICT-enabled academic support services.
3. **Phased and Sustainable Implementation:** Institutions should adopt a phased implementation model, beginning with affordable AI-enabled library tools, ensuring sustainability and optimal resource utilization.
4. **Inter-Institutional Collaboration:** Strategic collaborations with technology providers, universities and state-level digital initiatives should be encouraged to facilitate knowledge sharing and cost-effective AI adoption.
5. **Monitoring and Quality Assurance:** Periodic evaluation of AI-based services should be integrated into institutional quality assurance mechanisms and internal academic audits.

Policy Implications for Government Degree Colleges

1. **Need for Systemic Policy Support:** The findings of this study highlight the necessity for systemic policy support to enable AI-driven transformation in Government Degree College libraries.
2. **Integration of AI Readiness in Quality Frameworks:** Higher education authorities such as UGC and APSCHE should integrate AI readiness and digital library innovation into accreditation and quality assessment frameworks.
3. **Dedicated Funding for Digital Library Modernization:** Dedicated funding schemes for AI-enabled digital library modernization should be included in state and central higher education development plans.
4. **Capacity Building and Professional Development:** Policy directives should mandate continuous professional development of library professionals in emerging technologies.
5. **Ethical AI Governance and Data Security:** Standardized guidelines on ethical AI use, data governance and digital security are essential for responsible implementation.
6. **Alignment with NAAC and APSCHE Benchmarks:** Embedding AI-enabled library services within NAAC and APSCHE governance structures will support inclusive and sustainable higher education delivery.

CONCLUSION

The pilot study at SRR & CVR Government Degree College (Autonomous), Vijayawada offers important insights into the status of Artificial Intelligence adoption in Government Degree College libraries. The findings indicate that students, faculty, library staff and administrators demonstrate good awareness of AI and hold positive views about its role in improving library efficiency, user services and institutional development. However, institutional preparedness remains limited, as AI implementation is constrained by inadequate infrastructure, financial limitations, lack of technical skills and insufficient training opportunities. Despite these challenges, stakeholders show strong willingness to adopt AI in the future. The study also validates the research tool and provides a sound basis for broader investigations across Government Degree Colleges in erstwhile Krishna District of Andhra Pradesh.

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