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Innovative Curriculum Design in Library and Information Science Using Data Analysis and Generative AI: A Strategic Plan to Foster Entrepreneurial Aspirations

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ABSTRACT

This research examines the transformation of Library and Information Science (LIS) education through the integration of data analysis, generative artificial intelligence (AI), and entrepreneurship to equip students with future-ready skills. With the rise of big data, AI tools, and digital innovation, the traditional LIS curriculum requires a strategic overhaul to remain relevant in the knowledge economy. The study investigates the potential roles of data analytics and generative AI in LIS teaching and learning, evaluates the entrepreneurial readiness of LIS students and faculty, and proposes a curriculum model aligned with India's National Education Policy (NEP) 2020. Through a mixed-methods approach combining literature reviews, industry data, and curriculum design frameworks, the study highlights the critical need for interdisciplinary, hands-on, and innovation-oriented education. The proposed curriculum includes modules on AI tools (e.g., ChatGPT, Power BI, and Tableau), entrepreneurship development, capstone projects, and collaboration with industry incubators. Expected outcomes include enhanced digital and entrepreneurial competencies, improved job readiness, and increased student-led innovation. This research provides a roadmap for modernizing LIS programs to prepare graduates for leadership in a data-driven, AI-powered information ecosystem.

Keywords: Entrepreneurial Education and Skills, NEP 2020, Digital Transformation in Education, Skill-based Learning, LIS Curriculum.

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1. INTRODUCTION

In the rapidly evolving landscape of higher education, Library and Information Science (LIS) stands at a transformative crossroads as a discipline. The emergence of digital technologies, artificial intelligence (AI), big data analytics, and entrepreneurial models of knowledge services has redefined the competencies expected from library professionals. Traditional LIS curricula, largely grounded in theoretical and service-oriented frameworks, now require a paradigm shift toward innovation, digital fluency, and entrepreneurial thinking. To remain relevant in this era of intelligent systems and user-driven knowledge ecosystems, LIS education must be restructured to integrate data analysis and generative AI as core enablers of academic and professional growth. (Alemna & Cobblah, 2020; Jain, 2013).

The integration of data analysis in curriculum design empowers LIS students to derive actionable insights from vast information repositories, enabling them to evaluate user needs, optimize information retrieval, and measure the impact of library services through evidence-based decision-making. Simultaneously, the advent of generative AI

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technologies, such as automated text generation, natural language processing, and AI-assisted content curation, offers new avenues for creative problem-solving and innovation in library operations, digital archiving, and user engagement. These developments have expanded the professional scope of librarians from information custodians to knowledge strategists and data-driven innovators. (Raju, 2017).

Despite these emerging opportunities, most LIS programs worldwide continue to emphasize traditional competencies such as cataloguing, classification, and reference services, with limited exposure to advanced technologies, entrepreneurial models, and design thinking. There is a pressing need for an innovative curriculum framework that aligns with the current technological ecosystem, fosters entrepreneurial aspirations among learners, and prepares them for leadership roles in digital knowledge industries. Incorporating data analysis and generative AI into LIS education not only enhances technical proficiency but also nurtures creativity, adaptability, and independent problem-solving, essential traits for modern information professionals. (MHRD, 2020).

This study presents a strategic plan for developing an innovative LIS curriculum that integrates data-driven learning modules and AI-based pedagogical tools to foster entrepreneurial mindsets among students. The approach emphasizes interdisciplinary learning, practical application, and continuous digital upskilling. By bridging the gap between academic instruction and industry expectations, the proposed model seeks to redefine LIS education as a catalyst for innovation, sustainability, and self-employment in the information sector.

2. LITERATURE REVIEW

Koltay (2022) provides an in-depth analysis of how AI tools such as machine learning and natural language processing are transforming LIS education. The review examines how the incorporation of AI into LIS curricula promotes digital literacy, data ethics, and innovation-oriented learning, which directly supports the conceptual foundation of your research paper.

Kaur & Manhas (2022). This paper systematically reviews trends in digital transformation and curriculum innovation in LIS programs. It emphasizes the need to integrate AI applications, data analytics, and entrepreneurial competencies into LIS education. The authors' recommendations on developing hands-on, interdisciplinary learning models complement the strategic framework presented in your study.

Huvila (2020) provides a conceptual review of the challenges and opportunities associated with introducing AI literacy into LIS education. The paper highlights the importance of faculty readiness, ethical awareness, and curriculum redesign, reinforcing research's argument for capacity building and AI pedagogy as essential components of a future-ready LIS curriculum.

Morris, Kuratko & Cornwall (2020). This work reviews global models of entrepreneurship education in universities and explores pedagogical strategies for integrating entrepreneurial thinking into traditional disciplines. It supports the paper's objective of merging entrepreneurship with LIS education, advocating for experiential learning, incubator partnerships, and startup mentoring, all key elements of the proposed model.

3. STATEMENT OF THE PROBLEM

Despite the rapid advancements in data analytics, AI, and digital innovation, most LIS curricula continue to follow traditional, theory-based structures that inadequately prepare students for the demands of the modern information economy. The existing LIS programs emphasize conventional areas such as cataloguing, classification, and reference services, offering limited opportunities for students to develop data-driven, AI-enabled, and entrepreneurial competencies. This disconnect between academic instruction and professional expectations has resulted in a skills gap, reducing graduates' employability, innovation capacity, and ability to contribute to emerging digital and knowledge-based industries.

In alignment with the vision of India’s National Education Policy (NEP) 2020, there is an urgent need to redesign LIS education to integrate data analysis, generative AI tools, and entrepreneurship development within the curriculum. Such innovation would enable students to cultivate digital fluency, creativity, and

entrepreneurial thinking, transforming them into competent professionals capable of leading digital transformation in libraries and related information sectors. The present study addresses this problem by proposing a strategic and innovative LIS curriculum model that bridges the gap between traditional education and the evolving technological and entrepreneurial landscape.

4. PURPOSE AND OBJECTIVES OF THE STUDY

The primary purpose of this study is to develop a strategic and innovative curriculum framework for LIS education that integrates data analysis and generative AI tools. The aim is to equip LIS students with the necessary skills, knowledge, and mindset to foster entrepreneurial thinking and enable them to create and manage innovative information services, products, or ventures. This study seeks to bridge the gap between traditional LIS education and emerging industry demands by emphasizing digital intelligence, creativity, and entrepreneurial capability.

Objectives of the Study:

- To examine the current LIS curriculum in relation to entrepreneurial skill development.
- To identify the potential roles of data analysis and generative AI tools in enhancing LIS education.
- To explore the entrepreneurial aspirations and readiness of LIS students and faculty members.
- To design an innovative curriculum model that integrates data-driven learning and generative AI technologies for entrepreneurship development.
- To assess the feasibility and potential impact of the proposed curriculum on students' entrepreneurial competencies and future career pathways.
- To recommend policy and pedagogical strategies for implementing AI-powered entrepreneurial curriculum reforms in LIS programs.

5. LIMITATIONS AND FUTURE SCOPE OF THE STUDY

Although the present study provides a comprehensive framework for integrating data analysis and generative AI into the LIS curriculum, certain limitations must be acknowledged. Firstly, the research is primarily conceptual and design-oriented, relying on literature analysis, policy frameworks, and secondary data; empirical validation of the proposed model through large-scale pilot studies remains limited. Secondly, the study's findings are contextualised within the Indian higher education environment; therefore, their cross-national applicability requires further examination. Thirdly, the rapid evolution of AI tools and data analytics platforms implies that the proposed curriculum model may require regular updates to remain technologically relevant. Moreover, institutional readiness, including infrastructure, faculty training, and industry collaboration, varies significantly, which may impact the success of implementing the model.

Future Research Scope:

Future studies can empirically evaluate the effectiveness of the proposed LIS curriculum through longitudinal and comparative studies across multiple universities. Experimental research could measure students' entrepreneurial growth, innovation capacity, and employment outcomes before and after the implementation of the curriculum. Further investigation is also warranted into the ethical and pedagogical implications of integrating generative AI in education, particularly concerning data privacy, intellectual property, and academic integrity. Additionally, interdisciplinary collaborations with business schools, data science programs, and AI research labs could provide deeper insights into scalable, globally adaptable LIS curriculum reforms.

6. VISUAL REPRESENTATION OF THE INNOVATIVE CURRICULUM MODEL

Below is a conceptual diagram

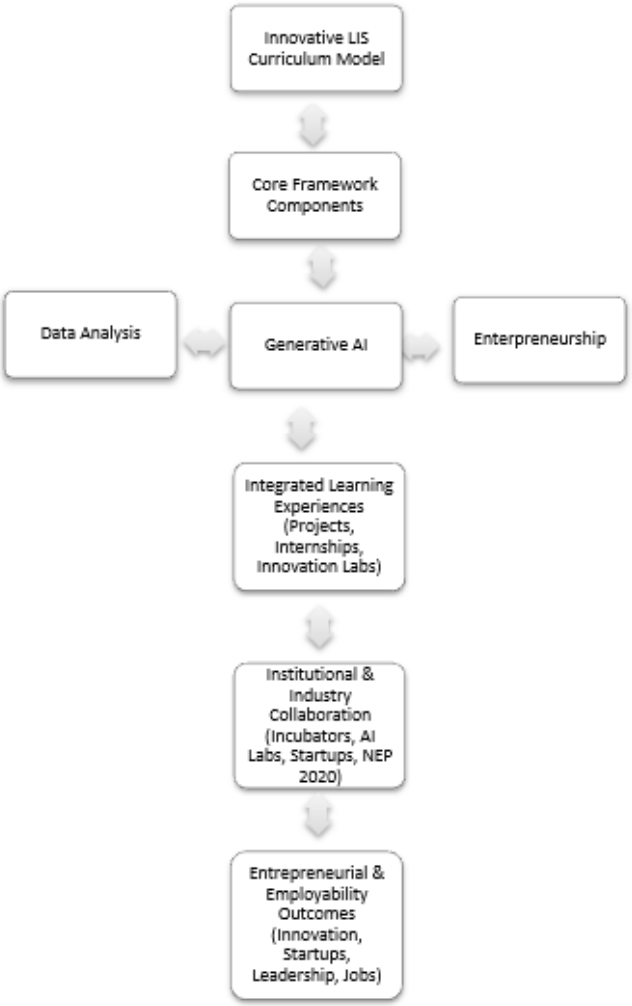

Figure 1. Conceptual Framework of the Innovative Curriculum Model for LIS Education

Source: Author's own work.

7. NEED FOR CURRICULUM TRANSFORMATION IN LIS

The rapid advancement of digital technologies and the evolving demands of the knowledge economy have significantly altered the roles and expectations of LIS professionals. Traditional LIS curricula, which have historically emphasised cataloguing, classification, and reference services, are increasingly viewed as insufficient in preparing graduates for the complex, data-driven, and entrepreneurial challenges of the 21st century (Jain, 2013; Raju, 2017). The emergence of artificial intelligence, big data, and digital content creation tools demands a shift toward curricula that promote data literacy, innovation, and creative problem-solving. LIS professionals today are expected to engage in digital curation, manage research data, develop user-centred information services, and even initiate information-based startups (Tenopir et al., 2016; Alemna & Cobblah, 2020).

However, in many academic institutions, LIS programs have not kept pace with these trends, leading to a mismatch between graduate competencies and job market expectations. To remain relevant and impactful, LIS education must undergo a strategic transformation integrating interdisciplinary knowledge, technological fluency, and entrepreneurial thinking into its core structure (Ocholla & Shongwe, 2013). Such transformation is not only timely but also essential for building a future-ready information workforce aligned with national and global education goals.

8. POTENTIAL ROLES OF DATA ANALYSIS AND GENERATIVE AI TOOLS IN ENHANCING LIS EDUCATION

Data analysis and generative AI tools hold transformative potential in enhancing Library and Information Science (LIS) education by equipping students with critical digital competencies needed in today's data-driven information landscape. These technologies enable the automation of routine library tasks, personalisation of information services, and intelligent decision-making based on user behaviour and data patterns (Lu, 2023).

Tools such as ChatGPT can support content creation, reference services, and language processing, while data analytics platforms like Tableau, Power BI, and Python libraries (e.g., Pandas, NumPy) foster analytical thinking and insight generation. Integrating these tools into LIS curricula prepares students to manage complex data environments, engage in evidence-based librarianship, and contribute to innovative digital solutions, thereby significantly expanding the traditional scope of LIS roles (Kaur & Manhas, 2022; McKinsey Global Institute, 2023).

9. INTEGRATION OF EMERGING TECHNOLOGIES

The integration of emerging technologies, such as data analytics, machine learning, and generative AI, is transforming the landscape of information creation, organisation, and dissemination. In the field of LIS, these technologies provide powerful tools for enhancing traditional

services and developing innovative ones, including automated cataloguing, intelligent reference services, predictive user behaviour analysis, and AI-generated content (Tenopir et al., 2016; Cox et al., 2019).

Generative AI models, such as ChatGPT and DALL·E, can support LIS professionals in tasks like summarising documents, answering complex queries, and producing metadata or instructional content with increased efficiency and creativity (OpenAI, 2023). Despite their potential, these technologies are not yet systematically integrated into LIS curricula in many developing countries, resulting in a skills gap between what students learn and what the industry demands. As information services become increasingly data-driven and user-centric, LIS education must evolve to include hands-on experience with these tools, ethical considerations in their use, and critical thinking about their implications (Raju, 2017; Alemna & Cobblah, 2020). This integration is crucial for producing professionals who are not only tech-savvy but also capable of designing innovative solutions for complex information problems in diverse digital environments.

10. DATA ANALYSIS AND GENERATIVE AI

The integration of Data Analysis and Generative Artificial Intelligence (AI) into Library and Information Science (LIS) education is critical for aligning with global technological and economic transformations. The global big data and analytics market is projected to reach $665.7 billion by 2030, growing at a compound annual growth rate (CAGR) of 27.6% between 2023 and 2030 (Fortune Business Insights, 2023). Simultaneously, Generative AI is expected to add up to $4.4 trillion annually to the global economy (Chui et al., 2023), with the Generative AI market size estimated to reach $667.9 billion by 2030, expanding at a CAGR of 47.5% (Bloomberg Intelligence, 2023).

These technologies are revolutionizing how information is generated, accessed, and organized core functions of LIS professionals. Moreover, the average annual salary of a data analyst in India is approximately ₹10 lakhs, with significantly higher earning potential internationally (Ambition Box, 2024). Embedding data analysis and AI competencies into the LIS curriculum is essential to prepare students for these high-demand, high-growth areas. Doing so not only empowers LIS graduates to drive innovation and decision-making in digital information environments but also enhances their employability in global knowledge markets.

11. ENTREPRENEURIAL OPPORTUNITIES IN LIS

The transformation of the information landscape, driven by digital technologies and changing user needs, has opened new avenues for entrepreneurship within the field of LIS. Traditionally seen as a service-oriented profession, LIS now offers fertile ground for innovation and business development in areas such as digital curation, information consultancy, content creation, metadata services, research data management, and e-learning platforms (Jain, 2013; Mittal, 2011). With the rise of open-access publishing, big data, and artificial intelligence, LIS professionals are increasingly positioned to create startups and service models that provide specialised information services to academic institutions, corporations, government agencies, and the general public (Raju, 2017; Tiwari & Sahoo, 2021).

Entrepreneurial ventures may include the development of AI-based search interfaces, virtual reference tools, institutional repository services, bibliometric consulting, and online literacy training programs. However, these opportunities remain largely untapped due to the lack of entrepreneurial training within existing LIS curricula (Alemna & Cobblah, 2020). Encouraging entrepreneurship in LIS education not only enhances employability but also empowers graduates to become creators of information products and services that address emerging digital challenges and community needs. Emerging areas include digital consultancy, research data management, AI-driven information services, content curation, and library-based start-ups.

12. ENTREPRENEURIAL ASPIRATIONS AND READINESS OF LIS STUDENTS AND FACULTY MEMBERS

Exploring the entrepreneurial aspirations and readiness of LIS students and faculty members reveals a growing interest in innovation, digital content creation, and startup initiatives within the field of Library and Information Science. As

traditional LIS roles evolve due to technological advancements, many students and faculty are increasingly inclined toward developing information-based services, digital platforms, and research-driven products that address gaps in the knowledge economy (Dinesh & Sahu, 2021).

However, despite the enthusiasm, a gap remains in structured entrepreneurial training within most LIS programs, resulting in limited practical knowledge of business planning, intellectual property, and venture development (Morris et al., 2020). By integrating entrepreneurship modules into LIS curricula, institutions can nurture a culture of innovation and equip both students and educators with the tools and mindset needed to transform creative ideas into viable enterprises.

13. GAP IN CURRENT LIS PROGRAMS

Despite the growing relevance of digital skills, data-driven services, and entrepreneurial thinking in the field of LIS, most LIS programs, especially in developing countries, continue to follow traditional, theory-heavy curricula with minimal emphasis on emerging technologies or innovation-based learning. Courses on cataloguing, reference services, and library management remain central, while critical areas such as data analytics, artificial intelligence applications, digital entrepreneurship, and user experience design are either absent or superficially addressed (Raju, 2017; Jain, 2013). As a result, graduates often lack the competencies needed to operate in dynamic digital environments or to launch information-based ventures. Moreover, few LIS institutions actively collaborate with innovation hubs, tech incubators, or industry partners to expose students to real-world challenges or entrepreneurial ecosystems (Mittal, 2011; Tiwari & Sahoo, 2021).

Faculty development in emerging technologies is also limited, which further restricts the scope for curricular innovation (Ocholla & Shongwe, 2013). This disconnect between academic preparation and professional reality creates a significant skills gap, limiting the potential of LIS graduates to make meaningful contributions to the digital economy and knowledge society.

14. ALIGNMENT WITH NEP 2020

The National Education Policy 2020, introduced by the Government of India, emphasises a holistic, flexible, and multidisciplinary approach to education that is aligned with the needs of the 21st century. One of the key directives of the NEP is the integration of technology, innovation, and entrepreneurship into higher education curricula to promote critical thinking, creativity, and problem-solving (Ministry of Education [MoE], 2020). In this context, transforming LIS education by incorporating data analytics, AI, and entrepreneurial learning is highly consistent with NEP's vision. The policy advocates for experiential learning, digital literacy, and fostering an entrepreneurial mindset among students, elements that are crucial for preparing LIS graduates to function effectively in the evolving knowledge society (Aggarwal & Thakur, 2021).

Furthermore, the NEP emphasises flexible curricula, multidisciplinary learning, and industry-academia collaboration, all of which support the proposed redesign of LIS programs to include real-world applications, innovation labs, and partnerships with tech-driven sectors (Kumar, 2021). By aligning LIS curriculum reforms with NEP 2020, academic institutions can ensure that their programs are not only contemporary and competitive but also nationally relevant and globally responsive.

15. STRATEGIC PLAN

Table 1 presents a strategic plan for implementing an innovative LIS curriculum that integrates data analysis and generative AI, aligning with the objectives of NEP 2020 and fostering entrepreneurial growth.

Table 1: Strategic Plan for Implementing an Innovative LIS Curriculum

Strategic Focus Area	Key Actions	Expected Outcome
Curriculum Reform	Integrate data analytics, AI, and entrepreneurship into core and elective courses.	Future-ready, digitally competent LIS graduates
Faculty Capacity Building	Organise workshops on data tools (Python, SQL, Power BI) and AI (ChatGPT, DALL·E)	Skilled faculty capable of delivering tech-driven content
Industry Academia Collaboration	Partner with tech firms, libraries, and startup incubators	Hands-on exposure, internships, and project-based learning
Skill-based Learning Modules	Introduce micro credentials in tools like Tableau, ETL, and Python libraries.	Competency-based certification and skill validation
Entrepreneurship Development	Conduct bootcamps, innovation labs, and start-up mentoring	Increased student-led innovations and entrepreneurial ventures
Technology Infrastructure	Upgrade labs with analytics software, AI tools, and high-speed internet	Enhanced learning through real-time applications
Policy Alignment (NEP, 2020)	Design a flexible, multidisciplinary curriculum with credit transfer and research integration.	Compliance with national policy and global relevance
Assessment and Evaluation	Implement outcome-based education and feedback mechanisms	Continuous improvement of curriculum effectiveness

Source: Author's own work.

16. PROPOSED MODEL

16.1 Innovative Curriculum Model

The proposed innovative curriculum model aims to modernize LIS education by embedding core competencies in data analysis, generative AI, and entrepreneurship. It includes structured modules that balance theoretical foundations with hands-on training in tools like ChatGPT, Tableau, and Power BI. Students will engage in real-world projects, workshops on innovation and intellectual property, and industry collaborations through internships and startup incubators. This integrated approach ensures that LIS graduates are not only information professionals but also capable digital innovators and entrepreneurs, aligning with the vision of NEP 2020 and the demands of the global information economy. Table 2 provides details of the proposed innovative curriculum model.

Table 2: Proposed Innovative Curriculum Model

Curriculum Component	Description	Expected Outcome
Core Modules	Courses on data analytics, generative AI, digital content creation, and entrepreneurship principles	Strong foundation in data-driven and innovation-based LIS practices
Practical Training with Emerging Tools	Hands-on sessions using ChatGPT, DALL·E, Tableau, Power BI, Python, Zotero, etc.	Technical proficiency and real-world application of tools
Entrepreneurial Development Workshops	Modules on business plan creation, startup models, IPR (Intellectual Property Rights), and funding	Entrepreneurial thinking and innovation readiness
Capstone Projects	Final semester projects focused on solving real LIS problems using AI/data-driven approaches.	Portfolio development and problem-solving competence
Industry Collaboration and Internships	Partnerships with incubators, digital libraries, LIS tech startups, and ed-tech platforms	Industry exposure and experiential learning
Interdisciplinary Learning Tracks	Integration of ICT, management, data science, and education technology in electives	Flexibility and cross-domain competency
Ethics and Policy Integration	Course modules on digital ethics, AI usage policies, and data governance	Responsible use of technology and compliance awareness

Source: Author's own work.

16.2 Logic Model

A logic model provides a structured framework to visualize the inputs, activities, outputs, outcomes, and impact of the curriculum innovation project. It clarifies how the program is expected to function and achieve its goals. Table 3 provides a structured framework for the curriculum as a logic model.

Table 3: Logic Model: A Structured Framework of Curriculum.

Components	Details
Inputs	• Existing LIS curriculum documents (national and global) • Faculty expertise in LIS and technology • AI tools and data analysis platforms • Institutional support and NEP 2020 policy alignment • Feedback from students, employers, and LIS professionals
Activities	• Curriculum gap analysis • Needs assessment survey of students and faculty • Design of new curriculum modules (AI, data analytics, entrepreneurship) • Development of teaching materials and training workshops • Pilot implementation and evaluation • Revised LIS curriculum framework integrating generative AI and data skills
Outputs	• Teaching modules, learning resources, and case studies • Faculty development programs • Student project guides and toolkits for innovation • Reports and policy briefs
Short-term Outcomes	• Increased student engagement and interest in entrepreneurship • Improved faculty awareness and capacity to teach AI/data tools • Curriculum alignment with NEP 2020 and the digital skills framework
Medium-term Outcomes	• Students acquire AI and data literacy skills • Students develop entrepreneurial thinking and real-world problem-solving abilities. • Creation of prototypes and mini start-up ideas from student projects
Long-term Impact	• A new generation of LIS professionals with entrepreneurial capabilities • Strengthened the LIS education system responsive to technological change • Increased employment, innovation, and societal value creation from LIS graduates

Source: Author's own work.

17. POLICY AND PEDAGOGICAL STRATEGIES

17.1 Policy for Implementing AI-Powered Entrepreneurial Curriculum Reforms in LIS Programs:

To implement AI-powered entrepreneurial reforms in LIS education effectively, strategic policy and pedagogical initiatives must be adopted. From a policy standpoint, it is essential to integrate data analytics, artificial intelligence (AI), and digital entrepreneurship into the core LIS curriculum to ensure graduates are equipped with future-ready skills (Huvila, 2020). Establishing national-level AI literacy standards aligned with the National Education Policy (NEP) 2020 and UGC's Model Curriculum will promote uniformity in learning outcomes. Further, interdisciplinary collaborations between LIS departments and computer science, business, and innovation hubs should be encouraged to create an environment conducive to innovation and hybrid skill development (Koltay, 2022).

Policymakers and universities should also support AI-based start-up incubation and provide seed funding and grants for entrepreneurial projects in library and knowledge services. Importantly, faculty development programs must be mandated to train LIS educators in AI technologies and innovation pedagogy, ensuring they can effectively mentor students and lead reform initiatives (Floridi & Cowls, 2019).

17.2 Pedagogical Strategies for Implementing AI-powered Entrepreneurial Curriculum Reforms in LIS Programs:

Pedagogically, the transformation requires embracing project-based learning (PBL) approaches, where students engage in real-world problem-solving using tools such as ChatGPT, Tableau, SQL, and Power BI (Koltay, 2022). Blended learning models, such as flipped classrooms and self-paced online modules, should be employed to foster interactive and personalised learning experiences (Huvila, 2020). Establishing AI-driven internships through collaborations with digital libraries, ed-tech firms, and data service providers will provide students with valuable hands-on experience and enhance their employability (Sarode, 2025).

In addition, organising bootcamps and hackathons focused on entrepreneurship and AI applications in LIS can cultivate innovation and stimulate the creation of digital solutions tailored to library services. Crucially, training in the ethical use of AI, addressing algorithmic bias, privacy, and data ethics, should be embedded in the curriculum to ensure that students apply technology responsibly and ethically (Floridi & Cowls, 2019).

18. EXPECTED OUTCOMES OF THE TRANSFORMED LIS CURRICULUM

The expected outcomes of the transformed LIS curriculum include the development of digitally skilled, innovation-driven, and entrepreneurially minded graduates. Students will gain practical expertise in data analytics, AI tools, and digital platforms, enabling them to design user-centric information services and start their own ventures. The curriculum will enhance employability, foster leadership in digital transformation, and better align LIS education with industry needs and national development goals such as those outlined in NEP 2020. Table 4 provides the expected outcomes of the transformed LIS curriculum.

Table 4: Expected Outcomes of the Transformed LIS Curriculum

Category	Expected Outcome
A. Academic and Skill-Based Outcomes	
Digital Competency	Proficiency in Excel, SQL, Tableau, Power BI, and Python for LIS applications
AI and Data Literacy	Understanding AI fundamentals, Generative AI models, and ChatGPT mechanisms
Programming Skills	Mastery of Python basics and libraries like Pandas, NumPy, and Matplotlib
Data Management	Implementation of ETL processes and advanced data querying for LIS datasets
Visualization Skills	Ability to design interactive dashboards using Tableau and Power BI
B. Entrepreneurial and Innovation Skills	
Innovation Capacity	Development of student-led digital innovations and library-oriented start-ups
Entrepreneurial Thinking	Integration of business models and problem-solving approaches in LIS projects
C. Pedagogical and Behavioural Outcomes	
Engagement and Creativity	Increased student engagement through AI tools and project-based learning
Ethical Awareness	Understanding ethical considerations in AI and data analytics in library contexts
D. Institutional and Industry Alignment	
Industry-Relevant Skills	Alignment with job market needs, such as data librarianship and digital content management.
NEP 2020 Alignment	Support for NEP goals: flexibility, digital learning, and multidisciplinary integration

Source: Author's own work.

19. METRICS FOR EVALUATING ENTREPRENEURIAL OUTCOMES

To assess the impact of the restructured curriculum on entrepreneurial aspirations and outcomes, the following quantitative and qualitative metrics are proposed:

Table 5: Suggested Metrics for Evaluating Entrepreneurial Outcomes in AI-Integrated LIS Curriculum

Category	Indicator	Measurement Approach
Skill Development	Student proficiency in AI, data analysis, and digital tools	Pre- and post-training competency assessment; project evaluations
Innovation Capacity	Number of student-led projects, prototypes, or startups	Institutional innovation registry; incubation centre reports
Entrepreneurial Readiness	Entrepreneurial self-efficacy and intention	Survey instruments using validated scales (e.g., ESE Scale)
Employment and Startups	Graduate employment rate in digital/AI sectors; number of LIS-related ventures	Alumni tracking and placement data
Industry Collaboration	Number of partnerships, internships, and hackathons	Institutional MoUs and annual activity reports
Research and Publications	Student/faculty research in AI, data analytics, and innovation	Indexing of publications in LIS and AI journals
Sustainability and Policy Impact	Adoption of the model in other LIS institutions	Cross-institutional adoption studies and feedback surveys

Source: Author's own work.

20. CONCLUSION

This study aimed to develop a strategic and innovative curriculum model in Library and Information Science (LIS) that integrates data analysis, generative artificial intelligence (AI), and entrepreneurial competencies to prepare students for the evolving digital landscape better. Based on the objectives, the findings underscore the pressing need to modernise LIS curricula by incorporating technological and entrepreneurial skill sets that align with the demands of the 21st-century information economy.

The integration of tools such as ChatGPT, Tableau, Power BI, and Python, combined with experiential learning through capstone projects, industry collaboration, and entrepreneurship-focused modules, will not only increase student engagement and innovation capacity but also enhance employability and startup potential among LIS graduates (Kaur & Manhas, 2022; Lu, 2023). Furthermore, aligning the curriculum with India's National Education Policy (NEP) 2020 ensures flexibility, interdisciplinary, and outcome-based education, reinforcing the broader policy framework for higher education transformation (Ministry of Education, 2020).

By proposing a future-ready LIS curriculum that fosters digital entrepreneurship and integrates data-driven learning, the study underscores the strategic shift required in LIS education. It recommends that academic institutions proactively adopt emerging technologies and innovation-led learning frameworks to position LIS graduates as competent, agile, and entrepreneurial information professionals in a data-driven world (McKinsey Global Institute, 2023; PwC India, 2024).

REFERENCES

Aggarwal, R., & Thakur, N. (2021). National Education Policy 2020: A roadmap for higher education transformation in India. *International Journal of Multidisciplinary Educational Research, 10*(3), 93–101.

Alemna, A. A., & Cobblah, M. A. (2020). The changing role of librarians in the era of digital transformation: A review. *Library Philosophy and Practice*, 1–10.

AmbitionBox. (2024). *Data analyst salary in India*. https://www.ambitionbox.com/profile/data-analyst-salary

Bloomberg Intelligence. (2023). *The generative AI market size may reach $667.9 billion by 2030*. https://www.bloomberg.com/professional/blog/generative-ai-market-outlook/

Chui, M., George, K., & Miremadi, M. (2023). The economic potential of generative AI: The next productivity frontier. McKinsey & Company. https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai

Cox, A. M., Kennan, M. A., Lyon, L., & Pinfield, S. (2019). Developments in research data management in academic libraries: Towards an understanding of research data service maturity. *Journal of the Association for Information Science and Technology, 70*(3), 265–277. https://doi.org/10.1002/asi.24181

Dinesh, K., & Sahu, A. K. (2021). Entrepreneurial inclination among library science students in the digital era: A survey-based study. *Library Philosophy and Practice*, Article 5853. https://digitalcommons.unl.edu/libphilprac/5853

Floridi, L., & Cowls, J. (2019). A unified framework of five principles for AI in society. *Harvard Data Science Review, 1*(1). https://doi.org/10.1162/99608f92.8cd550d1

Fortune Business Insights. (2023). *Big data and analytics market size, share & COVID-19 impact analysis*. https://www.fortunebusinessinsights.com/big-data-analytics-market-102250

Huvila, I. (2020). Learning AI in LIS: A challenge for the future. *Journal of Librarianship and Information Science, 52*(2), 283–292. https://doi.org/10.1177/0961000619871603

Jain, P. (2013). A paradigm shift in the 21st century LIS education: An overview of trends and issues in South Africa. *Library Review, 62*(2), 134–146. https://doi.org/10.1108/00242531311329431

Kaur, R., & Manhas, R. (2022). Reimagining LIS education for digital transformation: A curriculum perspective. *Library Herald, 60*(2), 125–138. https://doi.org/10.5958/0976-2469.2022.00018.3

Koltay, T. (2022). The role of artificial intelligence in reshaping LIS education. *Library Hi Tech, 40*(3), 523–536. https://doi.org/10.1108/LHT-08-2021-0275

Kumar, N. (2021). National Education Policy 2020 and its impact on Indian higher education. *Journal of Education and Development, 11*(1), 23–30.

Lu, Y. (2023). Integrating artificial intelligence into LIS education: A pedagogical framework. *Journal of Education for Library and Information Science, 64*(1), 45–59. https://doi.org/10.3138/jelis-64-1

McKinsey Global Institute. (2023). *The economic potential of generative AI: The next productivity frontier*. https://www.mckinsey.com

MHRD. (2020). *National Education Policy 2020*. Ministry of Human Resource Development, Government of India.

Ministry of Education. (2020). *National Education Policy 2020*. Government of India. https://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf

Mittal, R. (2011). Library and Information Science profession and the job market in India. *Annals of Library and Information Studies, 58*(2), 122–127.

Morris, M. H., Kuratko, D. F., & Cornwall, J. R. (2020). *Entrepreneurship programs and the modern university*. Edward Elgar Publishing. https://doi.org/10.4337/9781788118645

Ocholla, D. N., & Shongwe, M. (2013). An analysis of the Library and Information Science (LIS) job market in South Africa. *South African Journal of Libraries and Information Science, 79*(1), 35–43. https://doi.org/10.7553/79-1-109

OpenAI. (2023). *ChatGPT and generative AI for education and research*. https://openai.com/research

PwC India. (2024). *AI and data analytics market trends in India: 2023–2030*. https://www.pwc.in

Raju, R. (2017). Information professionals and the digital age: Roles and competencies. *Library Hi Tech, 35*(2), 255–273. https://doi.org/10.1108/LHT-10-2016-0111

Sarode, R. D. (2025). Fostering sustainable career development and employability among Library and Information Science students with the help of internship education. *International Journal of Information Library and Society, 14*(1), 1–8.

Tenopir, C., Birch, B., & Allard, S. (2016). Academic librarians and research data services: Preparation and attitudes. *Journal of Academic Librarianship, 38*(1), 3–9. https://doi.org/10.1016/j.acalib.2011.11.003

Tiwari, R., & Sahoo, J. (2021). A study of entrepreneurial attitude among LIS professionals in India. *Journal of Information and Knowledge Management, 20*(1), 2150003. https://doi.org/10.1142/S0219649221500035

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