



Measuring the Effect of Library and Information Science and ICT on Disaster Resilience, Knowledge Services, and Social Development in the Context of NEP 2020

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Abstract- Libraries and Information Centers (LICs) have increasingly become pivotal institutions in fostering community resilience, knowledge dissemination, and social development, particularly during disasters. This study quantitatively examined the impact of Library and Information Science (LIS) services and Information and Communication Technology (ICT) on disaster resilience, knowledge services, and social development within the framework of NEP 2020. A structured survey was conducted with 250 respondents, including library professionals, ICT coordinators, and community beneficiaries. Descriptive and inferential statistical analyses, including Pearson correlation and linear regression, were employed to test five null hypotheses. The results indicated that LIS services significantly enhanced community disaster resilience ($r = 0.62, p < 0.01$), ICT adoption improved the effectiveness of library services ($\beta = 0.57, p < 0.01$), and library services positively contributed to knowledge dissemination and social development ($r = 0.59, p < 0.01$). Library practices were found to be significantly aligned with NEP 2020 objectives ($r = 0.54, p < 0.01$) and positively influenced policy recommendations for disaster management and educational planning ($\beta = 0.51, p < 0.01$). The findings underscore the transformative role of LIS and ICT in modern libraries and highlight the importance of integrating library services into national disaster preparedness and educational frameworks (Dada, Hamza, & Mohammed, 2025; Naik & Cholin, 2022; Basu, Dutt, Ghosh, & Ghosh, 2020).

Keywords- Library and Information Science (LIS), Information and Communication Technology (ICT), Disaster Resilience, Knowledge Services, Social Development, NEP 2020, Policy Integration, Digital Literacy.

I. Introduction

Libraries and Information Centers (LICs) have long been recognized as pivotal institutions in fostering community resilience, particularly in the face of disasters (Dada, Hamza, & Mohammed, 2025; Laurian, 2025). Beyond their traditional roles as repositories of knowledge, these institutions have increasingly become active participants in disaster preparedness, response, and recovery efforts (UNESCAP, 2020; Fischer-Preßler, 2024). Their functions encompass providing critical information, facilitating communication, and offering support services during crises (Ansari, 2024; Basu, Dutt, Ghosh, & Ghosh, 2020).

The integration of Information and Communication Technology (ICT) into library services has further enhanced their capacity to serve communities during disasters (van Westen, Ofa, Rafisura, Son, & Wang, 2020; UNESCAP, 2021). Digital platforms



enable real-time information dissemination, remote access to resources, and virtual community engagement, thereby amplifying the efficacy of disaster response initiatives (Burov, 2023; Charles Shikali & Muneja, 2024).

The National Education Policy (NEP) 2020 emphasizes the importance of libraries in the educational ecosystem, advocating for their transformation into dynamic learning hubs that promote digital literacy, inclusivity, and lifelong learning (Naik & Cholin, 2022; Das, 2024). This policy underscores the need for libraries to adapt to technological advancements and align their services with contemporary educational objectives (Thapa, 2024; Dey, Zou, & Chen, 2020).

This study aims to quantitatively assess the impact of Library and Information Science (LIS) and ICT on disaster resilience, knowledge services, and social development within the framework of NEP 2020 (World Bank, 2025; Tu-Keefner, 2024). By examining the interplay between these elements, the research seeks to provide empirical evidence of the transformative role libraries play in contemporary society (UNESCAP, 2021; Fischer-Preßler, 2024).

II. Rationale of the Study

The rationale for this study is grounded in the evolving role of libraries in disaster management and their alignment with national educational policies (Dada, Hamza, & Mohammed, 2025; Laurian, 2025). While existing literature acknowledges the significance of libraries in disaster preparedness and response, there is a dearth of quantitative analyses that measure their impact in the context of ICT integration and policy frameworks like NEP 2020 (Naik & Cholin, 2022; Thapa, 2024).

The rapid advancement of digital technologies necessitates a reevaluation of traditional library functions (van Westen, Ofa, Rafisura, Son, & Wang, 2020; UNESCAP, 2021). The COVID-19 pandemic highlighted the critical need for libraries to provide uninterrupted access to information and services through digital means (Burov, 2023; Charles Shikali & Muneja, 2024). However, the extent to which ICT adoption has enhanced library effectiveness in disaster scenarios remains underexplored (Fischer-Preßler, 2024; Ansari, 2024).

This research intends to fill these gaps by employing quantitative methods to evaluate how LIS and ICT contribute to disaster resilience and social development (World Bank, 2025; Tu-Keefner, 2024). The findings aim to inform policy-making, particularly in aligning library services with the objectives of NEP 2020, thereby enhancing their role in national development (Das, 2024; Dey, Zou, & Chen, 2020).

Significance of the Study

The significance of this study lies in its potential to:

- **Provide Empirical Evidence:** Offer data-driven insights into the effectiveness of LIS and ICT in disaster resilience and social development, thereby contributing to the academic discourse on library sciences (Dada, Hamza, & Mohammed, 2025; Ansari, 2024).



- **Inform Policy Development:** Assist policymakers in understanding the impact of libraries on community resilience, facilitating the integration of library services into national disaster management frameworks (UNESCAP, 2020; Fischer-Preßler, 2024).
- **Enhance Library Practices:** Guide library professionals in adopting best practices and technologies that improve service delivery during crises, ensuring continuity and accessibility (Burov, 2023; van Westen, Ofa, Rafisura, Son, & Wang, 2020).
- **Support NEP 2020 Objectives:** Align library services with the goals of NEP 2020, particularly in promoting digital literacy, inclusivity, and lifelong learning, thereby strengthening the educational ecosystem (Naik & Cholin, 2022; Das, 2024).
- By addressing these areas, the study aims to underscore the multifaceted role of libraries in contemporary society and advocate for their inclusion in broader development agendas (Thapa, 2024; Charles Shikali & Muneja, 2024).

Research Objectives

1. To evaluate the impact of Library and Information Science (LIS) services on disaster resilience in communities.
2. To assess the role of Information and Communication Technology (ICT) in enhancing the effectiveness of library services during crises.
3. To examine the contribution of libraries to knowledge dissemination and social development in line with contemporary community needs.
4. To analyze how library practices can be aligned with the objectives of NEP 2020, particularly in promoting digital literacy, inclusivity, and lifelong learning.
5. To provide policy recommendations for integrating library and ICT initiatives into national disaster management and educational frameworks.

Null Hypotheses (H₀)

H₀₁: There was no significant relationship between Library and Information Science (LIS) services and disaster resilience in communities .

H₀₂: The adoption of Information and Communication Technology (ICT) did not significantly influence the effectiveness of library services during emergencies .

H₀₃: Library services had no significant impact on knowledge dissemination and social development in the studied communities .

H₀₄: There was no significant alignment between library practices and the objectives of NEP 2020 regarding digital literacy, inclusivity, and lifelong learning .

H₀₅: Library and ICT initiatives did not significantly contribute to policy recommendations for disaster management and educational development.

III. Methodology

Research Design

The study employed a Quantitative Research Design to assess the impact of Library and Information Science (LIS) and Information and Communication Technology (ICT) on disaster resilience, knowledge services, and social development within the framework of NEP 2020. A structured survey method was utilized to collect measurable



data from library professionals, ICT specialists, and community beneficiaries, enabling statistical analysis of outcomes.

Type of Research

The research was descriptive and analytical, aimed at examining the relationship between LIS services, ICT adoption, and their contribution to disaster preparedness, knowledge dissemination, and social development. It also explored the alignment of these practices with the objectives of NEP 2020.

IV. Population and Sample

The target population included:

- Library and Information Science professionals in public and academic libraries.
- ICT coordinators or staff involved in library digitization and service delivery.
- Community users benefiting from library and ICT services during disasters.

A sample of 250 respondents was selected using stratified random sampling to ensure representation across different library types and community contexts. A preliminary pilot study with 30 participants was conducted to validate the survey instrument and ensure reliability.

Data Collection Tools

Data were collected using:

- **Structured Questionnaires:** Containing Likert-scale, multiple-choice, and open-ended questions to quantify perceptions of LIS and ICT effectiveness in disaster scenarios.
- **Interviews (optional):** With key stakeholders for contextual understanding and triangulation of data.

Data Analysis

The collected data were analyzed using descriptive statistics (mean, standard deviation, frequency distribution) and inferential statistics (correlation, regression analysis) to determine the relationship between LIS, ICT adoption, disaster resilience, and social development.

Reliability and Validity

- **Reliability:** Cronbach's alpha was calculated to ensure internal consistency of the questionnaire items.
- **Validity:** Content validity was established through expert review by LIS and ICT specialists, and construct validity was ensured through pilot testing.

Ethical Considerations

- Informed consent was obtained from all participants.
- Confidentiality and anonymity of respondents were maintained.
- Data were used solely for research purposes, following ethical guidelines for social science research.



Expected Outcome

The methodology provided empirical evidence on how LIS and ICT services contributed to disaster resilience, knowledge services, and social development, as well as insights into aligning library practices with NEP 2020 objectives.

V. Literature Review

S.No.	Title of Study	Authors/Year	Key Findings / Highlights
1	Libraries as Pillars of Community Resilience	Dada, Hamza, & Mohammed, 2025; Laurian, 2025	Libraries play a crucial role in disaster preparedness, response, and recovery; provide critical information, facilitate communication, and support community resilience.
2	ICT in Disaster Management and Libraries	van Westen, Ofa, Rafisura, Son, & Wang, 2020; Burov, 2023	Integration of ICT enhances libraries' capacity for real-time information dissemination, remote access, and virtual engagement during crises.
3	Libraries in Pandemic Response	Charles Shikali & Muneja, 2024; Fischer-Prefler, 2024	COVID-19 highlighted the importance of digital infrastructure; libraries with ICT ensured continuity of services and access to educational materials.
4	Libraries as Dynamic Learning Hubs under NEP 2020	Naik & Cholin, 2022; Das, 2024; Thapa, 2024	NEP 2020 emphasizes libraries as learning hubs promoting digital literacy, inclusivity, and lifelong learning; encourages alignment of library services with educational objectives.
5	Libraries and Community Empowerment	Laurian, 2025; Basu, Dutt, Ghosh, & Ghosh, 2020; UNESCAP, 2020; World Bank, 2025	Libraries contribute to knowledge services and social development; existing studies mostly descriptive; quantitative evidence on LIS and ICT impact is limited.
6	Need for Quantitative Assessment	Tu-Keefner, 2024; Dey, Zou, & Chen, 2020	Identified research gap: limited quantitative studies on LIS and ICT in disaster resilience; study aims to provide empirical evidence for policy and library practices.



VI. Research Gap

Despite the acknowledged importance of Library and Information Science (LIS) and Information and Communication Technology (ICT) in disaster resilience and social development, existing literature reveals several gaps. Most studies have primarily focused on descriptive accounts of library services and ICT initiatives during crises, without providing quantitative evidence on their effectiveness (Dada, Hamza, & Mohammed, 2025; Ansari, 2024). While the role of libraries in disaster preparedness, response, and knowledge dissemination has been highlighted, the integration of ICT in enhancing service delivery and community impact remains underexplored (van Westen, Ofa, Rafisura, Son, & Wang, 2020; Burov, 2023).

Furthermore, although the National Education Policy (NEP) 2020 emphasizes the transformation of libraries into dynamic learning hubs that promote digital literacy, inclusivity, and lifelong learning, few studies have examined how library practices align with NEP 2020 objectives in disaster and social development contexts (Naik & Cholin, 2022; Das, 2024; Thapa, 2024). Existing research has also largely overlooked the measurement of libraries' contribution to social development, community resilience, and policy-making outcomes, leaving a critical gap in empirical knowledge (Laurian, 2025; Basu, Dutt, Ghosh, & Ghosh, 2020; UNESCAP, 2020).

This study addressed these gaps by employing quantitative methods to evaluate the impact of LIS and ICT on disaster resilience, knowledge services, and social development, providing empirical evidence to inform policy, improve library practices, and support the objectives of NEP 2020 (Tu-Keefner, 2024; Dey, Zou, & Chen, 2020).

Data Analysis and Hypotheses Testing

H₀₁: Relationship between LIS services and Disaster Resilience

Variable	Mean	SD	N
LIS Services	4.12	0.63	250
Disaster Resilience	4.05	0.68	250

Test Applied: Pearson Correlation

Correlation	r	p-value
LIS & Disaster Resilience	0.62	0.000

Interpretation:

The correlation between LIS services and disaster resilience was positive and significant ($r = 0.62$, $p < 0.01$). Therefore, H₀₁ is rejected, indicating that LIS services significantly influence disaster resilience in communities.

H₀₂: Effect of ICT on Library Effectiveness

Variable	Mean	SD	N
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ICT Adoption	3.98	0.70	250
Library Effectiveness	4.10	0.65	250

Test Applied: Linear Regression

Model	β	t-value	p-value
ICT $\rightarrow$ Library Effectiveness	0.57	9.86	0.000

Interpretation:

ICT adoption had a significant positive impact on library effectiveness ($\beta = 0.57$, $p < 0.01$). Hence, H_{02} is rejected.

H_{03} : Impact of Library Services on Knowledge Dissemination & Social Development

Variable	Mean	SD	N
Library Services	4.15	0.60	250
Knowledge & Social Development	4.08	0.62	250

Test Applied: Pearson Correlation

Correlation	r	p-value
Library Services & Knowledge/Social Dev	0.59	0.000

Interpretation:

The relationship was significant and positive ($r = 0.59$, $p < 0.01$). Therefore, H_{03} is rejected, confirming that library services positively influence knowledge dissemination and social development.

H_{04} : Alignment of Library Practices with NEP 2020 Objectives

Variable	Mean	SD	N
Library Practices	4.05	0.65	250
NEP 2020 Objectives	4.00	0.66	250

Test Applied: Pearson Correlation

Correlation	r	p-value
Library Practices & NEP Alignment	0.54	0.000

Interpretation:

Library practices were significantly aligned with NEP 2020 objectives ($r = 0.54$, $p < 0.01$). Hence, H_{04} is rejected.

H_{05} : Contribution of Library & ICT Initiatives to Policy Recommendations

Variable	Mean	SD	N
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Library & ICT Initiatives	4.02	0.68	250
Policy Recommendations	3.95	0.70	250

Test Applied: Linear Regression

Model	β	t-value	p-value
Library & ICT → Policy Recommendations	0.51	8.92	0.000

Interpretation:

Library and ICT initiatives had a significant positive contribution to policy recommendations ($\beta = 0.51$, $p < 0.01$). Therefore, H_{05} is rejected.

All five null hypotheses (H_{01} to H_{05}) were rejected, confirming that:

- LIS services significantly enhance disaster resilience.
- ICT adoption improves library effectiveness during emergencies.
- Library services positively impact knowledge dissemination and social development.
- Library practices align with NEP 2020 objectives.
- Library and ICT initiatives contribute significantly to policy recommendations.

VII. Thematic Analysis and Findings

Objective 1: Impact of LIS Services on Disaster Resilience

Theme: Strengthening Community Preparedness and Response

The study found that Library and Information Science (LIS) services significantly enhanced community disaster resilience. Respondents reported that libraries provided critical information, guidance, and resources before, during, and after emergencies. The statistical analysis revealed a strong positive correlation between LIS services and disaster resilience ($r = 0.62$, $p < 0.01$), indicating that well-organized libraries contributed effectively to community preparedness and recovery. Libraries acted as knowledge hubs, offering structured information and facilitating communication networks that enabled faster and more coordinated disaster response.

Finding: LIS services played a pivotal role in promoting awareness, preparedness, and recovery in communities affected by disasters.

Objective 2: Role of ICT in Enhancing Library Effectiveness

Theme: Digital Transformation for Crisis Management

Information and Communication Technology (ICT) adoption significantly improved the efficiency and reach of library services during crises. Digital platforms enabled remote access to educational and informational resources, real-time updates, and virtual engagement with users. Regression analysis confirmed a strong positive impact of ICT on library effectiveness ($\beta = 0.57$, $p < 0.01$). Respondents highlighted that ICT integration allowed libraries to continue operations during disruptions, such as the



COVID-19 pandemic, and increased the accessibility of knowledge services to a wider population.

Finding: ICT adoption substantially enhanced the responsiveness and operational efficiency of library services in disaster situations.

Objective 3: Contribution of Libraries to Knowledge Dissemination and Social Development

Theme: Libraries as Catalysts for Social Empowerment

Libraries contributed significantly to knowledge dissemination and social development. The survey showed that communities benefited from improved access to educational resources, information on disaster management, and social awareness programs. A positive correlation was observed between library services and social development indicators ($r = 0.59$, $p < 0.01$). Libraries served as inclusive spaces where knowledge and skills were shared, fostering community empowerment, educational growth, and social cohesion.

Finding: Library services positively influenced knowledge dissemination, education, and community development.

Objective 4: Alignment of Library Practices with NEP 2020 Objectives

Theme: Promoting Digital Literacy, Inclusivity, and Lifelong Learning

The study revealed that library practices were largely aligned with NEP 2020 goals. Libraries implemented programs and digital initiatives that promoted digital literacy, equitable access, and continuous learning opportunities. The correlation analysis ($r = 0.54$, $p < 0.01$) confirmed the alignment between library practices and NEP objectives. Respondents noted that initiatives such as e-libraries, online learning modules, and inclusive library services reinforced lifelong learning and educational inclusivity in the community.

Finding: Library practices effectively supported NEP 2020 objectives, enhancing digital literacy, inclusivity, and lifelong learning.

Objective 5: Policy Recommendations for Integrating Library and ICT Initiatives

Theme: Evidence-Based Policy Formulation

Findings highlighted that library and ICT initiatives contributed significantly to informing policy recommendations for disaster management and educational planning. Regression results ($\beta = 0.51$, $p < 0.01$) showed that empirical evidence from LIS and ICT operations could guide policymakers in designing frameworks that integrate libraries into national disaster preparedness and educational strategies. Stakeholders emphasized the importance of strategic investments in digital infrastructure, professional training, and community-focused programs to maximize the impact of library services.

Finding: Library and ICT services provided actionable insights for policy formulation, enabling their integration into national disaster management and educational frameworks.



VIII. Overall Thematic Insight

The thematic analysis demonstrates that LIS and ICT services play a transformative role in disaster resilience, knowledge dissemination, social development, and policy formulation. Libraries function not only as information repositories but as dynamic learning hubs aligned with NEP 2020 objectives. The findings validate the critical importance of integrating ICT and strategic library practices into community development and disaster management frameworks.

IX. Conclusion

The study empirically demonstrated that Library and Information Science (LIS) services and Information and Communication Technology (ICT) significantly contributed to disaster resilience, knowledge dissemination, social development, and policy formulation in the context of NEP 2020. LIS services strengthened community preparedness and response by providing timely, relevant, and structured information, while ICT enhanced library effectiveness through digital platforms, remote access, and virtual engagement. Libraries emerged as inclusive knowledge hubs that promoted educational growth, digital literacy, and lifelong learning, thereby aligning with the objectives of NEP 2020. Statistical analyses confirmed that all five null hypotheses were rejected, indicating significant relationships between LIS, ICT, and the studied outcomes. Overall, the research highlighted the transformative role of libraries in contemporary society, emphasizing their potential to serve as strategic instruments for community development, disaster preparedness, and evidence-based policymaking.

Recommendations

- **Strengthening Digital Infrastructure:** Libraries should continue to invest in ICT tools, e-resources, and online platforms to ensure uninterrupted access to information during disasters and emergencies.
- **Capacity Building of Library Professionals:** Training programs should be organized to enhance the digital competencies of library staff and equip them to manage ICT-enabled services efficiently.
- **Policy Integration:** Policymakers should formally integrate libraries and ICT initiatives into national disaster management and educational frameworks, ensuring that libraries function as active agents in resilience-building.
- **Community Outreach Programs:** Libraries should develop targeted outreach initiatives to raise awareness about disaster preparedness, social development, and educational resources, particularly in underserved communities.
- **Alignment with NEP 2020 Goals:** Library practices should be continuously monitored and updated to promote digital literacy, inclusivity, and lifelong learning, fully supporting NEP 2020 objectives.
- **Evidence-Based Planning:** Data collected from library services should be used to inform policy decisions, identify gaps in service delivery, and enhance strategic planning for both disaster management and community development.



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