

Big Data Potentiality in Academic Library Operations and Service Delivery: A Study of Ramat Library, University of Maiduguri, Borno State, Nigeria

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Abstract - The rapid expansion of digital information has positioned academic libraries as generators and managers of large volumes of structured, semi-structured, and unstructured data, creating opportunities for data-driven decision-making and service optimisation. This study investigates the potentiality of big data in library operations and service delivery at Ramat Library, University of Maiduguri, Borno State, Nigeria. Adopting a descriptive survey research design, data were collected from 152 library professionals using a structured questionnaire with a reliability coefficient of 0.87. Findings reveal that Ramat Library generates substantial operational data through circulation records, electronic resource usage logs, and user interaction patterns, but the systematic application of data analytics remains at a nascent stage ($\bar{X} = 2.27$, $SD = 0.95$). Library professionals demonstrated low overall awareness of big data concepts and analytical tools ($\bar{X} = 2.47$, $SD = 0.91$), with particularly low familiarity with Apache Hadoop ($\bar{X} = 1.96$, $SD = 0.89$) and Python ($\bar{X} = 2.12$, $SD = 0.94$). Key barriers included inadequate infrastructure ($\bar{X} = 3.61$, $SD = 0.79$), limited skilled personnel ($\bar{X} = 3.48$, $SD = 0.83$), unstable power supply ($\bar{X} = 3.72$, $SD = 0.74$), and the absence of data governance frameworks ($\bar{X} = 3.54$, $SD = 0.81$). The findings indicate substantial potential for data-driven transformation, but realising this potential requires investment in infrastructure, staff capacity development, and institutional data governance. The study recommends establishing a dedicated data analytics unit, integrating big data competencies into professional development programmes, and developing a comprehensive data governance policy tailored to the Nigerian academic library context.

Keywords - Big data, data analytics, academic libraries, Ramat Library, University of Maiduguri, library operations, service delivery, Nigeria

I. INTRODUCTION

A. Background to the Study

The contemporary academic library operates within an increasingly data-saturated environment. Every circulation transaction, database search, reference enquiry, inter-library loan request, and digital resource access generates data that, when properly harnessed, can illuminate patterns of user behaviour, inform collection development decisions, and enhance the quality of library services. The concept of big data, characterised by the volume, velocity, variety, veracity, and value of information, has emerged as a transformative force across sectors, and academic libraries are increasingly recognised as both generators and beneficiaries of big data applications. [1], [2]

Big data in library contexts encompasses the vast quantities of structured data (circulation records, catalogue metadata, user registration information), semi-structured data (web logs, social media interactions, email reference transcripts), and unstructured data (digital text, images, audio-visual materials, and user-generated content) that libraries accumulate through their daily operations. The analytical processing of these data streams can yield actionable insights for collection management, user engagement, space utilisation, and strategic planning. [1]

The University of Maiduguri occupies a distinctive position in Nigerian higher education. Located in Borno State, a region that has experienced significant security challenges over the past decade, the university and its library serve as vital anchors for educational continuity, research, and knowledge preservation in the Lake Chad region. As noted in recent scholarship, Ramat Library plays a crucial role in the digital preservation of Indigenous knowledge, recognising the importance of safeguarding local epistemologies and cultural heritage.

B. Statement of the Problem

Despite the growing recognition of big data's transformative potential for academic libraries globally, empirical evidence documenting its application and potentiality in Nigerian academic libraries, particularly in the northeastern region, remains sparse. A nationwide study of big data adoption in Nigerian academic libraries found that while librarians express favourable opinions concerning the relevance of big data, actual implementation remains limited by infrastructure deficits, skills gaps, and the absence of institutional data governance frameworks. Research in Kwara State revealed that structured data dominate library collections, and while big data significantly enhances decision-making, searchability, security, and personalised services, adoption is hindered by privacy concerns, limited skilled personnel, and budget constraints. [1], [2]

At Ramat Library, University of Maiduguri, preliminary observations indicate that while the library generates substantial operational data through its digital services, circulation systems, and electronic resource platforms, there is no systematic framework for collecting, analysing, and applying these data to improve services. Studies on Ramat Library have examined digital competencies of cataloguers, challenges with technology facilities management, and information access and dissemination channels, but none has specifically investigated the potentiality of big data in library operations and service delivery.

This study, therefore, addresses a critical gap by investigating the potentiality of big data at Ramat Library. It seeks to understand the current state of data generation and utilisation, assess librarians' awareness and readiness for big data analytics, identify barriers to

implementation, and propose a strategic framework for leveraging big data to enhance library operations and service delivery.

C. Objectives of the Study

The specific objectives of this study are to:

1. Examine the types and volume of data generated through library operations at Ramat Library.
2. Assess the level of awareness of big data concepts and analytical tools among library professionals at Ramat Library.
3. Investigate the current extent of data utilisation for decision-making in library operations and service delivery.
4. Identify the barriers to big data adoption at Ramat Library.
5. Propose a strategic framework for harnessing big data potentiality in academic library operations.

D. Research Questions

The following research questions guided the study:

1. What types of data are generated through library operations at Ramat Library?
2. What is the level of awareness of big data concepts and analytical tools among library professionals at Ramat Library?
3. To what extent are data currently utilised for decision-making in library operations and service delivery at Ramat Library?
4. What barriers hinder the adoption of big data analytics at Ramat Library?
5. What strategic framework can be developed to harness big data potentiality at Ramat Library?

E. Significance of the Study

This study contributes to the growing body of scholarship on big data in library and information science, particularly within the Nigerian and African contexts. It provides empirical evidence on data generation patterns, awareness levels, and institutional readiness at a significant northeastern Nigerian academic library, addressing a gap identified in recent reviews of big data adoption in Nigerian academic libraries. The proposed framework has practical implications for library administrators, policymakers, and professional bodies, including the Association of University Librarians of Nigerian Universities (AULNU), as they develop strategies for data-driven library management.

II. LITERATURE REVIEW

A. Theoretical Framework: Disruptive Innovation Theory

This study is anchored in Christensen's theory of disruptive innovation, which explains how emerging technologies can disrupt established industries by initially offering products or services that are lower in quality but more affordable, accessible, or convenient. Over time, these disruptive technologies improve and eventually replace dominant, established technologies. In the context of libraries, this theory is particularly relevant for understanding how big data analytics may initially seem inefficient or unnecessary compared to traditional library practices, but its potential for improving efficiency, decision-making, and service delivery could disrupt traditional librarianship by offering new ways to manage information resources and serve users.

Christensen observes that organisations, even when well managed and customer-focused, often fail to adapt to disruptive innovations because they prioritise sustaining innovations that cater to their existing customer base. This insight is particularly pertinent to academic libraries in Nigeria, where traditional practices may create institutional inertia against the adoption of data-driven approaches.

B. Big Data in Academic Libraries: Global Perspectives

The literature identifies several domains within academic library operations where big data analytics can deliver transformative value. Collection management and acquisition generate vast amounts of data on resource utilisation, inter-library loan patterns, and user preferences that can inform evidence-based purchasing decisions. Reference and information services produce data on enquiry types, response times, and user satisfaction that can guide service improvement initiatives. User engagement analytics, including database search logs, website navigation patterns, and digital resource access metrics, can illuminate user behaviour and inform personalised service design. [1], [3]

A study of big data analytics in university libraries from a disruptive innovation perspective found that library operations such as collection management, acquisition, preservation, and curation generate vast amounts of data, which can benefit from the application of data analytics tools. The study confirmed the disruptive potential of big data analytics in modern librarianship, enhancing decision-making and demonstrating libraries' value. [3]

Research on the impact of big data and data analytics on the provision of data services in academic libraries has demonstrated significant positive correlations among critical components including data-driven culture, organisational readiness, and analytical capability. The adoption of big data analytics for sustainability of library services has been examined in various national contexts, with findings consistently pointing to the need for investment in staff capacity, infrastructure, and robust data governance frameworks. [3]

C. Big Data in Nigerian Academic Libraries

Studies specifically examining big data in Nigerian academic libraries have proliferated in recent years, though geographical coverage remains uneven. Research in Kwara State found that structured data dominate library collections, with velocity, volume, variety, and value being the prominent big data features. Big data significantly enhances decision-making, searchability, security, and personalised services, with practical applications including resource modelling, database enrichment, and IoT-enabled services. However, adoption is hindered by privacy and security concerns, limited skilled personnel, inadequate infrastructure, and budget constraints. [1], [2]

A nationwide study involving librarians from six federal universities in Southwest Nigeria found that a significant proportion of librarians are well-acquainted with the relevance of big data and its potential to positively revolutionise library services. Librarians generally express favourable opinions concerning the relevance of big data, acknowledging its capacity to enhance decision-making, optimise services, and deliver personalised user experiences. The study recommended that libraries in Nigeria ensure reliable data storage across multiple databases and employ data experts to manage big data effectively. [2]

Research on the use of big data in the management of library resources in Nigerian universities has emphasised that library services must be accessible to all members of the community, requiring well-situated library infrastructure, facilities, and information resources. Studies have also examined the perceptions and use of big data analytics for information management among librarians in selected university libraries, revealing both enthusiasm for the technology's potential and concern about the formidable obstacles to its implementation. [2]

D. The Context of Ramat Library, University of Maiduguri

Ramat Library has been the subject of several studies examining its collections, services, and technological infrastructure, though none has specifically addressed big data potentiality. Research on digital competencies of cataloguers revealed that most respondents had low digital competency levels in organising information resources, with inadequate funding, insufficient training, and unreliable power supply identified as key obstacles. The study highlighted the need for enhanced digital skills development and

improved infrastructure to optimise information resource management. [5]

Assessment of information access and dissemination channels at Ramat Library found that the extent of access depends on digital platforms, user awareness, infrastructure, and ICT integration, with services including OPACs, social media platforms, current awareness services, websites and digital portals, email newsletters, and library blogs. Studies on the utilisation of electronic information resources have analysed patterns of e-resource use among the library's substantial user population. [4]

Challenges with the management of technology facilities at Ramat Library have been documented, with lack of resources or expertise identified as significant constraints. The library's digital preservation of Indigenous knowledge initiative reflects its commitment to safeguarding local epistemologies, but the data generated through these and other operations remain largely unanalysed for service improvement purposes. This study addresses this gap by systematically examining the potentiality of big data at Ramat Library. [6]

III. METHODOLOGY

A. Research Design

The study adopted a descriptive survey research design, which is appropriate for collecting data on existing phenomena and describing the characteristics of a population. This design enabled the researchers to capture the current state of data generation, awareness levels, and institutional readiness for big data analytics at Ramat Library.

B. Population and Sampling

The target population comprised all library professionals at Ramat Library, including librarians, cataloguers, system librarians, and library officers. A total of 152 professionals were enumerated using total enumeration sampling technique due to the manageable population size, consistent with similar studies in Nigerian academic libraries. This approach ensured comprehensive coverage of all professional staff involved in library operations and services.

C. Research Instruments

A structured questionnaire titled "Big Data Potentiality in Academic Libraries Questionnaire (BDPALQ)" was developed for data collection. The instrument contained 48 items organised into five sections: demographic information (Section A), types and volume of data generated (Section B), awareness of big data concepts and tools (Section C), current data utilisation for decision-making (Section D), and barriers to big data adoption (Section E). Items were rated on a four-point Likert scale: Very High/Strongly Agree (4), High/Agree (3), Low/Disagree (2), and Very Low/Strongly Disagree (1).

D. Validity and Reliability

The instrument was subjected to face and content validity by three experts in Library and Information Science and one expert in Research Methodology. A pilot study was conducted with 20 library professionals from a comparable academic library who were not part of the main study. The reliability coefficient obtained using Cronbach's alpha was 0.87, indicating high internal consistency.

E. Data Collection Procedure

Data were collected over a period of four weeks. Questionnaires were administered physically at Ramat Library to all 152 library professionals. The researchers obtained institutional permission from the University Librarian and ensured informed consent from all participants. Anonymity and confidentiality were maintained throughout the data collection process. A response rate of 89.5% (136 out of 152) was achieved, which is considered adequate for analysis.

F. Data Analysis

Data were analysed using descriptive statistics including frequency counts, percentages, means, and standard deviations. The mean scores were interpreted using a criterion mean of 2.50: items with mean scores of 2.50 and above were considered "agreed" or "high," while those below 2.50 were considered "disagreed" or "low." Statistical analysis was performed using SPSS version 26.

IV. FINDINGS

A. Demographic Characteristics of Respondents

TABLE I. DEMOGRAPHIC CHARACTERISTICS OF LIBRARY PROFESSIONALS (N = 136)

Variable	Category	Frequency	Percentage
Gender	Male	71	52.2%
	Female	65	47.8%
Age	20–35 years	38	27.9%
	36–50 years	68	50.0%
	Above 50 years	30	22.1%
Education	Bachelor's degree	61	44.9%
	Master's degree	55	40.4%
	PhD	20	14.7%
Years of Experience	1–10 years	50	36.8%
	11–20 years	58	42.6%
	Above 20 years	28	20.6%
Department/Unit	Circulation	32	23.5%
	Cataloguing	28	20.6%
	Reference	26	19.1%
	Systems/ICT	24	17.6%
	Collection Development	16	11.8%
	Other	10	7.4%

B. Research Question 1: Types of Data Generated Through Library Operations

TABLE II. TYPES AND VOLUME OF DATA GENERATED (N = 136)

Data Type	Mean	SD	Decision
Circulation transaction records	3.68	0.72	High
Electronic resource access logs	3.52	0.78	High
User registration and demographic data	3.45	0.81	High
Catalogue search and retrieval queries	3.38	0.85	High
Reference enquiry records	3.24	0.88	High
Inter-library loan requests	2.96	0.92	High
Website navigation patterns	2.78	0.94	High
Social media interactions	2.54	0.98	High
Digital preservation metadata	2.42	1.02	Low
IoT sensor data (if applicable)	1.86	0.91	Low
Overall Mean	3.08	0.87	High

The findings reveal that Ramat Library generates substantial volumes of operational data across multiple service points. The highest-rated data types are circulation transaction records ($\bar{X} = 3.68$, $SD = 0.72$), electronic resource access logs ($\bar{X} = 3.52$, $SD = 0.78$), and user registration and demographic data ($\bar{X} = 3.45$, $SD = 0.81$). These findings indicate that the library possesses a rich data environment with significant potential for analytical exploitation. The relatively lower ratings for digital preservation metadata ($\bar{X} = 2.42$, $SD = 1.02$) and IoT sensor data ($\bar{X} = 1.86$, $SD = 0.91$) suggest areas where data generation infrastructure could be enhanced.

C. Research Question 2: Awareness of Big Data Concepts and Analytical Tools

TABLE III. AWARENESS OF BIG DATA CONCEPTS AND TOOLS (N = 136)

Item	Mean	SD	Decision
I understand the concept of big data	3.12	0.84	High
I am aware of the 5 Vs of big data	2.56	0.96	High
I understand how data analytics can improve library services	3.24	0.82	High
I am familiar with Apache Hadoop	1.96	0.89	Low

I am familiar with Python for data analysis	2.12	0.94	Low
I am familiar with data visualisation tools	2.34	1.01	Low
I understand data mining techniques	2.28	0.98	Low
I am aware of predictive analytics applications	2.18	1.04	Low
I understand data governance principles	2.42	0.96	Low
Overall Mean	2.47	0.91	Low

The results indicate that while library professionals at Ramat Library demonstrate moderate familiarity with general big data concepts ($\bar{X} = 2.47$, $SD = 0.91$), there are significant knowledge gaps in technical aspects of data analytics. Professionals showed relatively high awareness of how data analytics can improve library services ($\bar{X} = 3.24$, $SD = 0.82$) and basic understanding of big data concepts ($\bar{X} = 3.12$, $SD = 0.84$), but low familiarity with specific analytical tools such as Apache Hadoop ($\bar{X} = 1.96$, $SD = 0.89$) and Python ($\bar{X} = 2.12$, $SD = 0.94$). These findings align with broader patterns in Nigerian academic libraries, where librarians recognise the value of big data but lack the technical competencies for implementation.

D. Research Question 3: Current Data Utilisation for Decision-Making

TABLE IV. EXTENT OF DATA UTILISATION FOR DECISION-MAKING (N = 136)

Application Area	Mean	SD	Decision
Collection development decisions	2.68	0.92	Moderate
User needs assessment	2.54	0.96	Moderate
Service quality evaluation	2.42	1.01	Low
Space utilisation planning	2.28	1.04	Low
Staffing and workflow optimisation	2.16	0.98	Low
Strategic planning and budgeting	2.34	0.94	Low
Personalised service recommendations	1.92	0.89	Low
Predictive maintenance of facilities	1.78	0.86	Low
Overall Mean	2.27	0.95	Low

The findings reveal that the systematic application of data analytics for decision-making at Ramat Library remains at a nascent stage ($\bar{X} = 2.27$, $SD = 0.95$). The highest-rated application areas are collection development decisions ($\bar{X} = 2.68$, $SD = 0.92$) and user needs assessment ($\bar{X} = 2.54$, $SD = 0.96$), suggesting that some data-driven practices are emerging in these domains. However, the low ratings for service quality evaluation ($\bar{X} = 2.42$, $SD = 1.01$), space utilisation planning ($\bar{X} = 2.28$, $SD = 1.04$), and particularly personalised service recommendations ($\bar{X} = 1.92$, $SD = 0.89$) indicate significant untapped potential for data-driven improvement across library operations.

E. Research Question 4: Barriers to Big Data Adoption

TABLE V. BARRIERS TO BIG DATA ADOPTION (N = 136)

Barrier	Mean	SD	Decision
Unstable power supply	3.72	0.74	High
Inadequate infrastructure (computing, storage)	3.61	0.79	High
Absence of data governance frameworks	3.54	0.81	High
Limited skilled personnel	3.48	0.83	High
Insufficient funding for data analytics initiatives	3.42	0.86	High
Privacy and security concerns	3.28	0.88	High
Lack of institutional data culture	3.16	0.91	High
Resistance to change among staff	2.94	0.94	High
Inadequate training opportunities	3.34	0.85	High
Overall Mean	3.39	0.84	High

The findings reveal significant barriers to big data adoption at Ramat Library. The highest-rated barrier is unstable power supply ($\bar{X} = 3.72$, $SD = 0.74$), which is a critical constraint for the continuous operation of data analytics infrastructure. This is followed by inadequate infrastructure for computing and storage ($\bar{X} = 3.61$, $SD = 0.79$), absence of data governance frameworks ($\bar{X} = 3.54$, $SD = 0.81$), and limited skilled personnel ($\bar{X} = 3.48$, $SD = 0.83$). These findings

are consistent with challenges identified in broader studies of Nigerian academic libraries, where infrastructure deficits and skills gaps consistently emerge as primary obstacles to technology adoption.

F. Hypothesis Testing

Hypothesis 1: There is no significant relationship between awareness of big data concepts and current data utilisation for decision-making among library professionals.

Pearson Product-Moment Correlation analysis revealed a statistically significant positive relationship between big data awareness and data utilisation for decision-making ($r = 0.412$, $p < 0.001$). Therefore, the null hypothesis was rejected. This finding indicates a positive association between awareness of big data concepts and data utilisation for decision-making.

Hypothesis 2: There is no significant difference in big data awareness between professionals with postgraduate qualifications and those with bachelor's degrees.

An independent samples t-test revealed a statistically significant difference in big data awareness between professionals with postgraduate qualifications (Master's/PhD) and those with bachelor's degrees ($t = 3.18$, $p = 0.002$). Professionals with postgraduate qualifications demonstrated significantly higher awareness of big data concepts and analytical tools.

V. 5. DISCUSSION

A. The Data-Rich Environment of Ramat Library

The finding that Ramat Library generates substantial volumes of operational data ($\bar{X} = 3.08$) is significant, revealing a largely untapped resource for service improvement and evidence-based management. The library's digital infrastructure, including over 300 high-speed desktop computers, dedicated internet connectivity, and electronic resource platforms, generates continuous streams of user interaction data. The circulation system, catalogue search logs, and reference enquiry records constitute a rich repository of information about user needs, preferences, and behaviours.

This data environment aligns with the characterisation of academic libraries as both generators and beneficiaries of big data. However, the gap between data generation ($\bar{X} = 3.08$) and data utilisation ($\bar{X} = 2.27$) indicates that Ramat Library is not yet realising the full potential of its data assets. This gap represents both a challenge and an opportunity: the data exist, but the analytical frameworks, skills, and institutional culture required to transform raw data into actionable insights are underdeveloped.

B. The Awareness-Capacity Gap

The moderate awareness of big data concepts among library professionals at Ramat Library ($\bar{X} = 2.47$) mirrors findings from broader Nigerian contexts, where librarians recognise the relevance of big data but lack technical competencies for implementation. The significant difference in awareness between professionals with postgraduate qualifications and those with bachelor's degrees ($t = 3.18$, $p = 0.002$) highlights the role of advanced education in developing data literacy.

The knowledge gaps identified, particularly in analytical tools such as Apache Hadoop ($\bar{X} = 1.96$) and Python ($\bar{X} = 2.12$), data mining techniques ($\bar{X} = 2.28$), and predictive analytics ($\bar{X} = 2.18$), are critical barriers to implementation. These findings underscore the need for structured capacity-building programmes that move beyond general awareness of big data to develop practical skills in data collection, processing, analysis, and visualisation. The significant positive association between awareness and data utilisation ($r = 0.412$, $p < 0.001$) supports the value of professional development as a potential component of capacity-building for data-driven library operations.

C. Barriers and the Imperative for Strategic Investment

The high levels of barriers identified ($\bar{X} = 3.39$) reflect the multidimensional challenges facing academic libraries in Nigeria's technological ecosystem. Unstable power supply ($\bar{X} = 3.72$) is a foundational constraint that affects all aspects of library technology infrastructure, from server availability to the reliability of data collection systems. This finding is consistent with earlier studies at Ramat Library that identified unreliable power supply as a key obstacle to effective information resource management.

The absence of data governance frameworks ($\bar{X} = 3.54$) is particularly significant. Without clear policies on data collection, storage, access, privacy, and ethical use, the library cannot systematically leverage its data assets. This governance gap also creates risks related to user privacy and data security, which are identified as barriers by respondents ($\bar{X} = 3.28$). The development of a comprehensive data governance framework must therefore be a priority for Ramat Library as it considers big data adoption.

D. Strategic Framework for Big Data Potentiality

Drawing on the findings and the theoretical framework of disruptive innovation, a strategic framework for harnessing big data potentiality at Ramat Library can be conceptualised across four interconnected pillars:

Pillar 1: Data Infrastructure and Governance. This foundational pillar involves investment in computing hardware, storage systems, and network infrastructure capable of handling large data volumes, along with the development of institutional policies for data collection, storage, access, privacy, and ethical use.

Pillar 2: Human Capacity Development. This pillar addresses the skills gap identified in the study through structured training programmes in data analytics, data mining, statistical analysis, and data visualisation, complemented by strategic recruitment of personnel with data science expertise.

Pillar 3: Analytical Applications and Service Integration. This pillar focuses on applying data analytics to specific library functions: collection development, user needs assessment, service quality evaluation, space utilisation planning, and personalised service design.

Pillar 4: Institutional Culture and Change Management. This pillar addresses the cultural and organisational dimensions of big data adoption, including leadership commitment, staff engagement, and the development of a data-driven decision-making culture.

This framework aligns with the disruptive innovation perspective, which suggests that big data analytics may initially appear unnecessary but has the potential to fundamentally transform library operations and service delivery over time. The framework also responds to calls in the literature for strategic approaches to big data integration in Nigerian academic libraries.

VI. CONCLUSION

This study has examined the potentiality of big data in library operations and service delivery at Ramat Library, University of Maiduguri, revealing a landscape of significant opportunity constrained by systemic

challenges. The findings demonstrate that Ramat Library possesses a rich data environment, generating substantial volumes of operational data through its circulation, electronic resource, and user interaction systems. However, the systematic application of big data analytics remains at a nascent stage, hindered by limited technical capacity, inadequate infrastructure, and the absence of data governance frameworks.

The study concludes that realising the transformative potential of big data at Ramat Library requires a strategic, multi-dimensional approach that addresses infrastructure, skills, governance, and institutional culture simultaneously. The data are already there, what is needed is the analytical capability, institutional framework, and

organisational commitment to transform these data into actionable insights for improved library operations and enhanced user experiences.

VII. RECOMMENDATIONS

Based on the findings, the following recommendations are made:

1. **Establishment of a Data Analytics Unit:** Ramat Library should establish a dedicated unit or team responsible for collecting, processing, analysing, and reporting on library operational data. This unit should be staffed with personnel trained in data science and library analytics.

2. **Development of Institutional Data Governance Policy:** The library, in collaboration with the University of Maiduguri's ICT Directorate and the Department of Library and Information Science, should develop a comprehensive data governance policy covering data collection, storage, access, privacy, ethical use, and retention.

3. **Capacity Building for Library Professionals:** Structured training programmes on big data analytics, data mining, statistical analysis, and data visualisation should be integrated into the library's continuing professional development curriculum. Priority should be given to practical, hands-on training with commonly used tools.

4. **Infrastructure Investment:** The university administration should prioritise investment in reliable power supply (including backup systems), computing infrastructure, and data storage solutions to support the library's data analytics initiatives.

5. **Development of a Data-Driven Decision-Making Culture:** Library leadership should champion the use of data in decision-making processes, encouraging staff at all levels to utilise available data for service improvement and demonstrating the value of data-driven approaches through pilot projects.

6. **Collaboration with LIS Researchers:** Ramat Library should establish research partnerships with LIS departments and data science programmes to conduct collaborative research on big data applications in library contexts and to access expertise not available in-house.

7. **User Privacy Protection:** As the library expands its data collection and analysis activities, robust privacy protection measures must be implemented, including anonymisation of user data, secure storage systems, and transparent policies on data use.

8. **Phased Implementation Approach:** Given resource constraints, a phased approach to big data adoption is recommended, starting with simple descriptive analytics of existing data and gradually progressing to more sophisticated predictive and prescriptive analytics as capacity develops.

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