

Library Automation and Its Impact on Services: A Case Study of the Central Library, Sido Kanhu Murmu University (SKMU), Dumka, Jharkhand

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ABSTRACT

This research examines the effects of library automation on service quality, customer happiness, and operational efficiency at the Central Library of Sido Kanhu Murmu University (SKMU) in Dumka. In response to the growing need for swift, precise, and user-focused services, the library implemented automated systems like OPAC, RFID, barcode technology, and digital catalogs. The study utilized a mixed-method approach, using primary data gathered from 250 respondents across various age, gender, and educational demographics. Statistical methods, such as regression analysis and correlation tests, were utilized through SPSS software to assess the impact of automated systems on user satisfaction and employee performance. The findings indicate that automation markedly improves accessibility, precision, and response time, resulting in an enhanced user experience and service quality. The study underscores a significant positive association between staff proficiency in utilizing automation systems and the overall efficacy of library operations, highlighting the necessity for ongoing digital skill enhancement among library personnel. The results affirm that automation serves as both a technological enhancement and a revolutionary process that redefines library operations and aligns services with contemporary user expectations. The study finds that libraries must include technical advancements and personnel training to maintain efficient service delivery in the digital age.

KEYWORDS: Library Automation, User Satisfaction, Service Quality, RFID, OPAC, Staff Competency.

INTRODUCTION

Advancement of Library Services

Library services have experienced a substantial transformation throughout the decades, transitioning from entirely manual methods to sophisticated, technology-driven procedures. Historically, libraries depended on physical card catalogs, manual indexing, and handwritten circulation records to administer their collections and patrons. These procedures, although effective, were labor-intensive and susceptible to human mistake. As the quantity of information and user expectations increased, the deficiencies of manual systems became increasingly apparent. The

mid-20th century signified a pivotal moment, as libraries began utilizing computers for fundamental record management. Over time, these initial technologies developed to facilitate categorization, circulation, and acquisitions in a more organized digital format. This progression enhanced internal efficiency and revolutionized user access and interaction with library materials, resulting in expedited retrieval, increased accuracy, and superior service delivery.

Advent of Digital Technologies in Libraries

The integration of digital technology has ushered in a new epoch for library services, transitioning the emphasis from the administration of physical resources to a hybrid approach that amalgamates both physical and digital access. The advent of Online Public Access Catalogs (OPACs) supplanted conventional card catalogs, enabling users to electronically search for materials with enhanced speed and accuracy. Integrated Library Systems (ILS) consolidated many library functions—cataloging, circulation, acquisitions, and user management—into a cohesive automated framework. As the internet and cloud computing proliferated, libraries enhanced their digital footprint by providing e-resources, digital repositories, and remote access to databases and journals. Technologies such as RFID have streamlined inventory and security processes, while artificial intelligence and machine learning are progressively employed to enhance cataloging, user behavior analysis, and virtual assistance. These advancements have established libraries as technologically agile entities capable of providing customized and immediate information services.

Concept and Scope of Library Automation

Library automation denotes the methodical application of computer technologies and communication tools to perform library operations with enhanced efficiency and precision. The initial emphasis on basic cataloging and circulation has broadened to encompass acquisitions, serials management, digital resource integration, user authentication, and analytics for informed decision-making. Contemporary automated systems facilitate both backend functions—such as metadata generation, classification, and database upkeep—and user-oriented services including online renewals, digital lending, remote access to e-books and journals, and automatic alerts. Automation improves user experience by offering real-time availability updates, tailored recommendations, and effortless access to digital content. In addition to operational efficiency, library automation also encompasses strategic objectives such as promoting accessibility, increasing user engagement, integrating digital literacy programs, and fostering research and academic output. In this wider perspective, automation functions as a mechanism for libraries to maintain relevance and prioritize user needs in a swiftly changing digital information environment (**Kristyanto & Shintawati, 2023**).

Constraints of Conventional Library Systems

Conventional library systems, although essential for knowledge management, are progressively hindered by the constraints of human procedures. Historically, operations like as cataloging, circulation, and book searches were performed manually, rendering them time-consuming and labor-intensive. Manual record-keeping is susceptible to human mistake, resulting in missing books, erroneous inventory counts, and inaccurate borrowing records. The expanding volume of collections and the rising diversity of user requirements intensify these constraints, complicating libraries' ability to manage resources efficiently. Moreover, conventional systems face challenges in

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collaboration and resource sharing among institutions, as physical catalogs and locally held records are not easily linked. These inefficiencies lead to postponed resource retrieval, diminished user pleasure, and constrained library capacity to meet the swift information demands of contemporary culture. Thus, conventional methods, while dependable in limited activities, frequently do not satisfy the demands of the contemporary information environment.

Requirement for Velocity, Precision, and Efficacy

In light of the constraints of conventional methods, library automation has become imperative to satisfy the increasing need for rapidity, precision, and efficacy. The implementation of barcodes, RFID technologies, and integrated library software systems has transformed library operations. Automated circulation systems facilitate immediate check-in and check-out of books, thereby removing delays associated with manual processing. Inventory management enhances precision, diminishes losses, and facilitates real-time resource tracking. Automation reduces the necessity for significant human involvement in repetitive operations, allowing personnel to concentrate on higher-value services such as user assistance and collection development. Moreover, these systems provide interoperability among libraries, facilitating smooth resource sharing on both national and international levels. Automated technologies mitigate essential operational issues by optimizing workflows, enhancing data precision, and expediting service delivery, thereby establishing a more agile and efficient library service model.

Anticipations of Users in the Digital Era

Library patrons in the digital era possess increasingly refined expectations, necessitating services that are rapid, easy, and available 24/7. Users no longer wish to depend exclusively on in-person visits to the library; they anticipate the ability to access catalogs, e-books, journals, and databases remotely at any time. Effortless search functionalities, prompt acquisition of desired materials, and intuitive navigation across digital platforms are now regarded as standard. Furthermore, contemporary consumers prioritize customized experiences, including automatic suggestions derived from reading history, digital bookings for sought-after resources, and prompt alerts for deadlines or new arrivals. The increased expectations signify overarching trends in digital service consumption, where convenience, speed, and precision are essential. To address these changing requirements, libraries must use automation and technology integration, ensuring that services stay pertinent, competitive, and in accordance with modern information-seeking behaviors (X. Zhang, 2022).

Library Automation: Fundamental Elements and Technologies

Library automation signifies the amalgamation of software, identification technologies, and sophisticated user interfaces to improve the administration and accessibility of library resources. It seeks to streamline conventional manual procedures such as cataloging, circulation, acquisitions, and user searches, while enhancing operational efficiency and user pleasure. Essential elements of library automation are Integrated Library Management Systems (ILMS), automation software such as Koha and SOUL, and identifying technologies including RFID and barcode systems. These instruments, in conjunction with Online Public Access Catalogs (OPACs), facilitate the seamless operation of both backend and user-facing services. By utilizing these technologies, libraries can facilitate expedited access to information, minimize human errors, accommodate extensive collections, and offer a more dynamic and tailored user experience (Tverytnykova et al., 2025).

Integrated Library Management Systems (ILMS)

Integrated Library Management Systems (ILMS) are sophisticated software systems intended to automate and consolidate diverse library functions inside a singular interface. They efficiently oversee cataloging, circulation, acquisitions, serials, and user accounts, thereby reducing the necessity for manual intervention. Prominent ILMS solutions encompass Koha and SOUL, both serving distinct operational environments. Koha, an open-source system, is highly regarded for its adaptability, community-oriented support, and comprehensive modules encompassing resource management, reporting, and user engagement. SOUL, created by the INFLIBNET Centre in India, is tailored for Indian academic libraries and facilitates multilingual interfaces. Both systems improve efficiency by consolidating several library activities, allowing real-time resource tracking, and providing comprehensive data for enhanced administrative decision-making (**I Gede Sujana Eka Putra & Ni Luh Putu Labasariyani, 2022**).

Automation Instruments and Software (Koha, SOUL, etc.)

Automation systems such as Koha and SOUL constitute the foundation of contemporary library administration. Koha is a web-based, open-source system that offers extensive modules for cataloging, circulation, acquisitions, and digital resource management. The open-source nature enables libraries to tailor functionality to local needs, interface with external databases, and facilitate e-resources. SOUL provides comparable functions but is specifically designed for Indian academic institutions, emphasizing regional needs such as multilingual support and adherence to INFLIBNET standards. Both solutions optimize repetitious library functions, minimize manual errors, and enhance user involvement by linking library services with internet platforms. These software solutions promote interoperability and integration with digital resources, ensuring libraries maintain relevance in the digital era (**Burney et al., 2019**).

The function of RFID, barcode systems, and OPAC

RFID (Radio Frequency Identification): RFID technology employs radio-frequency tags for the effective identification and tracking of books. It facilitates expedited check-in and check-out, computerized inventory oversight, and theft deterrence. RFID facilitates self-service alternatives, diminishing reliance on personnel for regular activities and enhancing circulation efficiency.

Barcode Systems: Barcodes continue to be an economical method for item identification. Every book is affixed with a barcode that is scanned during transactions and inventory assessments. Although not as sophisticated as RFID, barcodes offer dependable tracking and are extensively utilized because of their simplicity and cost-effectiveness.

OPAC (Online Public Access Catalog): OPAC serves as the interface enabling users to search for and identify resources online. It offers comprehensive details regarding each item, its availability status, and reservation alternatives. By granting users autonomy in locating and utilizing resources, OPAC markedly improves user experience and engagement, effectively connecting physical and digital library services (**I Gede Sujana Eka Putra & Ni Luh Putu Labasariyani, 2022**).

Technological Advancements in Intelligent Libraries

Intelligent libraries utilize sophisticated technology including RFID, the Internet of Things (IoT), cloud computing, and automated networking to provide cutting-edge services. Automated inventory management, real-time resource monitoring, and data-driven analytics streamline library operations and improve decision-making. Intelligent libraries can facilitate autonomous operations, tailored suggestions, and distant resource access. Cloud integration facilitates the effortless exchange of electronic resources among several branches or institutions, whereas IoT devices permit environmental monitoring and resource utilization assessment. These technologies collectively convert libraries into dynamic, data-driven, and user-focused institutions, adept at addressing modern information requirements with efficiency and innovation (Ibrahim, 2018).

OBJECTIVES

- To assess the impact of library automation systems on user satisfaction and service quality, focusing on accessibility, accuracy, and response time.
- To analyze the correlation between staff competency in using automated technologies and the overall performance of library operations in the Central Library, SKMU.

LITERATURE REVIEW

(P. Zhang et al., 2019) In the digital era, libraries have dynamic obstacles in overseeing extensive information, delivering efficient services, and guaranteeing a seamless user experience. The integration of automation and information technologies has profoundly altered traditional library systems. Artificial Intelligence (AI) is a disruptive technology capable of revolutionizing library operations and services. This study is to investigate and examine the function of Artificial Intelligence in library automation. The research will examine diverse uses of AI in libraries, including collection management, cataloging, user services, data analytics, and recommendation systems. The project will examine the advantages and obstacles libraries face in implementing AI-driven automation systems. A mixed-methods strategy will be utilized to perform the research. Surveys and interviews will be administered to librarians, library personnel, and users to assess their viewpoints and experiences on AI deployments. Additionally, case studies of libraries that have incorporated AI into their operations will be examined to derive insights into best practices and possible challenges. This research aims to elucidate how AI augments library automation and promotes the overall efficiency and efficacy of library services. The project will also identify potential ethical and privacy issues related to AI use in libraries and suggest guidelines for responsible AI utilization. This research will enhance the understanding of AI's role in library automation, contributing to the expanding knowledge of how technology may assist and modify information institutions in contemporary society. Libraries can utilize the research findings as a framework to make educated decisions about the introduction of AI solutions and to improve their services, eventually benefiting library patrons and the wider community.

(Ajani & Buraimo, 2022) This study sought to evaluate the state of library automation, the effects of automation on library services, and the obstacles faced by university libraries in sustaining automated systems for successful service delivery. This study's population comprises 697 library staff across nine university libraries in Southwest Nigeria. A standardized questionnaire (Appendix A) was utilized for data collection. A total of 335 questionnaires were disseminated, of which 309 were deemed useable, resulting in a response rate of 92.2%. The findings indicated

that library automation in university libraries in South West Nigeria was incomplete. Library automation enhances library services. Challenges encountered included insufficient technical support from the vendor, inadequate finance, the disposition of library personnel, and technophobia among staff.

(Ansar et al., 2021) The primary objective of this study was to examine the influence of automation on users' perceptions of library services at Government College University Faisalabad. The current study has three research objectives: (a) to evaluate users' perceptions of library automation at GCU Faisalabad, (b) to assess users' satisfaction with library services at GCU Faisalabad, and (c) to identify the issues encountered by users following the automation of library services at GCU Faisalabad. To achieve the objectives, the researcher employed a quantitative research methodology and created a questionnaire as the data gathering instrument. The convenience sampling method was employed to get data from the target population. A total of 16,570 students were enrolled in Bachelor's, Master's, M.Phil, and Ph.D. degree programs. The sample size was 391 pupils, representing 2.35% of the overall population. Of the 391 students, 375 completed the questionnaire. Consequently, the response rate was 95.9%. The findings indicated that over 75% of the participants favor and utilize automated library services and hybrid services. Additional respondents expressed their inclination to utilize automated services to conserve time. Furthermore, the findings of this study indicated that the participants possessed a comprehensive understanding of the automated services provided by GCU libraries. This research indicates that the majority of participants expressed satisfaction with the automated services provided by the GCU library.

(Okunlaya et al., 2022) This study examines the implementation of artificial intelligence (AI) in university libraries as a catalyst for digital transformation and innovative service provision. Although AI has the capacity to improve information retrieval, dissemination, and education, its implementation in university libraries is limited due to its exclusion from strategic initiatives. This study formulates the Artificial Intelligence Library Services Innovative Conceptual Framework (AI-LSICF) to bridge this gap, incorporating AI applications and functionalities inside a framework for service innovation and digital transformation. The research employs qualitative content analysis of current literature to identify avenues via which AI might facilitate value-added, customer-centric services in university libraries. AI-LSICF offers theoretical and practical insights, assisting scholars and academics in comprehending AI integration in library service innovation, while motivating librarians and information professionals to utilize technology for efficient, non-physical service delivery, especially pertinent during the fourth industrial revolution and unexpected disruptions like the COVID-19 pandemic. The framework emphasizes social and organizational ramifications by encouraging library professionals to improve existing business models, attain competitive advantage, and integrate AI into strategic planning, thereby ensuring libraries remain innovative, resilient, and responsive to changing educational demands.

(Asemi et al., 2021) This research examines literature about the implementation of intelligent systems in libraries, specifically concentrating on expert systems (ES), artificial intelligence (AI), and robotic librarians, emphasizing their capacity to improve library operations and services. The study employed descriptive and content review methodologies to critically assess publications published between 2007 and 2017, sourced from the Web of Science and Emerald databases, categorizing them into four domains: technology, service, user, and resource. The review indicates that intelligent systems have facilitated numerous library operations, encompassing technical services such

as the organization, storage, and retrieval of information resources, in addition to public services like reference aid and information desks. Expert systems effectively replicate the behavior of expert librarians, facilitating decision-making and management, while existing information systems exhibit significant potential for improvement through AI integration. Librarian robots are mostly designed for functions like book identification and shelving, with current research aimed at enhancing gripping, localization, and human-robot interaction. This study presents an innovative methodology by methodically contrasting material from both general and library-specific databases, highlighting the necessity for ongoing research into intelligent resources to enhance library intelligence and automation.

METHODOLOGY

Research Methodology

This chapter discusses the study's methods and measurements, as well as ethical concerns, data collection, and analysis. In the academic sense, research is a scholarly Endeavour. It has been said by researchers that research involves outlining and redefining problems, formulating hypotheses about potential solutions, collecting data, drawing conclusions, and then testing those conclusions to see if they are in line with the hypotheses that were developed.

Research Design

A study design is used to determine which approach is most appropriate for a certain collection of research objectives and factors. The research questions posed at the beginning of the project can be used to establish a systematic plan for data collection and analysis. Using a descriptive research design, this paper aims to A study of Library Automation and Its Impact on Services. There are many ways to conduct a descriptive study, including qualitative and quantitative ones. Researchers used both quantitative and qualitative methodologies in this study. It is a mixed-approach strategy. As part of the research process, it is essential to define the investigation's goals and objectives, as well as gather and analyze data from participants. The focus of this research is on the Library Automation and Its Impact on Services.

Research Approach

The technique of a study is the most important part of the project. Choosing the right research strategy is dependent on the objectives of the A study of the Library Automation and Its Impact on Services survey research techniques. The data will be collected through the use of questionnaires already developed. When participating in the survey it is possible for respondents to choose between structured and free questions.

Research variables

Variables are characteristics that are unique to each individual subject being studied. As an idea, it's one that can be measured.

Independent Variable

The researcher has direct control over this variable, which has an effect on the dependent variable. The independent variable in this research is:

- Automated library systems (use of OPAC, e-resources, digital catalogues, automated circulation, etc.)
- Staff competency in using automated technologies (training level, technical skills, experience)

Dependent Variable

To put it another way, the dependent variable is the one you're testing or measuring in an experiment. This study's dependent variable is:

- User satisfaction
- Service quality (measured by accessibility, accuracy, and response time).
- Performance of library operations (efficiency, accuracy, service speed, and error reduction)

Sample and sampling technique

Sampling is the process of selecting a subset of a larger group in order to make generalizations about Library Automation and Its Impact on Services. Probability sampling and non-probability sampling are the two types of sampling procedures. It is termed "probability sampling" because it involves drawing a random sample from a target library users at random. This type of sampling relies less on randomness when selecting a representative sample group. Deliberate sampling was required in order to perform a qualitative investigation into the Library Automation and Its Impact on Services.

Source of the Samples

A primary data set has been utilized in this study's analysis. The following list provides a quick overview:

Primary Data

The primary sources of primary data are all library users hence, the need for a web-based application (a form). Questionnaires have been used to collect primary data for this research project.

Secondary data

A secondary data set is a compilation of information derived from a primary set. There are a lot of records in this category. Secondary data can be found in a variety of places, including books and journals, the internet, and official government records.

Methods and Tools used

The data was collected through a survey. Surveys are common among many methods of collecting information from library users. All surveys characterize or explain the characteristics and attitudes of the library users through the use of a sample. the Library Automation and Its Impact on Services was assessed using a checklist. And here we have taken 250 respondents and those have been obtained through survey of many offices.

Area of study

The study would be conducted mainly in the Dumka, Jharkhand

Statistical Analysis

Data Analysis

Using raw data for data analysis, conclusions can be derived. A preliminary data analysis is necessary before beginning the data preparation process, which includes data entering, editing, and coding. Using software to analyze data quickly and accurately is essential for it to be helpful. The study's data was entered into a spreadsheet for analysis. Each respondent's responses were assigned an integer value before being placed into a spreadsheet. Using SPSS, we were able to analyze and model our data.

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The data in this study was analyzed using SPSS 22.0, a statistical software package. Analytical procedures such as ANOVA and percentage approaches were used to investigate the data that was regarded as the most significant. In order to have a clearer understanding of the study's most critical elements, percentage analysis was used. Comparing and analyzing data using percentages is a powerful technique. This is one of the simplest ways to get your point through to the audience you're targeting. When data is gathered, an overall picture of the situation can be painted. Use of graphs can improve the appeal of percentage analyses.

RESULT AND DISCUSSION

Table 1: Age

Age		
	Frequency	Percent
21-25 years	45	18.0
26-30 years	45	18.0
31-35 years	46	18.4
36-40 years	34	13.6
41-45 years	39	15.6
Above 46 years	41	16.4
Total	250	100.0

The age distribution of respondents reveals a rather equitable representation among various age groups, with the highest percentage in the 31–35 years category (18.4%), closely succeeded by the 21–25 years and 26–30 years groups, each comprising 18% of the total sample. Individuals over 46 years account for 16.4%, those aged 41–45 represent 15.6%, and the 36–40 years age group has the lowest participation at 13.6% of the total. This distribution indicates that the sample encompasses a varied array of age groups, with a minor predominance of respondents in the young to mid-adult categories, thereby reflecting a balanced amalgamation of viewpoints from both younger and older participants, which bolsters the comprehensiveness and reliability of the findings.

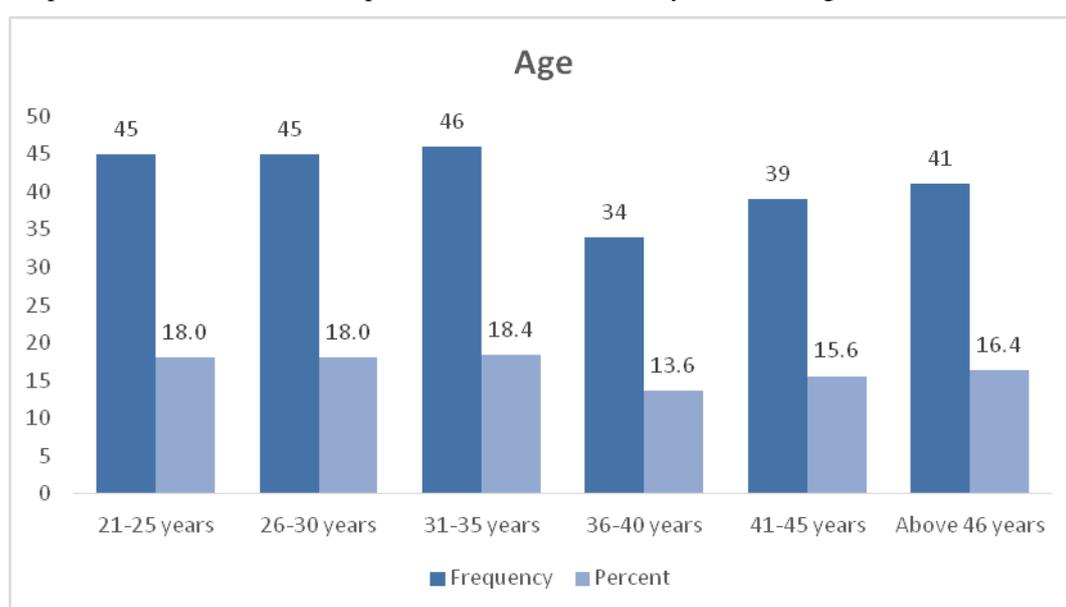


Figure 1: Age

Table 2: Gender

Gender		
	Frequency	Percent
Male	89	35.6
Female	82	32.8
Other / Prefer not to say	79	31.6
Total	250	100.0

The gender distribution of responses reveals a fairly balanced representation, with males comprising 35.6%, females 32.8%, and a notable 31.6% identifying as other or opting not to declare their gender. This nearly uniform distribution indicates an inclusive and diverse sample, guaranteeing that the viewpoints of various gender identities are sufficiently represented. This balanced demographic distribution enhances the study's robustness by reducing gender bias and facilitating a more thorough comprehension of the research findings across diverse gender groupings.

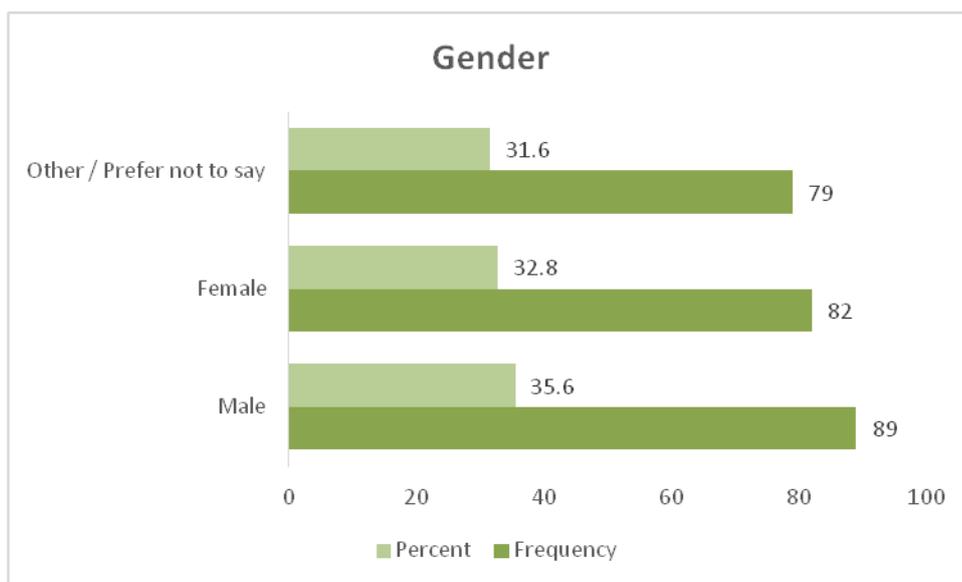


Figure 2: Gender

Table 3: Educational qualification

Educational qualification		
	Frequency	Percent
Diploma	67	26.8
Graduate	71	28.4
Postgraduate	58	23.2
Others	54	21.6
Total	250	100.0

The distribution of educational credentials among respondents indicates that graduates constitute the largest segment at 28.4%, followed by diploma holders at 26.8% of the sample. Postgraduates constitute 23.2%, whereas 21.6% of respondents are classified as 'Others.'

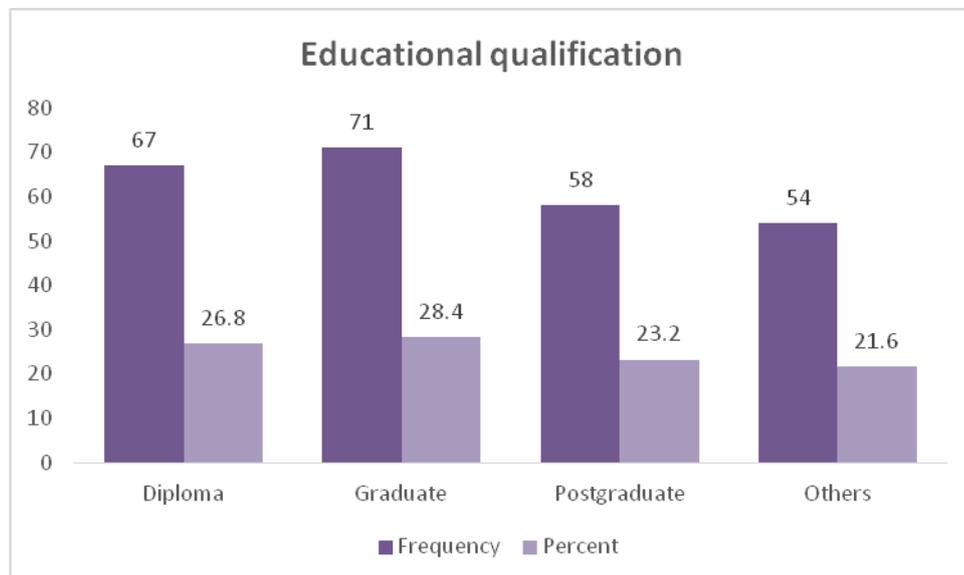


Figure 3: Educational qualification

Hypothesis

- There is a significant positive impact of library automation systems on user satisfaction and service quality, focusing on accessibility, accuracy, and response time.

Table 4: Regression analysis on hypothesis 1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.528 ^a	.279	.276	.863
a. Predictors: (Constant), Automated Library Systems				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.370	1	71.370	95.815	.000 ^b
	Residual	184.730	248	.745		
	Total	256.100	249			
a. Dependent Variable: User Satisfaction						
b. Predictors: (Constant), Automated Library Systems						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.531	.173		8.834	.000
	Automated Library Systems	.550	.056	.528	9.789	.000
a. Dependent Variable: User Satisfaction						

The model summary indicates that Automated Library Systems account for 27.9% of the variance in user satisfaction ($R^2 = 0.279$), signifying a moderate positive effect. The ANOVA results ($F = 95.815$, $p < 0.001$) indicate that the model is statistically significant. The coefficient results indicate that Automated Library Systems significantly enhance user happiness ($B = 0.550$, $p < 0.001$). This indicates that for each unit increment in automation, user happiness rises by 0.550 units.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.581 ^a	.337	.335	.922
a. Predictors: (Constant), Automated Library Systems				

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	107.384	1	107.384	126.231	.000 ^b
	Residual	210.972	248	.851		
	Total	318.356	249			
a. Dependent Variable: Service Quality						
b. Predictors: (Constant), Automated Library Systems						

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.502	.185		2.710	.007
	Automated Library Systems	.675	.060	.581	11.235	.000
a. Dependent Variable: Service Quality						

The model accounts for 33.7% of the variance in service quality ($R^2 = 0.337$), signifying a moderate positive impact of Automated Library Systems. The ANOVA results ($F = 126.231$, $p < 0.001$) indicate that the model is extremely significant. The coefficient for Automated Library Systems ($B = 0.675$, $p < 0.001$) indicates a significant positive impact on service quality. A one-unit improvement in automation results in a 0.675-unit enhancement in perceived service quality.

Hypothesis 2

- There is a significant positive correlation between staff competency in automation and the performance of library operations at the Central Library, SKMU.

Table 5: Correlations on hypothesis 2

Correlations			
		Staff Competency in Using Automated Technologies	Performance of Library Operations
Staff Competency in Using Automated Technologies	Pearson Correlation	1	.756**
	Sig. (2-tailed)		.000
	N	250	250
Performance of Library Operations	Pearson Correlation	.756**	1
	Sig. (2-tailed)	.000	
	N	250	250
**. Correlation is significant at the 0.01 level (2-tailed).			

The model accounts for 33.7% of the variance in service quality ($R^2 = 0.337$), signifying a moderate positive impact of Automated Library Systems. The ANOVA results ($F = 126.231, p < 0.001$) indicate that the model is extremely significant. The coefficient for Automated Library Systems ($B = 0.675, p < 0.001$) indicates a significant positive impact on service quality. A one-unit improvement in automation results in a 0.675-unit enhancement in perceived service quality.

DISCUSSION

The study's findings unequivocally indicate that the adoption of automated library technologies has profoundly altered the service delivery of the Central Library at SKMU, Dumka. The regression study demonstrates a robust positive correlation between automation and both user satisfaction and service quality. This indicates that automated solutions like OPAC, RFID, barcode systems, and e-resource integration have augmented accessibility, diminished waiting time, and increased accuracy in resource delivery. Individuals from various age groups and educational levels exhibited a positive reaction to automated systems, indicating that technology adoption aligns with the expectations of a heterogeneous user demographic. The even demographic distribution for age and gender enhances the validity of the findings. Furthermore, the report emphasizes that employee proficiency is essential for optimizing the advantages of automation. The robust link between staff expertise in digital technologies and library operational performance suggests that human-technology synergy is essential for effective functionality. Libraries cannot depend exclusively on automation unless personnel are sufficiently trained and proficient in managing digital interfaces. Users valued functionalities such as real-time catalog searches, automated circulation, and digital reservations, which eradicated manual delays and inaccuracies. The discourse highlights how automation has enhanced transparency in resource tracking and inventory management, hence facilitating improved decision-making and operational efficiency. The analysis indicates that automation constitutes not just a technological

enhancement but a fundamental revolution that fosters efficiency, precision, and user-oriented services in academic libraries.

CONCLUSION

The research concludes that library automation has markedly enhanced the quality and efficiency of services at the Central Library, SKMU. The incorporation of automated technologies has elevated consumer happiness by providing expedited access, precise information retrieval, and enhanced service interactions. Statistical research substantiates that automation enhances user satisfaction and service quality, hence rendering library services more dependable and responsive. The findings underscore the significance of staff proficiency, indicating that the efficacy of automated systems is primarily contingent upon the capability of library personnel to utilize digital technologies adeptly. The robust positive link between staff competency and library operational performance emphasizes the necessity for ongoing training and skill development. Automation has facilitated enhanced inventory management, efficient circulation, and clear record-keeping, hence minimizing operational delays and human errors. By aligning services with contemporary user expectations, the library has evolved from a traditional information center to a technology-enhanced knowledge hub. It is imperative to guarantee that infrastructure and human resources evolve concurrently to maintain the advantages of automation. The study confirms that automation is essential for libraries in the digital age and significantly enhances accessibility, accuracy, and service quality.

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