

Electronic Resource Management In Bangladeshi University Libraries: Trends, Challenges, And Strategic Solutions

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Abstract

Background: Electronic resource management (ERM) is very important for modern university libraries, but it is hard to put into practice in developing countries, notably Bangladesh. This study examines the present state of Electronic Resource Management (ERM) in Bangladeshi university libraries, seeking to discern significant trends, difficulties, and prospective strategic solutions.

Objective: This study contrasted practices in public and private institutions to examine ERM trends, challenges, and strategic solutions in Bangladeshi university libraries

Methods: A cross-sectional, descriptive approach was utilised, featuring a purposive sample of five university libraries, comprising three public and two private institutions. We used a mixed-methods approach to collect data from June to July 2025. This included a quantitative questionnaire survey for library workers, semi-structured interviews with senior librarians, and an examination of institutional resources. The gathered data underwent analysis using quantitative tabulation for survey outcomes and thematic classification for interview and document results.

Results: A cross-sectional, descriptive approach was utilised, featuring a purposive sample of five university libraries, comprising three public and two private institutions. We used a mixed-methods approach to collect data from June to July 2025. This included a quantitative questionnaire survey for library workers, semi-structured interviews with senior librarians, and an examination of institutional resources. The gathered data underwent analysis using quantitative tabulation for survey outcomes and thematic classification for interview and document results.

Conclusion: The results show that Bangladeshi university libraries have set up a basic ERM framework, but they are having a lot of trouble because of problems with money, infrastructure, and staff. To move to a more strategic and effective model, institutions need to focus on getting long-term funding, investing in staff training, and using data-driven initiatives to improve the administration of their electronic resource collections.

Keywords: Electronic Resource Management, University Libraries, Bangladesh, KOHA, DSpace, UGC Digital Library, Open Access, Usage Analytics

1. INTRODUCTION

Over the past 20 years, academic libraries all over the world have changed from collections that were mostly print to collections that were mostly electronic or hybrid. Electronic resource management (ERM) has become an important part of library operations (1,2). As part of ERM, which includes buying, licensing, accessing, analysing use, and preserving digital academic resources, libraries need to find a balance between technology, policy, and user needs. Libraries all around the world are slowly adding single sign-on systems, COUNTER-compliant consumption data, and integrated discovery services to make sure that everyone can easily access their services (3,4).

The Higher Education Quality Enhancement Project (HEQEP) started this change in Bangladesh in 2009. It led to the construction of the UGC Digital Library (UDL) and the Bangladesh Research and Education Network (BdREN). Through consortial licensing (5,6), these programs gave more than 80 universities access to a huge library of e-journals and e-books at lower pricing. The addition of open-source platforms like KOHA for integrated library systems and DSpace for institutional repositories made it even easier for both public and private colleges to modernise their workflows (7,8).

Even with these changes, a lot of research shows that Bangladesh still has a lot of problems that make ERM less effective. Limited finance, inconsistent membership renewals, and reliance on donor-funded programs have made it harder for things to stay the same (9). Also, the user experience is hampered by

slow internet speeds, poor ICT infrastructure, and a lack of reliable remote access options, especially for colleges that aren't in big cities (10,11). Librarians often don't have the specialised training they need to negotiate licenses, use analytics, and apply open access (OA) rules, which makes it harder for them to make the most of electronic collections (12, 13).

Users are quickly wanting more e-resources. University researchers and students are adopting electronic journals more and more to get the most up-to-date material and help with academic writing (14). However, studies indicate that the underutilisation of licensed resources arises when digital literacy deficiencies are coupled with an ignorance of available subscriptions (15,16). This contradiction of increasing access but limited effective use shows that Bangladesh needs better ERM policies.

The present study aims to enhance the evolving discourse by analysing ERM trends, challenges, and strategic solutions inside Bangladeshi university libraries. It seeks to provide an evidence-based perspective that connects campus-level activities (KOHA, DSpace, OA initiatives) with national-level initiatives (UDL, BdREN) through a survey of a limited sample of institutions in both the public and commercial sectors. To ensure sustainable, effective, and user-centred ERM in Bangladesh's higher education system, it is essential to understand these dynamics.

2. METHODS

2.1 Study Design

This study employed a cross-sectional descriptive approach to assess the status of electronic resource management (ERM) in university libraries in Bangladesh. The study, which examined a selective sample of five universities, was conducted over two months, from June to July 2025. Three public and two private institutions were selected for the sample to illustrate diversity in funding, governance, and resource allocation. This architecture makes it possible to look at both standard procedures and differences in ERM that are peculiar to each institution.

2.2 Study Setting and Sample

The study sample included five Bangladeshi universities purposively selected to reflect variations in funding structure, size, and governance model:

- Three public universities: Representing large, government-funded institutions with comparatively higher enrollment and reliance on the University Grants Commission (UGC) for e-resource support.
- Two private universities: Representing tuition-dependent institutions with relatively smaller student populations but greater flexibility in adopting digital systems.

The universities were spread out over the Dhaka and Chattogram divisions, which are where most colleges and universities are located. The sample as a whole included about 95,000 students and 3,000 faculty members. The libraries had different sizes of collections (print vs. digital), IT infrastructure, and staffing patterns, which made them good for looking at how different electronic resource management strategies work in Bangladesh.

2.3 Data Collection

Three different methods were used to collect data to make sure that the results were accurate and included both quantitative and qualitative aspects:

Questionnaire Survey

Library workers in charge of managing e-resources were given a structured questionnaire with 10 closed-ended and multiple-choice items. The questionnaire asked about important topics like:

- The kind and amount of e-resource subscriptions
- The systems and platforms that are used, like KOHA, DSpace, and discovery tools
- Sources of funding and a stable budget
- Problems with managing access, licensing, and usage data

Semi-Structured Interviews

One senior librarian or IT officer from each university took part in in-depth interviews. We did each interview in person or over the phone, and they all lasted between 20 and 30 minutes. The following subjects were spoken about in the interview:

- How institutions decide to buy e-resources
- Using the UGC Digital Library (UDL) and paying for your own subscriptions

- Ways for users to give comments and make requests
- The training, skills, and professional development needs of staff
- What people think are the shortcomings and strategic priorities for ERM. With permission, interviews were recorded, and field notes were added.

Document Review

We looked at institutional websites, library guides, and publications that were available to the public to make sure that the survey and interview results were correct. There was a lot of focus on:

- Lists of e-resources that you have signed up for
- Annual reports, policy papers, or manuals about library services
- Digital repository and ILS info pages

This stage made sure that the data was accurate and helped find differences between what was reported and what was said in public

2.4 Data Analysis

The collected data were subjected to a two-stage analysis process:

Quantitative Tabulation

We counted how many people answered each question and how many people answered each question in a certain way (e.g., how many libraries use KOHA, how many libraries gather COUNTER information).

Thematic Coding

We classified the interview transcripts and notes from the document review by hand and put them into four groups based on their themes:

- Access and Coverage: subscription methods, dependency on UDL, and the ability to access from outside the campus.
- Systems and Platforms: using KOHA, DSpace, discovery tools, and authentication systems.
- consumption and Analytics: gathering and reporting on consumption statistics, following COUNTER rules, and looking at demand trends.
- Challenges and Capacity: limitations in finances, infrastructure, and people resources.

We analyzed and combined the results from the three data sources using triangulation. This made the results more valid by showing both similarities and differences between institutions.

3. RESULTS

Below are the results of the questionnaire survey, semi-structured interviews, and document examination. The data, gathered from a random sample of five university libraries in Bangladesh, offers an overview of contemporary trends, difficulties, and strategic methodologies in electronic resource management (ERM).

3.1 Quantitative Findings: Survey Data

The survey conducted among library staff produced quantitative insights into ERM practices. The collected responses were organized into frequency counts and percentages, offering an overview of the systems and resources utilized across the participating institutions.

Table 1 shows the main differences between the public and private institutions in the sample, which have a big effect on how they handle electronic resource management (ERM). The results demonstrate a big difference in size: there are more than ten times as many students at public universities as there are at private ones. This mismatch affects things like how the funding is spent and how many people need help from users. The table also makes a big deal about a key distinction in how money is given. Public universities get a lot of money from the government and the UGC, which is why they always rely on the UGC Digital Library (UDL) for e-resources. On the other hand, private institutions are mostly funded by tuition fees and have more financial freedom. Half of them even have their own independent subscriptions.

Table 1: Characteristics of Participating University Libraries (N =5)

Characteristic	Public Universities (n=3)	Private Universities (n=2)	Total (N=5)
Average No. of Students	~ 35,000	~ 2,500	~ 21,000
Collection Size (Print)	Very Large	Moderate	Varies

IT Infrastructure	Centralized, often limited	Decentralized, flexible	Varies
Primary Funding Source	UGC and Government	Student Tuition Fees	Varies
Reliance on UDL	100%	50%	80%

Table 2 shows a quantitative picture of the ERM landscape, showing two very different realities. The data shows that fundamental systems are being used a lot on one side. All libraries use an Integrated Library System (ILS), and 80% of them choose KOHA, which is a popular open-source platform. This shows that you have a good understanding of digital infrastructure. A large majority of libraries also use a proxy server for off-campus access (80%) and keep a digital repository (80%), which shows that they care about providing important services and keeping local content safe.

But the table also shows that there are big differences in more advanced and strategic approaches. Only 40% of libraries use a discovery tool, and only 60% keep track of usage statistics. Only 20% of libraries have a full-time ERM staff person. This means that even when the technologies needed for access are in place, institutions don't have the sophisticated tools, knowledge, or specialised staff they need to manage, analyse, and improve their e-resource collections in a data-driven approach.

Table 2: Key Electronic Resource Management (ERM) Practices and Systems

ERM Practice	Number of Libraries (n=5)	Percentage (%)
Subscription to UGC Digital Library (UDL)	5	100%
Independent E-resource Subscriptions	3	60%
Use of an Integrated Library System (ILS)	5	100%
- <i>Specific ILS: KOHA</i>	4	80%
Use of a Digital Repository (e.g., DSpace)	4	80%
Use of a Discovery Tool	2	40%
Use of a Proxy Server for Off-campus Access	4	80%
Collect Usage Statistics (e.g., COUNTER)	3	60%
Regular Staff Training on ERM	2	40%
Dedicated ERM Staff Member	1	20%

3.2 Thematic Findings: Qualitative Analysis

Thematic categorization of interview transcripts and document review notes yielded enhanced understanding of the qualitative dimensions of ERM. Four significant issues came up, showing how intricate and important the university libraries' strategies are.

Access and Coverage

The UGC Digital Library (UDL) is the principal place where all five universities get their electronic resources. Librarians said that UDL has a good basic collection, but it often doesn't include the specialised articles and databases that are needed for more advanced research. A librarian from a public university said, "UDL is a good place to start, but our science departments need more specific resources that aren't free." Private universities were more likely to add their own subscriptions to UDL because they have more flexible funding. The key problem that was brought up was making sure that off-campus access went well. Problems included cumbersome login processes and unreliable proxy server connections.

Systems and Platforms

The study showed that open-source platforms were quite important. KOHA became the most popular Integrated Library System (ILS), with four out of five libraries using it to keep track of both print and digital holdings. Many institutions also used DSpace as a digital repository for theses and research papers, which shows that they were clearly trying to digitise local content. However, budget limits and a lack of technical know-how needed for implementation and maintenance mean that advanced technologies like

discovery services are still not widely used. Librarians said they needed more integrated systems that would make it easier to get to all of the library's resources.

Usage and Analytics

Only a small number of libraries (60%) said they always collected usage data to help them make choices about their ERM. People generally said that the process was manual and not very regular. Most people knew that COUNTER-compliant data was useful, but they didn't have the right tools or skilled staff to analyse it well. Interviews showed that faculty requests are still the key reason for additional subscriptions, rather than looking at statistics to see what people want. A senior librarian said, "We know how important usage data is, but we don't have the tools or resources to use it right. We buy things based on what faculty members ask for."

Challenges and Capacity

Several major problems were found, with money problems being the worst one. All libraries said that their budgets for digital resources were either not growing or getting smaller, which made it hard to keep current subscriptions, let alone add new ones. Infrastructure problems, such as poor internet connections and intermittent power supply, were also pointed out as big problems that made it hard to make sure everyone had access all the time. A major problem was that ERM didn't have any dedicated workers who had been trained professionally. Staff training was sometimes informal or nonexistent, which led to gaps in their ability to manage licenses, analytics, and new technologies. People thought that these problems with human resources made it very hard to create a strategic and long-lasting ERM framework.

4. DISCUSSION

This study's results show that university libraries in Bangladesh have made a lot of progress in building a basic system for managing electronic resources. However, they face a lot of big, connected problems when it comes to moving to a more strategic and user-focused model. All five institutions agree that their strong reliance on the UGC Digital Library (UDL) is a key part of their e-resource access strategy (3,4). But as interviewees showed, this dependence also has its downsides. The UDL's narrow breadth generally doesn't meet the specific objectives of academic and research domains, notably in science and technology (7-9). This shows that colleges need to add independent subscriptions to UDL access right once. This is currently easier for private universities that get money from tuition fees.

The choice to use open-source systems like KOHA and DSpace a lot is probably based on budgetary reasons. These platforms provide extensive capabilities for the administration of collections and institutional repositories at minimum expenses. But the fact that few people are using more advanced technologies, like discovery services, shows that there is a bigger problem with limited budgets and a lack of technical expertise needed to set up and keep these systems running (10).

A significant finding from this study is the considerable disparity between the accessibility of e-resources and their effective administration. It's worrying that just 60% of libraries regularly collect usage data and only 20% have staff who work on ERM. Without complete usage data and skilled staff to analyse it, choices about purchases and renewals are often based on anecdotal evidence or requests from faculty members who respond to them, rather than proactive, data-driven assessments of user needs and resource value (12,13). Without a strategic plan, resources may not be used as well as they could be, and collections may not be used as much as they could be.

The problems that have been found are complicated and affect the whole system. Qualitative data shows that the main problems are lack of money, problems with infrastructure, and not enough people to do the work. Budgets that are going down or staying the same make it hard to expand collections. Access is not always possible because of unreliable internet and electricity systems. The most critical concern is that library staff generally don't have the skills they need to deal with complicated licensing, do usage analysis, or effectively market e-resources (14) because they don't have professional training or specialised ERM roles. These limits in human resources were seen as a fundamental obstacle to creating a strategic and long-term ERM framework.

4.1 Policy Implications and Strategic Directions

The results of this study have important effects on policy at both the national and institutional levels. The UGC's heavy reliance on the UDL means that there has to be more discussion on policy within the

UGC to make sure that the collective digital library fulfils the different research demands of all academic institutions. In turn, universities should make clear strategic plans for ERM that fit with their broader academic goals. This means asking for secure, separate budgets for e-resources and making official career routes for librarians who work in ERM (15). A more centralised and coordinated approach to acquiring and managing digital resources at the national level could use bulk buying power and shared knowledge to make the most of limited resources at all of the country's colleges and universities.

4.2 Limitations and Future Research

This study is descriptive and relies on a small, purposeful sample, which presents inherent limitations. The findings provide significant insights; nevertheless, they may not be generalisable to all university libraries in Bangladesh due to the restricted number and unique selection criteria of the participating institutions (16). The cross-sectional design offers merely a temporal snapshot of ERM practices, inhibiting the examination of trends and temporal variations. Future research must rectify these shortcomings by executing a more extensive investigation with a broader and randomly selected sample of universities. Longitudinal studies would also be useful to follow how ERM practices change over time and see how new technologies and policies affect them. Moreover, comparative research analysing particular ERM components, such as the efficacy of diverse user training methodologies or the return on investment for standalone subscriptions, may yield more comprehensive insights.

5. CONCLUSION

5.1 Summary of Findings

This study provides a comprehensive analysis of electronic resource management within a targeted sample of university libraries in Bangladesh. The findings indicate that these schools have made considerable progress in implementing fundamental ERM systems, characterised by a robust dependence on the UGC Digital Library, extensive utilisation of open-source platforms such as KOHA, and initiatives to facilitate off-campus access. The investigation also uncovered significant barriers that impede advancement towards a more strategic and efficient ERM approach. Some of these problems are serious financial and infrastructure problems, a serious shortage of skills among staff, and a big gap in data-driven decision-making, especially when it comes to consumption statistics. The study finds that the basic building blocks for accessing digital resources are already in place, but a strategic shift is needed to solve these ongoing problems so that electronic resources may be fully used for research and academic purposes.

5.2 Recommendations

Based on the findings, several strategic interventions are recommended to strengthen ERM in Bangladeshi universities:

1. **Establish Comprehensive ERM Policies:** Universities should make sure their ERM policies are in conformity with national recommendations. Clear frameworks will assist public and commercial organizations use the same rules for acquiring, licensing, and accessing electronic resources. This will make it easier to handle these resources in a consistent and long-lasting way.
2. **Implement Identity-Based Access Systems:** Using secure access tools like single sign-on (SSO) or virtual private networks (VPNs) through the Bangladesh Research and Education Network (BdREN) will make it easier to get to resources from outside the campus. This will make it easier for students and researchers to use, especially in remote places, and will make it less need to rely on IP-based limits.
3. **Enhance Staff Training and Capacity Building:** Library staff should get frequent training in how to use analytics, negotiate licenses, and follow open access rules. To make the best use of resources, monitor usage trends effectively, and provide high-quality user support, it is important to strengthen the capacity of human resources.
4. **Secure Sustainable Funding Models:** To make sure that access continues, universities should look at multi-year subscription agreements, consortia purchasing, and mixed funding techniques. If you organize your finances well, you won't have to worry about budget cuts or relying on short-term donor assistance.

In conclusion, the results show that even while big steps have been taken to embrace ERM systems and make digital access available, there are still big gaps in infrastructure, analytics, training, and policy that

keep electronic resources from reaching their full potential. To make ERM at Bangladeshi universities more efficient, fair, and successful, it is important to make strategic changes to policy, access, capacity building, and financial sustainability.

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