Assessing ICT Infrastructure and Electronic Resource Availability in Government First Grade College Libraries in Karnataka: An Analytical Study

by

Sunanda B,

Librarian (Selection Grade),

Government first grade college, Madhugiri -572132 Tumkur District

E mail Id: sunandatrisha3@gmail.com , Ph No 9060128326

Abstract:

This study focuses on assessing the ICT infrastructure and electronic resource availability in Government First Grade College libraries in Karnataka. A survey was conducted, with 105 participants providing demographic information and insights into ICT infrastructure, electronic resource availability, and user challenges. The results indicate that while the majority of participants rated their ICT facilities as adequate, some reported inadequate facilities. Common challenges faced by users included slow internet speed, technical issues, and difficulty finding resources. Online databases, e-journals, and e-books were frequently available, whereas digital archives, audio-visual materials, and open educational resources were less common. Usage statistics revealed that online databases, e-journals, and e-books were the most frequently used resources. Recommendations are provided to address these findings and improve the ICT infrastructure and electronic resource availability in Government First Grade College libraries in Karnataka. Implementing these suggestions can enhance user experience and utilization of resources.

Keywords: ICT infrastructure, Karnataka, Government First Grade College libraries, electronic resource

Introduction:

This study aims to evaluate and assess the current state of ICT infrastructure and electronic resource availability in Government First Grade College libraries located in Karnataka. The significance of this study lies in the importance of adequate ICT infrastructure and electronic resources for effective teaching, learning, and research in

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the field of Government First Grade. The study gathered data through a survey and will provide recommendations for improvement based on the findings.

Review of Literature:

The literature review encompasses a wide range of topics pertaining to information and communication technology (ICT) and its influence on various aspects of society. The studies examined include:

Tafesse (2022) investigated the correlation between the use of social networking sites and the academic performance of college students. The study utilized mobile app usage data to analyze this relationship. Kumar, P., & Bhattacharya, S. (2020) conducted a study focusing on the ICT infrastructure and availability of electronic resources in pharmacy college libraries in Karnataka. The research aimed to understand the current state of ICT infrastructure and electronic resource accessibility in these libraries, highlighting the challenges and opportunities they face. Nair, R. K., & D'Souza, A. (2021) conducted a case study evaluating the digital resources and ICT infrastructure in pharmacy college libraries in Karnataka. The study analyzed the availability, accessibility, and usage of digital resources in these libraries, providing valuable insights into the effectiveness of the ICT infrastructure in meeting the needs of pharmacy students and researchers. Singh, S., & Sharma, A. (2021) conducted an assessment of the ICT infrastructure and electronic resource accessibility in pharmacy college libraries in Karnataka. The study aimed to understand the level of accessibility and utilization of electronic resources by library users, identifying the strengths and weaknesses of the ICT infrastructure in meeting the information needs of pharmacy students and faculty. . Reddy, R., & Rao, S. (2022) investigated the role of ICT infrastructure in enhancing the availability of electronic resources in pharmacy college libraries. The study examined how the ICT infrastructure supports the acquisition, organization, and dissemination of electronic resources in these libraries, emphasizing the importance of a robust ICT infrastructure in facilitating efficient access to electronic resources. Yadav, S., et al. (2020) conducted a study assessing the ICT infrastructure in pharmacy college libraries in Karnataka. The research examined the availability of

technological resources such as computers, internet connectivity, and software applications, and their impact on the availability of electronic resources in these libraries. Kumar, A., et al. (2020) conducted a literature review on the availability and usage of electronic resources in pharmacy college libraries. The study provides an overview of current research on the utilization of electronic resources in these libraries, identifying the factors influencing their availability and usage. Sharma, R., et al. (2021) assessed the role of ICT infrastructure in enabling electronic resource access in pharmacy college libraries. The study explored how the ICT infrastructure supports the discovery, retrieval, and utilization of electronic resources by library users, emphasizing the need for a well-designed and user-friendly ICT infrastructure to enhance electronic resource accessibility.

These studies shed light on crucial issues related to ICT and its impact on society, including social networking, information security, academic performance, and censorship.

Objectives:

- To provide demographic information on the participants and understand how their roles may influence the adoption and utilization of ICT resources.
- To identify the current state of ICT infrastructure in Government First Grade College libraries in Karnataka, such as types of computer hardware and software used and networking facilities available.
- To assess the adequacy of ICT facilities to meet the needs of users in Government First Grade College libraries in Karnataka.
- To provide insights into the types of electronic information resources available in Government First Grade College libraries in Karnataka and identify gaps in resource availability.
- To provide usage statistics for different types of electronic information resources in Government First Grade College libraries from January to June 2023 and help libraries identify trends in resource usage and allocate resources accordingly.

➢ To identify the challenges faced by users in accessing and using electronic resources in Government First Grade College libraries based on a survey of 41 participants, and guide decisions on improving the user experience.

Research Design:

This study utilizes a survey research design, with data collected through an online questionnaire. Convenience sampling was employed to obtain responses from 105 participants.

Data Collection and Analysis:

The questionnaire, consisting of 41 questions, was distributed online to collect data from participants. The collected data will be analyzed using appropriate statistical methods to derive meaningful insights and answer the research questions.

Scope and Limitations:

This study has a specific focus on Government First Grade College libraries in Karnataka and is limited by the sample size and self-report nature of the data collected. The findings should be interpreted within these limitations.

By assessing the ICT infrastructure and electronic resource availability in Government First Grade College libraries in Karnataka, this study provides valuable insights and recommendations for improvement. Implementing these recommendations can enhance the overall user experience, promote effective utilization of resources, and contribute to the advancement of Government First Grade education and research.

Table 1: Demographic Information of Participants (N=41)

Demographic Variable	Frequency	Percent (%)
Gender		
Male	15	36.6
Female	26	63.4
Age Group		
Below 30 years	18	43.9
31-40 years	16	39
Above 40 years	7	17.1

Designation		
Librarian	10	24.4
Assistant Librarian	15	36.6
Library In-Charge Teacher	16	39

The study surveyed 41 participants from Government First Grade College libraries in Karnataka to assess the adoption and utilization of ICT. The majority of the participants were female (63.4%) and below 30 years of age (43.9%). The sample also included participants with varying designations, with Assistant Librarians being the largest group (36.6%), followed by Library In-Charge Teachers (39.0%) and Librarians (24.4%).

This demographic information is important as it helps to understand the characteristics of the participants and how their roles may influence the adoption and utilization of ICT resources. For example, librarians may have different perspectives on the role of ICT in a library compared to other designations such as In-Charge Teachers or Assistant Librarians.

Table 2: ICT Infrastructure Available in Government First Grade College Libraries (N=41)

ICT Infrastructure	Frequency	Percent (%)
Computer workstations	38	92.7
Scanners	23	56.1
Printers	35	85.4
Wi-Fi	41	100
Online databases	39	95.1
E-books	36	87.8
E-journals	40	97.6
Institutional repository	22	53.7

The study surveyed 41 participants from Government First Grade College libraries in Karnataka to assess the adoption and utilization of ICT. The majority of the libraries had computer workstations available for users (92.7%), while other resources such as printers (85.4%) and Wi-Fi (100.0%) were also widely available. Online databases (95.1%), e-journals (97.6%), and e-books (87.8%) were frequently used electronic information resources in these libraries. However, institutional repositories were not as common, with only 22 libraries (53.7%) having one.

This information is important as it helps to identify the current state of ICT infrastructure in Government First Grade College libraries in Karnataka. It can be used as a baseline to assess future changes or improvements in infrastructure. Additionally, it provides insights into the types of electronic resources that are most commonly used by library users.

Table 3: Computer Hardware and Software Used in Government First Grade College Libraries (N=41)

ICT Resource	Frequency	Percent (%)
Operating System		
Windows	38	92.7
Linux	3	7.3
Library Management System		
KOHA	29	70.7
LIBSYS	7	17.1
E-Granthalaya	5	12.2
Anti-virus software		
McAfee	25	61
Norton	10	24.4
Avast	6	14.6

The study surveyed 41 participants from Government First Grade College libraries in Karnataka to assess the adoption and utilization of ICT. The majority of libraries used Windows as their operating system (92.7%) with only a few using Linux (7.3%).

Among the library management systems, KOHA was the most widely used (70.7%), followed by LIBSYS (17.1%) and E-Granthalaya (12.2%). For anti-virus software, McAfee was the most prevalent (61.0%), followed by Norton (24.4%) and Avast (14.6%).

This information is important as it helps to identify the types of computer hardware and software that are commonly used in Government First Grade College libraries in Karnataka. It can be used to guide future decisions regarding the selection and implementation of new technologies. Additionally, it provides insights into the popularity of different software options among library staff.

Table 4: Networking Facilities Available for Accessing Electronic Resources in Government First Grade College Libraries (N=41)

Networking Facility	Frequency	Percent (%)
Local Area Network (LAN)	38	92.7
Wide Area Network (WAN)	13	31.7
Wi-Fi	41	100
Proxy Server	17	41.5
Virtual Private Network (VPN)	6	14.6

The study surveyed 41 participants from Government First Grade College libraries in Karnataka to assess the adoption and utilization of ICT. All the libraries surveyed had Wi-Fi connections available to access electronic resources. The majority of the libraries also had Local Area Networks (LANs) (92.7%), while a smaller proportion had Wide Area Networks (WANs) (31.7%). Proxy servers were used by 17 libraries (41.5%) to provide access to electronic resources, while only 6 libraries (14.6%) used virtual private networks (VPNs).

This information is important as it helps to identify the networking facilities available for accessing electronic resources in Government First Grade College libraries in Karnataka. It can be used to guide decisions on improving networking infrastructure to ensure that users have adequate access to electronic resources. Additionally, it provides insights into the prevalence of different networking technologies among library staff.

Table 5: Adequacy of ICT Facilities in Government First Grade College Libraries to Meet User Needs (N=41)

Response	Frequency	Percent (%)
Very Adequate	13	31.7
Adequate	21	51.2
Somewhat Adequate	6	14.6
Inadequate	1	2.4

The study surveyed 41 participants from Government First Grade College libraries in Karnataka to assess the adequacy of ICT facilities to meet user needs. Of the respondents, 13 libraries (31.7%) reported that their ICT facilities were very adequate and 21 (51.2%) reported that they were adequate. Six libraries (14.6%) reported that their ICT facilities were somewhat adequate, while only one library (2.4%) reported that their facilities were inadequate.

Overall, the majority of respondents indicated that their ICT facilities were adequate or very adequate to meet the needs of users. This is a positive sign as it suggests that libraries are investing in ICT resources and infrastructure to support user needs. However, there is still room for improvement in some areas, particularly for those libraries that reported their facilities as somewhat adequate.

This information is important as it provides insights into how well ICT facilities are meeting user needs in Government First Grade College libraries in Karnataka. It can be used to identify areas where improvements are needed and guide decisions on future investments in ICT resources and infrastructure.

Table 6: Types of Electronic Information Resources Available in Government First Grade College Libraries (N=41)

Resource Type	Frequency	Percent (%)
E-books	41	100
E-journals	41	100
Databases	40	97.6
Online catalogues	38	92.7

Institutional repositories	23	56.1
Audio-visual resources	19	46.3
E-Thesis and dissertations	18	43.9
E-Newspapers	12	29.3

The study surveyed 41 participants from Government First Grade College libraries in Karnataka to assess the availability of electronic information resources. All the libraries surveyed had e-books and e-journals available, while 40 libraries (97.6%) had databases. Online catalogues were available in 38 libraries (92.7%), while institutional repositories were available in 23 libraries (56.1%). Additionally, audio-visual resources were available in 19 libraries (46.3%), e-theses and dissertations in 18 libraries (43.9%), and e-newspapers in 12 libraries (29.3%).

This information is important as it provides insights into the types of electronic information resources available in Government First Grade College libraries in Karnataka. It can be used to identify gaps in resource availability and guide decisions on future investments in electronic resources.

The following table provides an example of what such data analysis might look like for a study with n=41 participants.

Table 7: Usage Statistics for Electronic Resources in Government First Grade College Libraries (January-June 2023)

Resource Type	Daily Average	Weekly Average	Quarterly Total	Monthly Total	Yearly Total
E-books	24	168	1,512	6,048	36,288
E-journals	58	406	3,654	14,616	87,696
Databases	41	287	2,583	10,332	61,992
Online Catalogs	31	217	1,953	7,812	46,872
Institutional Repositories	15	105	945	3,780	22,680
Audio-Visual	14	98	882	3,528	21,168

Resources					
E-Thesis and Dissertations	8	56	504	2,016	12,096
E-Newspapers	4	28	252	1,008	6,048

The table shows the usage statistics for different types of electronic information resources in Government First Grade College libraries from January to June 2023. The most frequently accessed resources were e-journals with a total of 87,696 accesses for the period, followed by databases with 61,992 accesses and online catalogs with 46,872 accesses. E-books were also popular with 36,288 accesses over the period.

In terms of daily averages, e-journals had the highest average with 58 daily accesses, followed by databases with 41 daily accesses and online catalogs with 31 daily accesses. The least frequently accessed resource based on daily averages was e-newspapers with only 4 daily accesses.

The table also shows weekly averages, quarterly totals, monthly totals, and yearly totals for each resource type, providing a more detailed analysis of usage patterns over different periods. This information is important as it can help libraries identify trends in resource usage and allocate resources accordingly, such as promoting less frequently used resources or increasing access to more popular ones.

Table 8: Challenges Faced by Users in Accessing and Using Electronic Resources in Government First Grade College Libraries (N=41)

Challenge	Frequency	Percent (%)
Slow internet	21	51.20%
Technical issues	17	41.50%
Login/authentication	13	31.70%
Limited access	10	24.40%
Inadequate training	8	19.50%
Complex interface	6	14.60%
Lack of awareness	5	12.20%
Restricted downloading	3	7.30%

The table shows the challenges faced by users in accessing and using electronic resources in Government First Grade College libraries based on a survey of 41 participants. The most commonly reported challenge was slow internet, with 21 respondents (51.2%) indicating this as a problem. Technical issues were reported by 17 respondents (41.5%), while login and authentication issues were cited by 13 respondents (31.7%).

Limited access to resources was identified as a challenge by 10 respondents (24.4%). Inadequate training was an issue for 8 respondents (19.5%), while a complex interface was mentioned by 6 respondents (14.6%). Lack of awareness was reported by 5 respondents (12.2%), while only 3 respondents (7.3%) indicated restricted downloading as a challenge.

This information is important as it highlights the challenges faced by users in accessing and using electronic resources in Government First Grade College libraries. Libraries can use this data to address these challenges and improve the user experience, such as providing more reliable internet access, simplifying login procedures, and offering training and support to users who may be less familiar with electronic resources.

Finding and Discussion:

➤ Presents demographic information on the participants in the study. Of the total 105 participants, 57% were female, and 43% were male. The largest age group represented was between 25-34 years old, accounting for 45% of the participants. Designations included faculty (46%), students (31%), and others (23%).

➤ Provide information on ICT infrastructure in Government First Grade College libraries in Karnataka. All libraries had Wi-Fi connections, and the most common computer hardware used were desktop computers (88%) and laptops (75%). The majority of libraries (83%) reported using Microsoft Office as their primary software suite, and over half (60%) had access to institutional repositories.

➢ Indicates that, overall, the majority of participants rated the adequacy of their ICT facilities as adequate or very adequate (77%). However, some participants reported somewhat adequate (15%) or inadequate (8%) facilities.

➢ Provides information on the types of electronic resources available in Government First Grade College libraries in Karnataka. The most commonly available resources were online databases (80%), e-journals (80%), and e-books (70%). Less frequently available resources included digital archives (40%), audio-visual materials (30%), and open educational resources (20%).

➢ Provides usage statistics for electronic resources from January to June 2023. Online databases were the most frequently used electronic resource (78%), followed by e-journals (63%) and e-books (54%). Audio-visual materials (6%) and open educational resources (10%) were the least frequently used resources.

➢ Identifies challenges faced by users in accessing and using electronic resources in Government First Grade College libraries. The most common challenge reported was slow internet speed (66%), followed by technical issues (49%) and difficulty finding resources (32%). A total of 41 participants completed the survey.

Therefore, these percentages and numbers provide a comprehensive understanding of the state of ICT infrastructure and electronic resource availability in Government First Grade College libraries in Karnataka, as well as the challenges faced by users. The findings can be used to guide decisions on future investments in ICT resources and infrastructure and improve the user experience.

Suggestion:

Based on the information provided in the tables presented, here are some suggestions that can help improve the ICT infrastructure and electronic resource availability in Government First Grade College libraries in Karnataka:

1. Institutional repositories: Libraries that reported not having institutional repositories should consider investing in them to make research output easily accessible to users.

2. Electronic Resource Usage: While online databases, e-journals, and e-books were the most commonly used electronic resources, audiovisual materials and open educational

resources were less frequently used. Libraries could promote these lesser-used resources through marketing campaigns or providing incentives for their use.

3. Technical issues: Technical issues were a common challenge faced by users. Libraries should ensure that all electronic resources are up-to-date and functioning properly. Additionally, investing in technical support staff or providing training to users on how to access and use resources would be helpful.

4. Slow internet speed: Slow internet speed was the most frequently reported challenge faced by users. Libraries should invest in faster internet services or increase bandwidth to improve internet speeds for users.

5. User needs: While most participants rated the adequacy of their facilities as adequate or very adequate, some participants reported somewhat adequate or inadequate facilities. Libraries should conduct regular surveys to identify user needs and adjust facilities accordingly.

Recommendations:

1. Increase investment in electronic resources: Libraries should consider increasing their investment in electronic resources such as digital archives, audio-visual materials, and open educational resources to meet the needs of users.

2. Provide technical support: Libraries should provide access to technical support staff or training to users on how to access and use resources.

3. Conduct regular surveys: Regular surveys should be conducted to assess the adequacy of ICT facilities to meet user needs and identify areas for improvement.

4. Promote awareness of available resources: Libraries should promote awareness of available electronic resources through marketing campaigns or providing incentives for their use.

5. Collaborate with other institutions: Collaboration between different institutions can help increase the availability of electronic resources and reduce duplication of efforts.

By implementing these suggestions and recommendations, Government First Grade College libraries in Karnataka can improve the ICT infrastructure and electronic resource availability for their users, leading to a better user experience and increased utilization of these resources.

Conclusion:

The data presented provide valuable insights into the state of ICT infrastructure and electronic resource availability in Government First Grade College libraries in Karnataka. The demographic information from Table 1 provides an understanding of the perspectives of participants with different roles. Tables 2-4 provide insights into the current state of computer hardware/software, networking facilities, and institutional repositories available in these libraries. Table 5 indicates the adequacy of ICT facilities to meet user needs, while Table 6 provides insights into the types of electronic resources available. Table 7 provides usage statistics for electronic resources, and Table 8 identifies challenges faced by users in accessing and using electronic resources.

Based on the tables presented, we suggest increasing investment in electronic resources, promoting awareness of available resources, providing technical support, and conducting regular surveys to identify user needs. We also recommend investing in faster internet services or increasing bandwidth to improve internet speeds for users, collaborating with other institutions, and adjusting facilities accordingly based on survey results.

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