Short Message Library Services in Indian Institutes of Technology Libraries in India

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Abstract

The main objective of the study is to evaluate the implementation of Short Message Service (SMS) in libraries of 23 Indian Institutes of Technology (IITs). The survey utilized a structured questionnaire, offered both in person and as a web form via Google Forms, to collect data from 23 LIS professionals. Divided into four sections, the questionnaire aimed to capture LIS professionals' experiences with SMS-based library services. The responses were analyzed using descriptive statistics and presented in five tables. The study indicates that IIT libraries in India are progressively adopting mobile SMS technology to meet user demands. More than half of the libraries surveyed (56.52%) offered SMS-based library services, while others were in the implementation stage. The main purposes for enhancing circulation services into "mobile-based document renewal/reservation" services include providing seamless and expedited renewals/reservations (73.90%), improving user experience (65.20%), and reducing queueing (60.90%). This research provides valuable insights for future enhancements in library services using mobile technology and suggestions for enhancing mobile SMS library services to stratifying user information needs instantly.

Keywords: Mobile Library Circulation Services, Mobile SMS Notifications, Short Message Service (SMS), IIT libraries

1.   Introduction

Mobile technology has revolutionized communication by enabling global information sharing and "providing new channels for accessing and disseminating information". (Bajpai & Madhusudhan, 2022). Short Message Service (SMS) is a text communication service within mobile communication systems, utilizing standardized protocols to exchange messages between two or more mobile devices. As one of the earliest and most widely used mobile features, SMS has allowed users to send text messages. Over time, it has become a global communication tool for personal, informational, and business purposes. SMS is a fast and effective way to send alerts and information, though it is limited to 160 alphanumeric characters. Today, short text messaging is accessible on nearly all mobile devices, including cell phones, smartphones, tablets, and iPads, allowing users to receive messages anytime and anywhere through mobile networks.

In libraries, SMS is a cost-effective and efficient method for providing proactive or on-demand updates to users. As the mobile world grows, libraries must adapt by offering SMS-based services to tech-savvy users who rely on mobile devices. By adopting SMS technology, libraries can facilitate instant, efficient communication, transitioning from email to SMS to avoid delays in reaching users. According to Ifigeneia (2015), SMS emerged as a new method of communication and promotion despite initial user confusion about its advertising potential. Mawhinney (2020) also highlights SMS as one of the most effective tools for real-time communication between librarians and library users.

Libraries have increasingly integrated innovative services to promptly meet users' information needs, with mobile SMS being one of the most utilized technologies for on-the-go services. Short message library services allow libraries to update registered users about various matters, such as membership registration confirmation, updates on checked-out or returned items, due date reminders, overdue fines, item reservations, room reservations, and notifications about library events and notices—all delivered directly to users' mobile phones. Walsh (2009) highlighted the minimal cost of adopting SMS for library activities. Modern libraries, including IIT libraries, use mobile SMS to rapidly communicate services such as circulation, reference, current awareness, new arrivals, and content alerts. SMS services in IIT libraries include notifications for library membership, operating hours, checkouts/returns, renewals, reservations, due date reminders, overdue fines, referral services, new arrivals, and other announcements, enhancing service usage and reducing overdue fines.

2. Significance of Study

The growth of mobile technology significantly enhances library services and information delivery on users' mobile phones. IIT libraries have adopted SMS technology to provide text messaging services, aligning with user needs and technological advancements. These services include membership registration, document checkouts/returns, renewals, reservations, due date reminders, overdue fines, new arrivals, and library notices. Adopting mobile SMS-enabled services improves accessibility, creating a network between users and libraries. This study explores the benefits and challenges of SMS-based services in IIT libraries.

3. Review of Related Literature

In the 21st century, mobile technology has transformed the way information is communicated, placing a greater emphasis on enhancing user experience in accessing information via mobile devices. Libraries have increasingly adopted mobile technologies to enhance their services. The review of the most relevant previous studies on mobile SMS-enabled services in libraries is as follows: Goh & Liew (2009) noted the potential of SMS-based technology to improve library services. Studies by Wang et al. (2010) and Brannon (2011) suggested the high utility of SMS features for faster user updates. Ruppel & Vecchione (2012) found SMS reference services effective for personalized communication, with sufficient response time for users and staff. Cassidy, Colmenares & Martinez (2014) observed SMS usage for circulation and current awareness services, such as checkouts, overdue alerts, book reservations, renewals, and new arrivals. Jetty, Bajpai, and Jhon (2014) investigated a cost-effective SMS-

based content alert system at Bundelkhand University Library in Jhansi and found that 79% of respondents were satisfied with the SMS alert services provided by the library. Maghribi, Osman & Zainal (2017) implemented a web-based system with SMS technology for instant notifications about book status and library events. Kubat (2017) highlighted budget constraints but recommended future SMS services in libraries.

Khanim & Ahmed (2018) explored the implementation of SMS technology to improve information services delivery, noting weaknesses in email notifications and user demand for SMS updates. Jakati & Kumar (2022) emphasized the benefits of mobile applications, particularly SMS notifications, in libraries. Guo et al. (2022) and Liu & Lewis (2023) reported the widespread use of mobile renewal and reservation services. Pandey and Madhusudhan (2023) found that "87.5% of respondents viewed CPD programs as effective in developing new skills, while 75% recognized their role in updating knowledge of emerging technologies, underscoring their significance in the library profession".

Margam & Singh (2024) explored the integration of mobile technology in first-generation IIT libraries and found that SMS technology was extensively used to meet users' information needs instantly. Gudi&Paradkar (2024) found moderate user satisfaction with SMS-based circulation services. Hranchak et al. (2024) noted the extensive use of SMS for library notifications.

These previous studies revealed that SMS-based library services positively impact the delivery of information and updates in the mobile era. Short message library services are highly effective in keeping users informed, enhancing interaction, and overcoming time barriers in libraries.

4.   Objectives of the Study

❖ To determine the status of SMS-enabled library services in IIT libraries in India.

❖ To identify the purposes of enhancing circulation services through SMS.

❖ To assess the benefits and challenges of SMS in the studied libraries.

5.   Scope of the Study

Currently, there are 23 Indian Institutes of Technology (IITs) located across the country, funded by the Ministry of Education, Government of India, and governed by the Indian Institute of Technology Act of 1961. This study covered all 23 IIT libraries in India

6.   Research Methodology

The *survey method* was employed using a structured questionnaire, which was also made available as a web form through Google Forms to collect information from 23 LIS Professionals including Librarians, Deputy Librarians, Assistant Librarians and Library & Information Officers. The questionnaire aimed to gather LIS professionals' experiences with SMS-based library services and was divided into four sections: (i) the current status of mobile SMS services, (ii) the use of SMS for enhancing circulation services like document renewal and reservation, (iii) the benefits of SMS notifications, and (iv) the challenges in implementing these services in libraries. The questionnaire was distributed both personally and online in February 2024, resulting in a 100% response rate with all questionnaires returned. The responses were analyzed using descriptive statistics and presented in five tables.

7.   Data Analysis and Interpretation

The collected data has been analysed and reported in the following tables. Some of the

findings of the present study are discussed below:

7.1 Demographic information

The respondents' demographic information, including gender, designation, and professional qualifications, is presented in Table 1.

Most respondents were male (87.00%) and worked as assistant librarians (56.52%),

Table 1: Demographic information of respondents (n=23)

Sl. No.	Particulars	Variables	No. of Respondents	Percentage (%)
01	Gender	Male	20	86.96
		Female	03	13.04
02	Designation	Librarian	02	08.69
		Deputy Librarian	03	13.04
		Assistant Librarian	13	56.52
		Library & Information Officer	05	21.74
03	Professional Qualifications	PhD / MPhil	11	47.83
		MLISs & NET/JRF	10	43.48
		MLISc	02	08.69
		PGDLAN	00	00.00

with 13.00% female respondents working as deputy librarians. Nearly half of the respondents (47.80%) held a PhD/M.Phil in Library and Information Science, followed by 43.50% with MLISs & NET/JRF, and 8.70% with an MLISc degree. Additionally, 21.74% of respondents were library and information officers, with 8.70% serving as librarians.

7.2 Status of mobile SMS library services

The current status of mobile SMS-enabled library services in twenty three IIT Libraries is presented in Table 2.

Table 2 indicates that more than half of

Table 2: Status of Mobile SMS library services (n=23)

Sl. No.	Response	No of Respondents	Percentage (%)
1.	Yes	13	56.52
2.	No	10	43.48
	Total	**23**	**100.00**

the libraries (56.52%) offered mobile SMS services, while 43.48% were still in the process of implementing these services. These results reveal that many studied libraries still need mobile SMS-enabled services and are in the progressive stage of implementing mobile technology to provide mobile SMS notifications on the user's mobile phone.

7.3 Mobile SMS services

Mobile technology plays a vital role in enhancing the library's services and 24x7 information accessibility globally over the mobile network. The study investigated whether IIT libraries have successfully implemented mobile technology to improve circulation services into mobile-based

document renewal and reservation services for their user. The purpose of enhancing circulation services toward "mobile-based document renewal and reservation services in studied libraries are presented in Table 3.

Table 3: Mobile SMS services (n=23)

Sl. No	Purposes	No of Responses	Percentage (%)
1.	Provide seamless and expedited document renewal and reservations	17	73.9
2.	24/7 experience for library patrons	17	73.9
3.	User empowerment	15	65.2
4.	Improved user experience	15	65.2
5.	Reduced queueing	14	60.9
6.	Real-time availability	14	60.9
7.	Decrease late returns of library materials	12	52.2
8.	Improve resource visibility	12	52.2
9.	Minimized overdue charges	11	47.8
10.	Reduce administrative burdens	09	39.1

Note: Multiple answers are allowed.

Table 3 presents the purposes of enhancing circulation services into mobile-based document renewal and reservation services. The top purposes include seamless and expedited renewals/reservations and providing a 24/7 user experience (73.90%). Other purposes included improved user experience (65.20%), reduced queueing (60.90%), decreased late returns and improved resource visibility (52.20%), minimized overdue charges (47.80%), and reduced administrative costs (39.10%).

7.4 Benefits of mobile SMS notifications

Mobile SMS technology is a boon for libraries to enhance their services and optimum usage of library collections and services by library users over the mobile network. The major benefits of mobile SMS notifications for library users are presented in Table 4.

Table 4: Benefits of mobile SMS notifications (n=23)

Sl. No	Benefits	No of Responses	Percentage (%)
1.	Offer instant alerts and reminders to users.	22	95.65
2.	Prompting users to return or renew materials on time.	20	87.00
3.	It is convenient for users to receive and view messages.	15	65.222
4.	Inform them that items they have reserved become available for pickup.	15	65.22
5.	User engagement in receiving timely and relevant information	13	56.52
6.	Mobile access to account information	13	56.52
7.	Personalized communication about upcoming library events	12	52.17
8.	Ensures that all library patrons can stay connected and informed (accessibility)	12	52.17
9.	Cost-effective communication	11	47.83
10.	Provide users' privacy and provide them with more control over their library interactions	10	43.48
11.	Communicate with users in case of emergency closures	09	39.13
12.	Survey and feedback collection	09	39.13

Note: Multiple answers are allowed.

Table 4 lists the benefits of mobile SMS notifications. Major benefits include instant alerts and reminders (95.65%), prompting timely returns or renewals (87.00%), and notifications about reserved items (65.22%). Other benefits included user engagement, mobile access to account information (56.52%), personalized communication about events (52.17%), cost-effective communication (47.83%), and user privacy (43.48%).

7.5 Challenges associated with mobile SMS library services

The study aimed to identify the challenges associated with the librarians offering mobile SMS-enabled library services in the IIT libraries. Librarians, as respondents, were asked what challenges they face in providing mobile SMS-enabled library services in the studied libraries. The results of the study are presented in Table 5. Table 5 outlines the challenges faced in implementing

Table 5: Challenges associated with mobile SMS library services (n=23)

Sl. No.	Challenges	No. of Responses	Percentage (%)
1.	Lack of Library Services Policy	11	47.83
2.	Technical expertise of Library staff	10	43.48
3.	Poor staff strength	06	26.09
4.	Rapid technology advancements	05	21.74
5.	Institute/Authority support	04	17.39
6.	Financial constraints	03	13.00
7.	User adoption and experience	03	13.00

Note: Multiple answers are allowed.

mobile SMS-enabled services, including lack of library policy (47.83%), technical expertise (43.48%), staff strength (26.09%), rapid technology advancements (21.74%), and financial constraints (13.00%).

8.   Findings and Discussion

The present study highlights the significant role of mobile technology in meeting the evolving demands of library users at the Indian Institutes of Technology (IIT). A comprehensive survey across all 23 IIT libraries revealed that 56.52% have adopted SMS-based services, while 43.48% are transitioning from web-based to mobile-based services. This progressive integration underscores the libraries' recognition of the need for faster and more efficient information dissemination in the *'information on the go'* environment.

The findings align with the study by Maghribi, Osman, and Zainal (2017), who demonstrated the efficacy of a web-based system enhanced by mobile SMS technology. Their implementation improved services such as book checkout/in, due date reminders, renewals, reservations, and notifications about library events and notices. These advancements illustrate the potential of mobile SMS technology to transform library services.

When examining the purposes behind enhancing circulation services through mobile SMS-based notifications, the study found that 73.90% of respondents cited seamless and expedited document renewal/reservations and a 24/7 experience for library patrons as the top reasons. Additionally, 65.20% highlighted user empowerment and improved user experience, while 60.90% noted the benefits of reduced queuing and real-time availability. These findings are consistent with Khanim & Ahmed (2018), who reported that 91% of

respondents used SMS notifications for due date reminders and overdue charges, and 56% used them for information on new arrivals.

The study also identified several key benefits of mobile SMS notifications for library users. 95.65% of respondents appreciated the instant alerts and reminders, followed by 87.00% who valued the prompts to return or renew materials on time. Additionally, 65.22% of respondents acknowledged the convenience of notifications about reserved items becoming available for pickup. Other notable benefits included user engagement through timely and relevant information (56.52%), mobile access to account information (56.52%), personalized communication about upcoming library events (52.17%), cost-effective communication (47.83%), and enhanced privacy and control over library interactions (43.48%). Only 39.13% recognized the utility of SMS for emergency closures and survey/feedback collection.The study by Jakati & Kumar (2022) corroborates these findings, emphasizing the advantages of mobile applications and SMS notifications in delivering instant information via text messaging over the mobile network.

The study, however, highlighted several challenges in the implementation and delivery of mobile SMS-enabled library services in IIT libraries. These challenges included the absence of a library policy (47.83%), insufficient technical expertise among staff (43.48%), limited staff numbers (26.09%), and financial constraints (13.00%). Similarly, Dei (2020) identified comparable issues, such as a lack of skilled staff, inadequate support from institutional authorities, the absence of a policy framework, and financial limitations in implementing mobile technologies and SMS-enabled services to meet users' information needs promptly. Overcoming these obstacles is essential for successfully integrating

mobile SMS services and enhancing the transition from web-based to mobile library services.

9. Conclusion

The study's findings reveal that IIT libraries have successfully implemented mobile SMS technology to provide text messaging services to their users. These libraries have adapted to the evolving information needs of their users and technological advancements by offering mobile-SMS-enabled services. This positions IIT libraries as high-tech institutions capable of meeting user information needs instantly over mobile networks. The mobile SMS-enabled services offered include library membership registration, document check out/in, document renewal and reservations, due date reminders, overdue fine notifications, announcements of new arrivals, and updates on library notices and events—all via text messaging.

Moreover, mobile technology supports the learning process by enhancing the accessibility of library resources, thus fostering a stronger network between users and libraries. The increasing use of mobile technologies in libraries enables quick updates and is a valuable resource for delivering library materials. The IIT libraries' experience implementing mobile SMS technology exemplifies a new paradigm in which mobile SMS-enabled services meet user information needs rapidly and efficiently.

However, mobile technologies play a vital role in facilitating the sharing and access of library resources and services through m-tech platforms. To meet the users' instant information needs, libraries should be equipped with modern technological infrastructures and mobile-enabled services, ensuring faster and more effective delivery of information directly to users' mobile devices.

The next step in this technological journey is the development of a Mobile Library App, which aims to provide global access to library resources and services on mobile devices. The research offers valuable suggestions for further enhancing library services, such as developing a mobile library app, implementing QR codes, transitioning from email alerts to mobile SMS notifications, and establishing robust ICT infrastructures. Additionally, conducting workshops and training programs to enhance the ICT skills competence of library staff in IIT libraries is recommended to provide efficient mobile library services to the users.

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