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Cost-effective content alert system using SMS: a case study at Bundelkhand University Library, Jhansi

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Introduction

The past decade has seen a tremendous growth in mobile telephony. Research carried out by Infonetics predicts that by 2013 the number of worldwide mobile subscribers will reach 5.9 billion. This growth is ascribed mainly to the anticipated increase in mobile communication in Africa, India and China. Innovations in handsets and modes of transmission have seen an expansion of mobile telephone services to all walks of life. McEwen observes that Net Gen and Millennial students are used to being always with and on their mobile phones (McEwen, 2012).

Among the various mobile applications, Short Message Service (SMS) is one of the most popular services, widely used all over the world. Research shows that SMS has been adopted by many users and has in fact become extremely popular among both younger and older generations of users. It is estimated that close to 3.3 trillion SMS have been sent over the mobile network since its inception. Though some notable studies on the usage of SMS have been done in the past, there is very little information available on the connection between SMS and library services, although it can be generally noted many library services can be successfully run through SMS services. Bundelkhand University, in Jhansi in the heartland of India, attempted to use SMS technology to implement a cost-effective content alert system. This paper is a product of that project, which looked into whether such a cost-effective system could be implemented using SMS technology, its implications for the
use of library resources and the acceptance of SMS services amongst library users.

**Content alerts**

An alert is defined as a form of communication that is important and time sensitive and that enables the recipient to be alert to issues which are related to them. In the library world an alert contains user-requested information or content. Alert messaging or alert notification is thus the delivery of alerts to recipients. Most sophisticated service providers embrace all capabilities, aggregating a multitude of reminders, notifications and alerts and adapting the delivery system to the specific context of the content being delivered, thus enabling users to create sophisticated scenarios of their own choosing.

In the academic world alerts contain the content or a reference to the content which the user has requested. Most academic publishers and database aggregators provide content alerts to their electronic databases as a value-added service which is relevant to the content and context. Commonly, these alerts are delivered to the user’s mailbox through e-mail systems. At Bundelkhand University an attempt was made to convert these e-mail alerts into a more time-sensitive SMS-based value-added service to library users, so as to maximize the usage of library resources.

It is worth observing that mobile applications for libraries are in their infancy. A number of Integrated Library Systems (ILS) have started to adopt mobile components for their OPACs; some ILS provide various other mobile-related services, especially alert messages using SMS. Libraries use SMS to interact with their members and to send alerts and notifications as a general value-added service. In developed countries libraries are using SMS to interact with their members and send alerts and notifications related to the library. Timothy Vollmer observes that mobile technology is changing the relationship between libraries and their users by expanding services and posing new challenges to readers’ privacy (Vollmer, 2010).

**Literature review**

There is growing interest within academic institutions in using mobile devices to support teaching and learning. A variety of mobile devices can
be used in mobile learning. The most ubiquitous and stable mobile technology, namely Short Message Service (SMS) or texting (Traxler, 2005) on mobile phones, has great potential in education. Over the last 10 years, many SMS projects for teaching and learning have been reported in the literature. Library services can be improved through SMS-based administrative support. Libraries can reach out and serve students ubiquitously by sending and receiving SMS-based library information.

There are a number of areas in library services where SMS-based messages can be helpful. Basic information alerts such as notices of book reservations, renewals and overdue reminders work well via this medium of communication. Walsh (2009) points to a number of pilot projects in the employment of SMS in the mainstream educational system.

One example is the SMS alert services offered by the Hong Kong Institute of Education (HKIED, 2012). Further library services can also be provided via SMS-based systems. For example, extended text messaging reference can text SMS messages to and receive answers from librarians, as reported in Hill, Madarash Hill and Sherman’s (2007) research at Southeastern Louisiana University, as a way to further enhance the quality of services provided by libraries in higher education.

SMS has become a popular way of communicating, particularly amongst the X and Y generations, who make up a large proportion of our university client base. As a form of communication it is mobile, asynchronous and in everybody’s hands. Although it is a widely used communication mechanism for mobile phone users, SMS is far more than just a technology for teenage chat. This is mainly because the technology is ubiquitous and customers can make calls anywhere to transact various kinds of business.

Custom-made technology such as Liblet (a Portalify product), AltaRama’s Reference by SMS or Mosio’s Text A Librarian allow clients to use SMS to send reference queries to the library; renew library books; pay library fines; and check the availability of library items. Liblet also enables the library to send due date reminders, recall and hold notices via SMS. Popular in Scandinavia, Liblet has been successfully implemented by Chalmers University of Technology Library in Sweden and by Helsinki University of Technology (Pasanen and Muhonen, 2002).
SMS technology

SMS technology evolved out of the Global System for Mobile Communications standard, an internationally accepted mobile phone network specification created by the European Telecommunications Standards Institute. The 3rd Generation Partnership Project maintains the SMS standard (Brown, 2007). SMS messages are handled via a short message service centre (SMSC) that the mobile provider maintains for the end devices. The SMSC can send SMS messages to the end device using a maximum payload of 140 octets. This defines the upper limit of an SMS message as 160 characters using 7-bit encoding. It is possible to specify other schemes such as 8-bit or 16-bit encoding, which decreases the maximum message length to 140 and 70 characters, respectively.

Text messaging is still the only universal mobile platform for the masses. It does not require special downloads, as it is already available on 98% of all mobile phones. As already noted, mobile networks allow text messages of up to 160 characters to be sent or received. The concatenation mechanism of SMS also permits messages of longer than 140 bytes. For a large operation to send and receive SMS messages, the messages can be sent to the mobile network operator using SMPP (Short Message Peer-to-peer Protocol). SMPP is an open industry standard messaging protocol that is designed to simplify the integration of data applications with wireless mobile networks. Most service providers offer e-mail to SMS gateways that receive e-mail messages and convert them into SMS to be sent to the mobile network.

Project overview

The project to set up an SMS service was comprised of the following steps:

■ Choose the databases for which content alerts are to be received.
■ Prepare a list of users with relevant subject fields for content harvesting.
■ Create a user profile from this list.
■ Create a separate mail ID for the project.
■ Start e-mail content alerts from the chosen databases.
■ On receipt of e-mail alerts send them to the users through SMS.
■ Conduct a post-project review amongst the participants.
Bundelkhand University subscribes to the UGC Infonet Digital Library Consortium, INFLIBNET Centre Ahmedabad. Almost all the databases were needed to cover the subjects that were present in the list of users, and so all the 19 databases were chosen. These were: American Chemical Society, American Institute of Physics, American Physical Society, Annual Reviews, Cambridge University Press, Economic and Political Weekly, Emerald, Indian Journals.com, Institute of Physics, ISID, JCCC, JSTOR, Oxford University Press, Project Muse, Royal Society of Chemistry, Springer Link, Taylor & Francis, Web of Science and Wiley-Blackwell.

- A profile database of 50 users was created as an MS Excel spreadsheet, with the users’ name, subject, subject keywords, e-mail ID and Mobile number (Figure 1.1).
- All of the users’ keywords were registered with the database(s) of the UGC Infonet Digital Library Consortium.

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**Figure 1.1** User profiles database
The Library created a separate e-mail ID (centrallibrarybu@yahoo.com) for receiving the content alerts from all of the database(s).

The Library hired a bulk SMS server (http://bulksms.tornadoweb solution.com) for sending SMS alerts at a very economical cost of Rs. 0.23/SMS (Figure 1.2).

![Bulk SMS server home page (reproduced with permission)](image)

Figure 1.2 Bulk SMS server home page (reproduced with permission)

On receipt of content alert messages from the database(s), these were transmitted to the specific users after cross-checking the profile database. This was done manually through the SMS gateway service, as shown in Figure 1.3.

Figure 1.4 illustrates an SMS alert received on a user's handset. A total of 600 SMS texts have been sent to users and the project is ongoing.

**Findings**

To gauge the usefulness of the content alert service using SMS, a survey
was conducted six months into the project. A well-tested questionnaire was distributed among 36 (faculty members) out of the total 50 users. Of these, 34 responded and 2 did not. This equates to feedback from 68% of users, which, keeping in view the 10% standard sampling, is a greater response.

**Figure 1.3** Onward transmission of SMS message, using the SMS gateway service (reproduced with permission)

**Figure 1.4** SMS alert received on a user’s handset
Close to 94% of respondents confirmed that they were well aware of the library’s SMS alert service, which shows that they use their electronic devices frequently. Close to 41% confirmed that they received the SMS alert service daily; 35% received the service once a week; and 24% received it monthly. Given the frequency with which the library receives SMS alerts from the publishers, the frequency with which users received SMS alerts was very impressive.

Purpose of using SMS alerts

With a high percentage of users confirming their awareness of SMS alerts and an above average number receiving SMS alerts on a daily basis, users were asked the purposes for which they were using SMS alerts. Close to 71% responded that they used the SMS service for teaching; 76% for research; followed by 9% for scholarly writing. This provides a picture of the various activities for which SMS alerts were used.

Frequency of getting desired documents through SMS alert service

Users were asked how frequently they received the desired documents. Close to 50% of users reported that they were receiving 1–5 times the desired information through the SMS, whereas only 5% of users were getting such service frequently, i.e. more than 15 times. The variations in frequency may be due to the frequency of different publications.

Satisfaction with SMS alert service

Close to 79% of users responded that they were satisfied with the Library’s SMS alert service, which reflects the success of the Library’s efforts. This question was important to the Library administration for the continuation and further enhancing of the project.

Requirement of SMS alerts for other services

In order to broaden the SMS service, users were asked what other alerts they would like. A new book titles alert service was requested by 82%
of users, and close to 20% requested circulation alerts. This has given a direction for the Library’s future enhancement of the SMS alert service.

**Decision on the continuation of the service**

When asked whether they wanted the project to continue, 97% of the surveyed users responded positively, which reflects the great acceptance of the SMS alert service. This has allowed the Library management to seek approval from the university administrators for the extension and continuation of the project at the university level.

**Comfortable service opinion**

Since SMS is a new medium of communication, the Library also wanted to know what kind of alerts the users were comfortable with. The majority of users (74%) were of the view that SMS alert service is more convenient than e-mail alerts, because in this mobile era everyone has a mobile phone to hand, whereas for e-mail access one has to have an internet connection.

**Cost-effectiveness of SMS content alert service vs print/traditional methods**

Previously, the content alert service was provided by the traditional method of circulating printed copies of alerts. The printing of a single page at Central Library, Bundelkhand University costs Rs. 0.75. Sending e-mails was considered to be cost-effective, but it proved not to be time-effective, as computer access for checking e-mail was limited to either the office or the home. The printing and messenger costs together come to around Rs. 2.00 or more for printed alerts, whereas the SMS alert service costs just Rs. 0.23 per alert per user. The service is very time saving, accurate and cost-effective.

**Conclusion**

The library initiated the SMS alert service to provide article alerts in their subject areas to the user community at Bundelkhand University. The system was found to be very useful for sending such alerts. A
survey among those users who are being provided with the service shows that the users are very much aware of the service and are also greatly convinced that it is very useful for their research and academic work. Most users are in favour of continuing the service. The majority of users support using the SMS alert service for new book arrivals, overdue book alerts, etc., which shows the usefulness of the service and its impact on users.

The results reflect a very positive response to the provision of library and information services. Mobile technology is a very economic communication medium in India and accessible to everyone. The SMS alert service is very cost-effective and is successful in reaching all users frequently or whenever required. The indications are that the service should be continued long term and that it will certainly increase reading interests among the user community.

Thus the mobile phone – now with significant computing power – is the primary internet connection – and the only one for a majority of the people across the world, providing information in a portable, well connected form at a relatively low price.

Notes


References


**Further reading**


