

Content Alert System Using Short Message Service (SMS): A Testimony of two Collaborative Projects in Africa and Asia

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Abstract

This paper is a case study of a semi-automated Content Alert System implemented at two university libraries; The university of Swaziland, Swaziland, Southern Africa and Bundelkhand University Library at Jhansi in India. Among the various mobile services, Short Message Service (SMS) is one of the most popular services widely used all over the world. The projects initiated at these libraries were intended to use the SMS service to provide an effective content alert system with very little cost impact on the libraries and at the same time aimed to increase the usage of library resources among the library patrons. The project ran in two phases. In the first phase a successful content alert system was tried and tested at the University of Swaziland with the help of Emerald Publishers. On successful completion of the project a prototype was developed. Using the prototype the second phase of the project was designed. In the second phase a similar content alert service was established with a larger user group and the alerts were generated from a number of publishers and SMSs were sent to the patrons. This paper describes in detail the background, the rationale, details of the project, the methods used and the findings of the projects.

Keywords

Short Message Service, SMS, Mobile Computing, Mobile library applications.

1. Introduction

The current academic environment is dominated by the use of advanced communication technologies. Such technologies are used extensively by students and staff at institutions of higher learning for accessing and disseminating information. A closer look at the gadgets around us, it is clear that we are becoming more comfortable with wireless communication systems; there is no doubt that the world is moving towards wireless communication. It's significant to note Yoo-Seong Song and Jong-Moon Lee's (2012) study of mobile device ownership among international business students, which shows clearly that close to 82% students owned smartphones. Olatokun (2006) observes that "Mobile phones have become an inseparable part of everyday life". Mobile devices have become more attractive mainly because of the availability of e-commerce related applications and the ease with which one can access desired information

from anywhere anytime. The real impetus for the mobile devices started with the arrival of web 2.0 applications especially the active participation of the user towards the web which has pushed the growth of mobile devices in academic institutions. When we look at the different gadgets used around us it's obvious to note most of them are wireless. "Everywhere we go we cannot help but notice the number of mobile devices being used; cell phones, ipods, ipads, android devices, MP3 players, GPS systems, blackberries and even mini-laptops". Jacobs (2009) observes that "mobile access is the remediation of wireless internet". Libraries which play an integral part in the dissemination of information has always tried to use the opportunities created by technologies to provide innovative services to its users. Starting from the advent of microprocessors in libraries each technological milestone has created new and innovative services in the library realms. The latest innovations are the use of mobile technologies in library services.

2. Growth of Mobile networks & services

The Global System of Mobile Communication (GSM) is widely spread and accessible throughout the world. The growth of mobile users over the years is phenomenal. The total number of mobile phone users in 2009 was estimated at over 4 billion (www.budde.com.au/research/global-mobile-subscriber-statistics.html), which represented more than 50% of the global population. This number has grown to 6 billion in the year 2012 (<http://www.digitalbuzzblog.com/infographic-2012-mobile-growth-statistics/>) which is around 87% of the world population. This phenomenal growth is attributed to the growth in mobile communication in India and Africa. It is also estimated that close to 1.2 billion people access internet through their mobile devices and over 300,000 apps have been developed for the mobile phones. The growth of mobile users saw the tremendous market growth of mobile companies and mobile gadgets. Compared to the bulky and large mobile phones of 1984 when Motorola first introduced its first mobile handset which weighed close to 2 pounds, to the most sleekest smartphones of today there has been a tremendous growth and development in the mobile telephone industry. It is anticipated that the launch of WiMax technology and the 4G LTE will bring a revolutionary change in mobile communication world.

3. Libraries and Mobile Technology

With the tremendous growth of mobile communication technology the expectation and interest among the students and staff to use mobile technology especially for library related applications are generally on the raise. An exhaustive literature search proves that in the past several years a number of mobile technology related projects for teaching and learning were reported in various literatures. Walsh (2009) in his text messaging article refers to a number of small-scale and pilot projects centered on mobile learning but most of them were experimental projects and have not yet been brought to the mainstream learning environment. Imhmed (2009) refers to Parent Alert System (PAS) via SMS for campus facilities which make use of Wireless Application Protocol (WAP) which also shows the pitfalls in the system that require in-depth investigation. Thinking specifically for libraries, Simon So observes that libraries can better reach out and serve students by sending and receiving SMS-based library information (So, S. 2009). It's a strong belief amongst librarians that there are a number of areas in library services which can be better

reached by SMS-based messages. Basic information alerts such as notices of book reservations, and renewals and overdue reminders are well suited for this communication medium.

Among the various mobile applications and services, one mobile service which has taken the library community by storm is SMS (Short Message Service). The SMS based alert service offered by the Hong Kong Institute of Education (HKIED 2012) is an important mobile based information service for libraries. Kroski (2012) in his article “On the move with Mobile web” refers to Library SMS Notification system used at the University of Illinois at Urbana-Champaign. This system provides notifications by text messaging to its users when in-depth reference service were solicited from the librarians. Hill and Sherman (2007) reports extended text messaging reference which can text SMS messages to and receive answers from librarians at Southeastern Louisiana University. Custom-made services such as AltaRama’s Reference by SMS Service (www.altarama.com) or Mosio’s Text a Librarian (www.mosio.com) are successful commercial applications which have provided excellent SMS based library services. For many libraries texting is used to complement the different other reference services currently offered by their institution such as in-person, email, phone and chat (Murray 2010).

4. SMS Technology an overview

Modern mobile telephony has produced a number of path breaking applications. But among the various applications and services, text messaging is still the universal platform for the masses. Among the various facilities available within the mobile communication system, SMS (Short Message Service) is the oldest and most used till date. This is basically because it does not require special downloads as it is already available on all the mobile phones (Pope et al., 2009). Infographic mobile growth statistics show that close to 8 trillion text messages were sent in 2011 alone. This shows the versatility of Short Message Services. SMS technology evolved out of the Global System for Mobile (GSM) communications standard, an internationally accepted cell phone network specification which the European Telecommunications Standards Institute created (Brown 2007). SMS messages are sent and received through a Short Message Service Center (SMSC) which acts as the transmitter of SMSs. The SMSC are capable of sending and receiving messages up to 140 characters. In most of the countries when an SMS is sent, it is sent to applications or services addressed to a short code instead of a standard phone number (Brown 2007).

5. Project background:

In 2009 when mobile telephony was beginning to make inroads into mainstream academic institutions a project was attempted at the University of Swaziland. The project was to experiment whether SMS technology can be effectively used to engage the library users into using the library services, especially the electronic resources and whether it is possible to effectively market the library services through SMS technology. Realizing the potential of such a project especially in an academic institution a strong partner was needed and Emerald Group Publishers responded our call and had a collaborative project at University of Swaziland library for a period of 2 months (March – April 2009). The project was very simple. Firstly we created a Web enabled SMS platform to send SMS messages, gathered a group of selected students, compiled SMS messages, mostly of Table of contents, article alerts, quotations and library alerts

and transmitted them to the students. On transmission we monitored the usage of our electronic resources.

Following the successful piloting of the Engage the users' project, a prototype of the SMS alert service was published in Emerald Journals (Anbu K and Mavuso 2012). Realizing that the pilot project was limited in a number of aspects a similar attempt was made at Bundelkhand University, in the heartland of India, where the authors have made an attempt to see whether a slightly modified version of the project with specific alert messages which are normally received from the publishers can be effectively sent to library patrons on an SMS based SDI simulation method. The major difference from the original pilot project is to move from the Emerald's Intouch platform to an independent platform. Further, the second project also wanted to see whether the prototype suggested in the pilot project can be successfully experimented if a larger user-base with heterogeneous clientele is enrolled. As an experiment a number of newer databases were also included to study the impact and problems faced in executing the project

6. Methodology Followed

The methodology to create an effective SMS based alert system comprised of the following stages:

- Creation of a web enabled SMS platform to send SMS messages
- Creation of users profiles for receiving SMS messages
- Assimilation of alerts for transmission
- Transmission of the assembled messages through the web enabled SMS platform.

6.1 Web enabled SMS Platform

The backbone of these projects are the creation of web enabled SMS Platforms. For sending continuous SMS messages it is important to have a web enabled SMS gateway so that it is easy to maintain and administer. A web enabled SMS gateway is an interface which can allow the sender to send SMS from a computer. Most of the SMS service providers offer web enabled SMS platform as an add-on service. For creating custom made web SMS platform there are a number of free and open source software and a few proprietary software available which can be made use of to create a web enabled SMS Platform. In these two projects two separate web enabled SMS platforms were experimented. In the first case Emerald's Intouch portal which makes use of Elgg, an open source software was used and in the second phase a commercial SMS vendor was used which provided the web based SMS gateway.

6.2 User Profile

An important component to the SMS based alert service is the creation and maintenance of the user profile. This is the reciprocal link between the information and the recipient. All the relevant information about the users are stored in this profile, which can be a database or table. A user profile consists of information about the user and his information needs. A prototype of a user profile for mobile based SDI service consists of the user identification number, contact number,

information needs which translates as keywords or subject and the frequency of information. For the first phase of the project a simple table was created with just the user name, contact details and the mobile number. This is because all the recipients were from the same group which had similar subject requests. During the second project the subject keywords were recorded against each user so that the relevant and specific information could be transmitted to them.

6.3 Assimilation of content alerts:

The main purpose of the project is to deliver the content alerts. Different techniques were employed to generate and assimilate the contents. In the case of the first project a straightforward table of content alerts from Emerald Management Database was generated since the target audience was from the faculty of Management and everyone had the same need. The expansion of the second project involved a heterogeneous group of users drawn out of different faculties with different subject needs; hence a different approach was employed. An SDI (Selective Dissemination of Information) method was used to ascertain the subject requirements of every user. Accordingly the user subject keywords from each users profile were picked. Since the users are drawn from different faculties, a need for assimilating information from different databases was also required. So email based content alerts for different databases and publishers were solicited from the different databases with the keywords supplied by the staff were entered. This has enabled the library to assimilate the content alerts.

6.4 Transmission of the content

On successful assimilation of alerts the final step is to transmit them as SMS messages to the users. The SMS gateway was used to transmit those messages from the portal which also acts as a permanent record of all the activities which will help to determine the usage and all the other administrative statistics. Once again the first phase of the project was simple because all the alerts were transmitted to all the users. In the case of the second project, each content alert was cross-checked against each users and accordingly the specific alert was sent to each user.

7. Findings

On Completion of the projects reviews was conducted to see the impact of the service amongst the library users. In the case of the first project with the University of Swaziland it was very easy to ascertain the results as the alerts were sent to a specific set of users and the alerts were picked from one specific database. The results showed that the number of download and the number of sessions the users engaged with the database increased dramatically during the time of the project. As the graphs in figure 1 illustrate the Full Text downloads were increased by almost 150% compared to that of the previous two months. On a year to year comparison the growth rate again showed an impressive 150% to that of the previous year for that period.

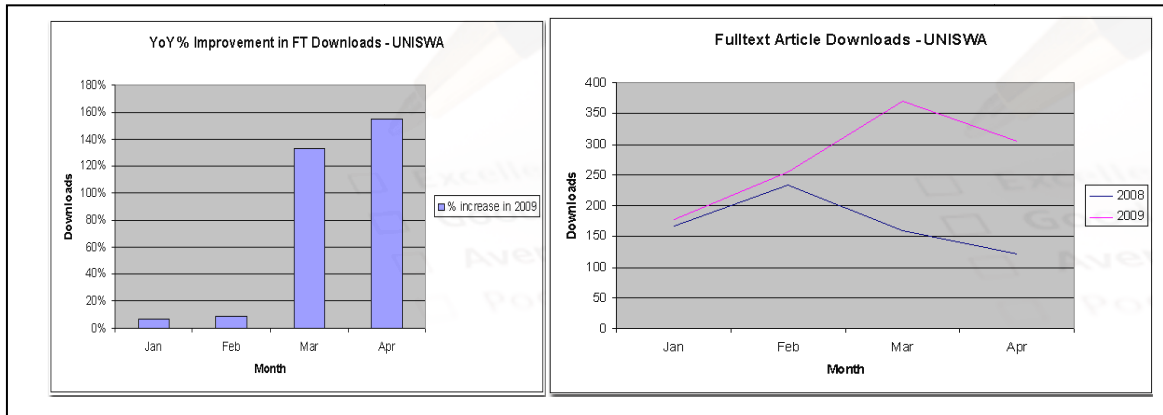


Fig. 1 Full Text Download month wise and year to year

Keeping all the complexities of the second project in mind another analysis of the service was carried out with reference to the number of downloads and access to databases. Once again the results showed a remarkable increase in the usage of the databases. A comparison of year to year downloads for five main databases subscribed by the university showed that there was a marked difference compared to the previous year. Notably the database American Chemical Society, showed an increase of close to 5 times more than that of the previous year, while the other databases also showed similar increase in the download. The graph and table below depict the increase of downloads during the project period.

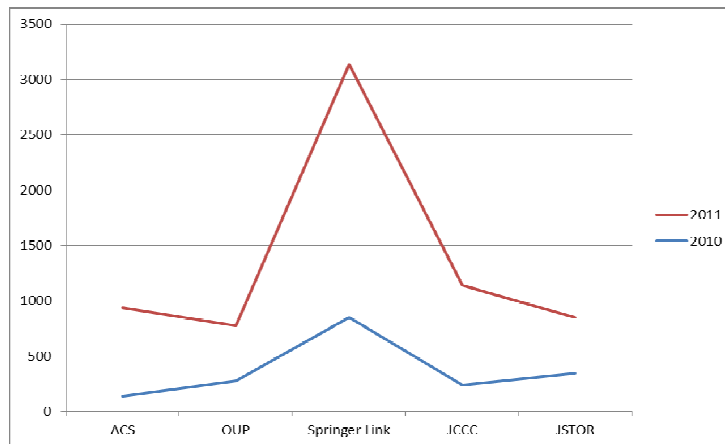


Fig. 2. Full Text Download year to year for five major databases

8. Lessons Learnt

From the two projects valuable lessons were learnt. Following points summarize the experiences and lessons learnt:

- **Marketing:** The important lesson we learnt in the whole project is that the library services can be better utilized, especially in the academic institutions once they are marketed properly to the users. Whether it is in Africa or in the rural India, the usage of electronic resources depends on how best they are marketed. In this case the unique SMS based alerts proved novel and informative for users to try and experiment the databases to download full text articles.
- **Scalability:** From the pilot project to the second phase of the project we learnt that once a proper prototype is formed it's easy to scale the project to the needs of different situations. In our case we had to port our project to an institution which had a user group with diverse disciplines. Our well documented prototypes helped to scale the project to different situations.
- **Collaboration:** Another important lesson is the value of collaboration and partnering. It's weird to see a project initiated in south of Africa could be ported into the heartland of India. This is made possible only by collaboration and partnering.
- **Consistent Results:** Another lesson we have learnt is that the results seems to be consistent with both the libraries irrespective of the clientele and the information sources. This speaks volumes about the psychology of users and the future of library marketing.
- **Use of current Technology:** It is also worth mentioning that there is a need to provide services through the technology which is current and used by the mass. This will bring lot of enthusiasm amongst the users.
- **Cost effectiveness:** Usage of mobile technology has also proved that this is very cost effective. The pilot project made use of the generous gift of Emerald Publishers for sending SMS messages. In the case of the second phase the bulk SMS were bought at a cheaper price.

8. Conclusion

The Information and Communication Technologies (ICT) has been spear heading a major revolution in the access and dissemination of information. There is no doubt that modern gadgets and applications drive the technological boom, but at the same time some age old services like SMS can also prove to be cost effective and at the same time provide the basic need of the libraries. The next generation of users is looking forward to these innovative service deliveries to drive their information quest. The underlying principle of the next generation of library services is to link – people, technology and information in the same context; to link using the choice of the users and in the mode of communication which is more suitable and available – telephone, SMS, IM, texting email name anything. With more experiments and projects in these areas and documenting them for other libraries to follow them will no doubt enhance the service delivery in libraries and prepare the users for an exciting experience.

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Biographies

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