QR (QUICK RESPONSE) CODES AND ACADEMIC LIBRARIES: REACHING TO MOBILE USERS A BEST PRACTICES

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ABSTRACT

The purpose of this paper is to compile and explain the mobile services developed by the PUMBA (Pune University Department of MBA) Library. The paper aims to show what is role of QR code to reaching mobile users of academic libraries for the effectiveness and potential to deliver library services to a new generation of students. The paper also highlights the initiative of QR code in library as well as other selective filed, various readers of QR Code, handset compatibility for scanning QR code, information about QR code generator & tips for making QR Code. Offering mobile services has amplified the physical use of the library in different ways and has improved the use of non used reading material using a technological reference. University of Pune, Department of Management Sciences (PUMBA) Library with cooperation with Jayakar Library has been implemented QR code to enhance mobile base library services in 9th January 2013. The intention is that to increase physical use of library. PUMBA Library has subscribed various management journals print as well as online. Library has websites to view online journals. Library has paste QR code on print journals after scanning code user would be taken instantly to the same journals website were users can view past issue in full text. Pune University has its won song called ‘Vidyapeeth Geet’ in Marathi and it displayed with frame in front of the gate of every department of university. PUMBA Library has produced QR Code with You Tube link & paste on frame of university song. After scanning code users can see video of University song. Further library has taken initiative in non used books. This paper will be useful for libraries searching new and innovative technological channels to communicate and deliver their information services.

KEYWORDS QR (Quick Response) Code, Mobile services, Academic Libraries, Information service.
1.1 INTRODUCTION

As technology becomes increasingly available and digital information expands on a daily basis, academic library use is on the decline. A nationwide report in March 2004 indicated that over the previous 10 year period, overall library usage declined 21% and circulation fell 35%. The report further claimed that libraries within the United Kingdom could be unused and irrelevant by 2020. Research libraries on college and university campuses are finding that “gate counts and circulation of traditional materials are falling at many college libraries across the country, as students find new study spaces in dorm rooms or apartments, coffee shops, or nearby bookstores. Many academics mourn the loss of a common culture of library use across campuses and communities while others hail the era of a new type of library with a new structure of knowledge and practical use such as digital library, e-library, multimedia library, virtual library, hybrid library etc.

While physical use may have been reasonably expected to decline in recent years due to the large scale shift to digital libraries and the increase in sources such as e-journals, e-books & databases, the trend has appeared to be on a much larger scale. E-books, iPads and kindles may be the way of the future, but most of the world’s knowledge is still stored in millions of good old paper books on library shelves. Library can not give all books in digital content because it has various technical problems such as copyright. Other hand reader or researcher spent more time on internet because of growth of mobile base equipments i.e. Laptop, iPhone, iPad, Mobile handset etc. still they unable to reach authentic information or satisfactory information as per their requirement. A study of around 2,000 American college students in 2001 showed that 93% felt that finding information online “made more sense” than going to the actual library. Filling this gap between physical millions of valuable books & users’ requirement the present study proposed using QR code library can convert valuable books into interactive print material so that these valuable books can be use by mobile base users to visiting library. Quick Response (QR) code has facility to organize information effectively and retrieves it at right format at right time as per user’s requirement. This way library can increase physical use of books using technology. The role of technologies and regulations services of library is taken into account in the analysis of the information service resources (Print,
Software and Internet based) of library and future scenarios for mVAS (mobile Value Added Service) in library profession.

2. WHAT IS QR CODE

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional bar code) A QR code is a matrix barcode readable by smart phones and mobile phones with cameras. They are sometimes referred to as 2d codes, 2d barcodes, or mobile codes. QR codes can hold much more information than a regular barcode. The information encoded in a QR code can be a URL, a phone number, an SMS message, a V-card, or any text. They are referred to as QR because they allow the contents to be decoded at high speed. QR codes were developed in 1994 by Denso-Wave, a Toyota subsidiary. The QR code typically appears as a small white square with black geometric shapes. A QR code has two basic parts — the three positioning elements, which are the large square blocks at the three corners and the data elements, which is everything else. The positioning elements help the software determine the QR code’s location and orientation. The data elements represent the encoded data. For example, it could be a product number, a URL, or (in our case here) an ISBN. The code also has some information used for error correction. The following image should give you the basic idea:
3. TYPES OF QR CODE

QR Codes can trigger different actions on the smart phone where they are read. Directing a user to a website isn't the only possible action and some of them are worth knowing (such as saving a visiting card or connecting to Wi-Fi networks).

3.1 Website: - By scanning this type of QR Codes, users will be directed to a webpage and will discover the content available. This is the most common QR Code type.

3.2 Visiting card: - With these visiting cards QR Codes, a contact card with the details you entered will be automatically added to the contact list of the scanning smart phone. You can enter your names, address, phone number, etc.

3.3 Wi-Fi network: - You can create QR Codes that contain Wi-Fi network credentials. After scanning, smart phones will connect automatically.

3.4 Send an SMS: - Save the content and the recipient's phone number of an SMS. After scanning, you will only have to confirm before sending it.

3.5 Send an email: - This works exactly like the SMS QR Code type. Only this time, you enter the email content, the subject and the recipients to enable sending after scanning.

3.6 Phone: Type a phone number when creating the QR Code. After scanning, users will be asked to call the phone number.

3.7 Add an event to a calendar: - After scanning these QR Codes, you will be asked if you want to save the event in your smart phone's calendar. By adding the event to your calendar, you will be reminded of the correct date.

3.8 Geolocation: - When creating these QR Codes, you enter the latitude and longitude coordinates of a location. By scanning them, users will be able to find the location on their favorite geolocation application.

3.9 Simple text: - This is the simplest QR Code type. A raw text is encoded and will be displayed on the screen after scanning. You can write anything you like.

3.10 YouTube Video: - Embedding a YouTube video in your QR code directs users to promotional or how-to videos about your company.

3.11 LinkedIn Share: - Creating a QR Code for LinkedIn lets clients and customers find your profile easily on this popular business networking site.
4. QR CODE INITIATIVES

4.1 Coca-Cola taps QR codes to drive consumer engagement
Marketers are constantly debating about whether or not QR codes are beneficial to their marketing efforts. Ultimately, Coca-Cola, Toys R Us and Walmart have proven that mobile bar codes are not only beneficial, but also crucial in driving consumer engagement. Over the past few years there has been a love/hate relationship with QR codes. Nowadays, the campaigns have gotten more sophisticated and companies are constantly placing mobile bar codes on billboards, bus shelters and products.

4.2 Boston Market:- Boston Market tapped QR codes to drive new and existing customers to its locations. To add an incentive to get consumers to scan the mobile bar codes, the restaurant chain offered prizes. The QR codes were part of a bigger initiative for Boston Market’s “The Unofficial Sponsor of Summer” campaign. The campaign, which runs through July 29, offers in-store consumers the chance to win a dream vacation to Maui for four, among other prizes such as sporting goods and gift cards when they scan the mobile bar code found inside every restaurant. When consumers scan the QR code, they are encouraged to enter the grand prize trip. Using mobile bar codes helps Boston Market make the campaign more interactive, as well as lets the company connect with consumers on a deeper level. Additionally, consumers are more inclined to scan QR codes when there are prizes attached.
4.3 Brisk:- Pepsi and Unilever’s Brisk Iced Tea let fans unlock exclusive content for the new Kinect Star Wars game via scannable Microsoft Tags printed on limited-edition bottles. What was interesting about the campaign was the fact that the mobile bar codes were plastered on the products – something that users would not miss. When users scanned the Microsoft Tag they were redirected to the company’s Facebook page and also had the opportunity to unlock exclusive Kinect Star Wars game content. The campaign was a great way for Brisk to reach Star Wars fans. Using mobile bar codes to let consumers unlock exclusive content is a great way to offer them something different.

4.4 Cadillac:- Cadillac placed mobile bar codes on its print campaign that promoted the carmaker’s XTS model and featured calls-to-action that gave users different experiences based on publication titles. The ad campaigns directed users to a campaign-specific mobile site that incorporated video, location and photos. The ads ran in several publications, including Fortune. Specifically for the Fortune ad campaign, there were main pictures that highlighted specific features of the vehicle. Each photograph was framed by an image of a smartphone. The graphics were aimed at showing users that they could learn more about the car via their devices. When users scanned the mobile bar code they were redirected to a mobile landing page where they could view videos or browse a photo gallery of the XTS model. By placing QR codes on its static print ads, Cadillac was able to bring the campaign to life.
4.5 Jamba Juice: While many companies use QR codes to drive user engagement, others such as Jamba Juice use the technology to build their database. To build its email database, Jamba Juice placed QR codes on its in-store signage. In addition to growing its database, consumers can also opt-in to receive exclusive offers and discounts by becoming an insider. When consumers scan the mobile bar code, they are redirected to the company’s mobile-optimized page where they can become an insider. Using QR codes is a smart move for Jamba Juice as it encourages consumers to enter their information such as name, email, birthday, ZIP code and mobile phone number. This lets the company learn more about its customers and better target them going forward.

4.6 Kenneth Cole: For Father’s Day, Kenneth Cole took a different approach to increase sales. The retailer placed QR codes on its print ads that let consumers shop the company’s watch collection. When consumers scanned the mobile bar code, they were directed to a campaign-specific mobile site. From there, users were able to browse the company’s full collection of watches and choose to shop them via three department stores’ Web and mobile sites – Nordstrom’s, Dillard’s and Macy’s. The campaign was obviously time-sensitive, therefore, by placing QR codes on its print ads, Kenneth Cole was able to read a broader audience. Mobile bar codes present a great opportunity for marketers and are a great way to drive sales.
4.7 LA Galaxy:- Soccer team LA Galaxy partnered with Shasta and SpyderLynk on a mobile bar code campaign that offered fans exclusive video content and rewards. The mobile bar codes were featured on Shasta’s 12-Packs of Cola, Tiki Punch, Orange, Twist, and Grapefruit Zazz along with retail point-of-purchase signage. When fans scanned the mobile bar codes they were able to access exclusive Shasta FlavorStyle videos which featured tricks and tips from the Galaxy Futboleros soccer entertainers. LA Galaxy also incorporated social into its marketing efforts to continue a dialogue with consumers, even after they scanned the mobile bar code. Social and mobile constantly go hand-in-hand and marketers are increasingly using both mediums to interact with users.

4.8 Toys R Us:- Toys R Us continued its QR code push to promote more than 20 of its large outdoor items and let consumers visualize how the product would work and look in their own backyards. Since many of the outdoor items were too large to display in-store, Toys R Us used in-store signage that let consumers scan the QR code of a product in which they were interested. Consumers could scan the mobile bar code next to the product with their mobile device to view video footage or images of the item fully set up. Last year, Toys R Us rolled out a virtual store that let consumers scan QR codes featured on billboards and shop the company’s 2011 Hot Toy List. On-the-go commuters and travelers in the New York metro area were encouraged to take part in the initiative.
4.9 Walmart:- Walmart partnered with Procter & Gamble on a QR code campaign. As part of the initiative, mobile bar codes were placed on bus shelters and trucks. Consumers were encouraged to scan and instantly buy products from brands such as Tide, Pampers and Gillette. The campaign took place in New York and Chicago. There were 12 bus shelters along the Magnificent Mile and Michigan Avenue in Chicago that were wrapped in a pop-up store experience. The mobile storefronts featured nine limited-edition Olympic SKUs, as well as mobile bar codes next to products such as Bounty towels, Iams dog food and Pampers Cruisers. When consumers scanned the QR codes, they were redirected to Walmart’s mobile site where they can buy the product. Additionally, there was a P&G truck touring New York that gave out limited-edition samples to consumers passing by. Passerby were also given takeout menus that featured QR codes that let them shop the products no matter where they are. The campaign was a smart way to drive user engagement and get them amped up about the campaign.

5. QR CODE INITIATIVES IN LIBRARIES

Library Journal columnist Michael Kelley has written, “As QR Codes become more prominent in daily life, librarians are seeking the best way to incorporate this simple and free technology into their operations” (Kelley, 2010). Library can use this QR code in Catalog records to offer patrons basic information about location of books and call number users can scan the code and head to the stacks rather than writing or printing, this means, for example, a student who scans QR codes from a library OPAC in the middle of the night in his or her dorm room could head to the library stacks the next day, click open the app to refer to the call numbers of the titles scanned the night before, and quickly find the books. Also, expect to see QR code scanner/reader apps that allow users to tag, share, comment, collaborate, and more in the future. Taped to video/DVD cases, linking to mobile-friendly video trailers, Codes in the library stacks/end caps or
magazine/journal areas that point to online electronic holdings of print materials or related subject guides, linking to library audio tours for orientations etc.

5.1 at Texas Tech University Libraries, librarians created new ways to communicate and connect with their patrons. Producing videos to make the library more approachable allows the user to see the library as a place of information, not intimidation. The videos give short, professional, informative messages that assist users. Deploying QR codes to assist users in a variety of ways throughout the library encourages the user to engage with the library. By developing a new outreach program called roving reference, librarians are meeting their patrons in their environment.

5.2 The Miami University (Ohio) QR codes have been implemented to enhance library services. When users see a QR code, they use phone’s application to scan it. Users would be taken instantly to information on their phone” (Miami University Libraries, 2011a). Further, QR codes will also be accessible “inside the covers of select books” that, “when scanned with users mobile phone, will direct to a page on users mobile site which lists other books by the same author, books on the same topic, and even reviews of the work” (Miami University Libraries, 2011b). Author Robin Ashford suggests a further investigation into the uses of QR codes in libraries may be found in, “Library Success: A Best Practices Wiki” where librarians have been listing their successful uses of the QR codes in areas including art gallery information and links to resources about the artists, links to library audio tours, information regarding the library’s text messaging service, links to video information friendly to smart phones, codes on study room doors connected to room reservations, a code connection to computer reservations system and many more services (Ashford, 2010b).

5.3 University of Pune, Department of Management Sciences (PUMBA) Library with cooperation with Jayakar Library has been implemented QR code to enhance mobile base library services in 9th January 2013. The intention is that to increase physical use of library. PUMBA Library has subscribed various management journals print as well as online. Library has websites to view online journals. Library has paste QR code on print journals after scanning code user would be taken instantly to the same journals website were users can view past issue in full text. Pune University has its won
song called ‘Vidyapeeth Geet’ in Marathi and making frame & display in front of the gate of every department of university. PUMBA Library has produced QR Code with You Tube link & paste on frame of university song. After scanning code users can see video of University song. Further library has taken initiative in non used books. E.g. books on Cell Signalling by Nelson, John. This book has not yet used in library but it has very good experimental images & explanation. We create QR code & paste on pages whenever images are. Maximum users are visited to library for copying the images to their mobile. And to see if video any where paste or not in the form of QR code. This way we are getting success in bridging the gap between information & users requirements & increase the physical use of library.

6. HOW TO GENERATE QR CODE?

Creating a single QR code is a simple process. There are many free QR code generators available; one I regularly use is the Kaywa QR code generator. This code generator allows four different content types, a URL, text, phone number, or SMS and a choice of four sizes—small, medium, large, or extra-large. Creating a code is as simple as choosing a content type, adding your URL or other data, and clicking the “generate” button. The QR code is immediately created and can be copied, saved, or embedded. An easy-to-use Google Chrome QR code extension allows one to create a QR code while visiting any URL in one easy click. A QR code is instantly generated and pops down from the corner of the browser’s address bar, with an option to save to disk or share on Facebook. There are plenty of free QR code generators websites. Some websites are:
1. http://qrcode.kaywa.com/
3. http://goqr.me/

7. QR READER

7.1 KAYWA Reader:-

1. You can download the KAYWA reader directly to your PC or MAC and then use bluetooth or a USB cable to transfer the files to your mobile phone (requires registration) or you can download it directly to your mobile phone by visiting the following web address: http://reader.kaywa.com/ -

2. Kaywa will then check to see if your mobile phone is compatible with their software.

3. **Compatibility:-** From the KAYWA website, it appears that only Motorola, Nokia, Samsung and Sony Ericsson mobile phones are supported.

7.2 Nokia Reader

1. To visit the Nokia N80 device page on the Nokia website. On the left hand menu, select 'Phone Software', then 'Smart phone'. Scroll down the page until you see 'Barcode reader'.

2. Follow the link and instructions and you can download the software to your PC.

3. You will then need to download the Nokia PC Suite in order to transfer the files to your mobile phone.

4. Additionally, if you have the download application on your mobile phone, you can use that to get the reader.

5. **Compatibility:-** From the Nokia website, it appears that only the Nokia N80, N93, N93i, N95 and E90 support the reader.
7.3 i-nigma Reader

1. To visit the web address: http://www.i-nigma.mobi/ which will automatically detect if your mobile phone is compatible.

2. The i-nigma reader is supported to: Dopod, HTC, i-mate, LG, Mio, Motorola, Nokia, Orange SPV, Palm, QTek, Samsung, Sony Ericsson, T-Mobile, Cingular, O2, Sprint, Swisscom, Verizon, Vodafone and more.

7.4 Lynkee Reader

1. To visit http://m.lynkee.com/ and loaded, select your device from the drop down list.

2. Compatibility:- The lynkee reader can scan multiple forms of mobile barcode, including QR-Codes, Datamatrix and EAN13. The lynkee reader is available on a wide variety of modern smart phones including iPhone, Blackberry, Sony Ericsson, HTC, Motorola and Nokia.

7.5 UpCode

1. You can download the reader directly to your mobile phone by visiting the http://www.upcode.mobi/ - or you can send a SMS (text message) containing to: +358 50 3100075 (no word required) and you will be sent the link to the software. Alternatively, you can download the software directly to your PC or MAC via the UpCode website.

2. The UpCode reader is supported to Motorola, Nokia, Samsung, Sony Ericsson, Siemens, Panasonic, Blackberry, LG, HTC and Vodafone.

7.6 QuickMark

1. In order to download the reader, you are required to register for an account before you get access to the download.

2. Compatibility:- The QuickMark reader is supported to: Apple, ASUS, AT&T, BenQ, CHT, Cingular, CMCC, Dopod, Emobile, ETEN, Fujitsu-Siemens,
GIGABYTE, HP, HTC, HUAWEI, iDo, i-mate, Lenovo, LG, Lobster, Mio, Motorola, Nokia, O2, OKWAP, Orange, Panasonic, Pantech, Qtek, Samsung, Siemens, SoftBank, Sony Ericsson, Sprint, Swisscom, T-Mobile, UBiQUiO, UTStarcom and Vodafone.

7.7 SnapMaze

1. To download this reader, visit to http://mobile.snapmaze.com/jar/ directly via your mobile phone.
2. You will then be presented with a link that once selected will begin the download of the reader to your mobile phone.
3. You can also download the software to your PC and then transfer it your mobile phone via bluetooth/infrared.
4. **Compatibility**:- The SnapMaze reader is compatible with all J2ME MIDP 2.0, CLDC 1.1 mobile phones. Basically, you must have a Java enabled mobile phone. Most Nokia 6XXX and NXX series, Sony Ericsson KXXX and WXXX series. Also limited Motorola and Samsung models.

7.8 BeeTagg

1. Downloading the BeeTagg reader can be done via four simple methods: visit http://get.beetagg.com/ directly via your mobile phone for a download link.
2. Visit their website, enter your mobile phone number and BeeTagg will send you a SMS along with a link to the reader.
3. You can also send a SMS with text BEE to +44 762 480 24 86 and they will send you a SMS back with a link to the reader.
4. **Compatibility**:- The BeeTagg QR-Code reader is compatible with over 50 mobile phones including major brands such as Apple, Blackberry, HTC, LG, Mio, Motorola, Nokia, Palm, Samsung, Siemens, SonyEricsson and SPV.
7.9 NeoReader

1. Users looking to download the NeoReader must access the following URL on their mobile phones browser http://get.neoreader.com/

2. after doing so, NeoReader will automatically detect your mobile phones manufacturer.

3. Next, follow the quick and easy installation instructions.

4. The NeoReader QR-Code software is compatible with a number of popular handsets including Apple, Blackberry, Motorola, Nokia, Samsung and Sony Ericsson.

7.10 ScanLife

1. In order to download the ScanLife barcode reader, connect to the internet on your mobile phone and then visit http://www.getscanlife.com/ - the website will then automatically detect if your mobile is supported.

2. **Compatibility**: The ScanLife software is compatible with a large set of manufacturers including Apple, BlackBerry, Nokia and Samsung. ScanLife can be used on major operating systems such as Android, iPhone, Palm and Windows.

7.11 MobileTag

1. To download the MobileTag QR-Code reader, it's easiest to visit http://m.mobiletag.com/ on your mobile phone.

2. The MobileTag website is initially loaded in Spanish, but don't let that put you off; simply select English (if desired) to change language and begin the download.

3. **Compatibility**: There is no definitive list of supported models of mobile phone, however the MobileTag reader is available on iPhone, Blackberry, Android Windows and most Nokia's via the Ovi store.
8. MUST KNOW QR CODE TIPS

- **Resolution** – An important part of a QR code is the size as if it is too small some devices may have issues reading it. Across different generators Resolution is also referred to as Scale, Block size or Output.

- **Data Type** – This defines what action the code will take when scanned, it is commonly used to show the user websites, plain text, phone numbers, Google maps and email addresses.

- **Redundancy/Error Correction** – If a portion of the code becomes unreadable having using Error Correction during creation will mean the code compensates for lost data. There are varying degrees of correction offered (15% is the most common) though the larger the redundancy allowed for the greater the increase the grid size. At 0% any obstruction/damage to the code is likely to render it unreadable.

9. CONCLUSION

Academic libraries have historically offered their services onsite, even if that offer was basically technological. Equipment and space, and their transformation, continue to be key components of success in academic libraries, but today we find ourselves immersed in a new context where commercial and communicational interaction is held more and more through mobile devices. Mobile services are considered here as more than the access to the information and the library from a mobile device – but as also encompassing those services that facilitate access to information resources from anywhere or any device, and, moreover, those that exploit the capabilities of these devices to facilitate access to information to the users. Academic librarians can leverage this usage of mobile devices to effectively deliver products and services to students and faculty.
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