



Creating QR Codes for Doctoral Theses : An Experimental Approach for Accessing Bioscience Theses in Shodhganga by using QR Codes at Kuvempu University

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ABSTRACT

QR (Quick Response) codes are used to promote library services and help users to access information quickly. The present study aims to explore the areas of QR code application in library services by experimenting at Kuvempu University. In this article, an attempt has been made to create QR codes for Bioscience theses of Kuvempu University available at Shodhganga ETD repository to provide quick access to URLs of theses. With the help of smart phones users can find theses quickly and independently. This article will explain how QR codes can be used for linking resources and describe issues surrounding their use.

Keywords : QR Codes, Library Services, Shodhganga, Bioscience Theses, Kuvempu University.

I. INTRODUCTION

New and emerging technologies have always been playing the vital role in shaping the different services of libraries. These technologies not only help the users to access quick, quality and efficient services but also provide a chance to library and information professionals to think outside the box to make their services effective and responsive. Of the technologies that have been developed and used in libraries, QR codes offer a wide variety of useful applications for libraries, and as more and more users begin to use smart phones and other mobile devices, libraries all over the world have been trying to utilize them for the betterment of their services libraries need to find ways to reach those users.

In the last two decades, libraries are facing tremendous changes as the modern tools and

technologies have grown rapidly. Library materials are also changing quickly to the various digital

formats from the traditional print formats. Information/knowledge has been creating and publishing from every sector of humankind. Document types are also not limited to books and periodicals. Various types of materials out there like-image, audio, video, painting, artefacts, three-dimensional, software, and much more. These materials are also available with various file formats so that, one can use information in many ways. Lastly, the Internet has opened the door to reach anything or anybody from anywhere with just a single click. So, managing this huge amount of resources becomes more challenging day by day.

Now QR codes have appeared in magazines, newspapers, cashless shopping, retail stores and several other places. Ashford [1] opined that, QR

codes would not replace any technology, however efficient uses of these QR codes can enhance the user experience at large and alter how s/he interacts with the academic libraries, the librarians and the library collection. The present study aims at providing quick access to Bioscience theses collection of Kuvempu University by creating QR codes.

II. OBJECTIVES OF THE STUDY

The main objectives of the present study are:

- To study the features of QR Code.
- To explore the areas of QR code applications in library services.
- To create QR codes for Bioscience theses of Kuvempu University available at Shodhaganga ETD repository.
- To provide quick access to the Bioscience theses.
- To create awareness about the QR code usage in libraries.

III. METHODOLOGY

Creating a single QR code is a simple process. There are many free QR code generators available. For the present study the researcher used QR code generator for creating QR codes for Bioscience theses of Kuvempu University. 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.

For generating QR codes, the researcher used the following steps.

- Selected QR code generator website (ex.: <http://www.qr-code-generator.com>) and added it to the Google Chrome as an extension.
- Selected the URL of the Bioscience theses uploaded to the Shodhaganga ETD repository. A total of 297 URLs have been selected.
- Creating QR Code for the URL’s of 295 Bioscience theses using QR Code Generator.

IV. SCOPE AND LIMITATIONS OF THE STUDY

The present study aims to create QR codes for Bioscience theses of Kuvempu University available at Shodhaganga ETD repository. The study covers only theses submitted to the various departments under Bioscience discipline. These departments include Applied Botany, Biotechnology, Applied Zoology, Environmental Science, Microbiology and Wildlife Management etc. A total of 297 theses have been selected for the present study. The researcher created QR codes for all 295 theses using QR code generator.

V. WHAT IS A QR CODE?

QR code is a two-dimensional barcode were invented in 1994 by the Toyota Motors subsidiary Denso Wave to track vehicles and parts during the manufacturing process. The QR code consists of black modules (square dots) arranged in a square grid on a white background. The information encoded may be made up of data (numeric, alphanumeric, byte / binary, Kanji) or, through supported extensions, virtually any type of data. A QR code is read by an imaging device, such as a camera, in a mobile phone and there a number of different barcode scanner applications such as Red Laser, Barcode Scanner and QR Scanner that can read and decode data from a QR code. The majority of these are completely free, and all you have to do once you install one is to use your phone's camera to scan the barcode, which will then automatically load the encoded data for you [2].

The QR code, similar to a barcode, is an example of an information matrix. However a significant difference in the two is that a barcode only holds information nicely in the horizontal direction up to 30 numeric characters and a QR can do so vertically as well.

Fig.1 QR Code & Barcode



The data encoded can include numbers, alphanumeric characters' symbols, text symbols such as kanji (Japanese language symbols) as well as control codes.

VI. FEATURES OF QR CODE

- Easy to use-just held mobile device up to frame the code and scan.
- Supports IOS and Android
- Easy to install and configure
- Allow users to easily scan QR Codes Using the App, and be redirected to a source of information detail page

VII. APPLICATION OF QR CODE IN LIBRARY SERVICES

With the advent of ICT and awareness of technology among people, QR codes are being used everywhere. According to Parabhoi et al. [3] QR codes can be used in library books, journals CD- ROMs, ticketing, entertainment and transport ticketing, VCard information, commercial tracking, product/loyalty marketing and in-store product labelling. So we can say that QR code can be used in a variety of ways as

per need. The main aim of using QR code is to give brief message to the users. There are several ways to use the QR code in Library environment.

- To give directions to the user
- To provide brief information to user
- To inform of required documents
- To promote the library services
- To create link to all the resources available in the library
- To create link to virtual tour of library sections
- To use in library exhibitions like Videos, Audios, and websites
- QR code is used to provide text messages for reference service and contact Information of library staff as well as library patrons.

VIII. ABOUT SHODHGANGA

"Shodhganga" is the name coined to denote digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre. The word "Shodh" originates from Sanskrit and stands for research and discovery. The "Ganga" is the holiest, largest and longest of all rivers in Indian subcontinent. The Ganga is the symbol of India's age-long culture and civilisation, ever-changing, ever-flowing, ever-loved and revered by its people, and has held India's heart captive and drawn uncounted millions to her banks since the dawn of history. Shodhganga stands for the reservoir of Indian intellectual output stored in a repository hosted and maintained by the INFLIBNET Centre [4]. The Shodhganga@INFLIBNET is set-up using open source digital repository software called DSpace developed by MIT (Massachusetts Institute of Technology) in partnership between Hewlett-Packard (HP). The DSpace uses internationally

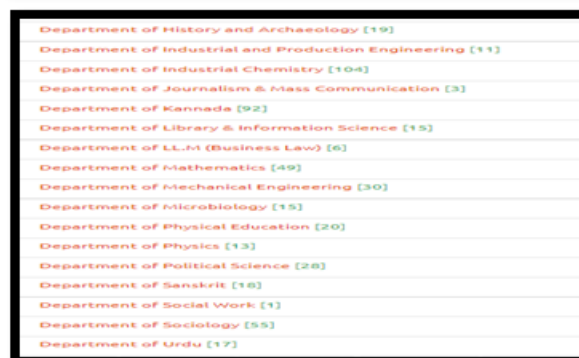
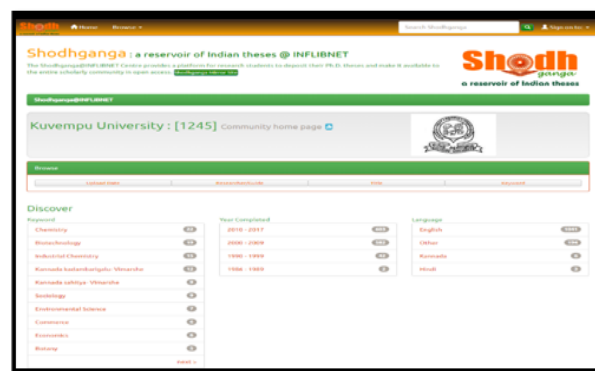
recognized protocols and interoperability standards. Shodhganga provides a platform for research scholars to deposit their Ph.D. theses and make it available to the entire scholarly community in open access. The repository has the ability to capture, index, store, disseminate and preserve ETDs (Electronic Theses and Dissertations) submitted by the researchers.

IX. CREATING QR CODE FOR BIOSCIENCE - THESES USING QR CODE GENERATOR

Here an attempt has been made to generate QR codes for theses submitted to Bioscience departments which are available in Shodhganga database with respect to Kuvempu University. For the present study the researcher selected Bioscience theses only due to time limit. A total of 297 theses related to Bioscience discipline have been selected for creating QR code. The following section explains the steps for creating QR code for theses using QR Code Generator.

a. Theses Collection of Kuvempu University@Shodhganga
Kuvempu University is good in teaching, research and developmental activities. It has 36 departments. Every year good number of research projects/work has been undertaken by the different departments in the campus. The library of the university has rich collection of theses submitted by the research scholars. The theses submitted to the library have been uploaded to Shodhganga-a central repository of theses and dissertations at INFLIBNET. At present a total 1245 theses of all departments of Kuvempu University are available at Shodhganga database. The researcher generated QR code for the Kuvempu University homepage at Shodhganga.

Screenshot 1: QR Code for Kuvempu University homepage at Shodhganga



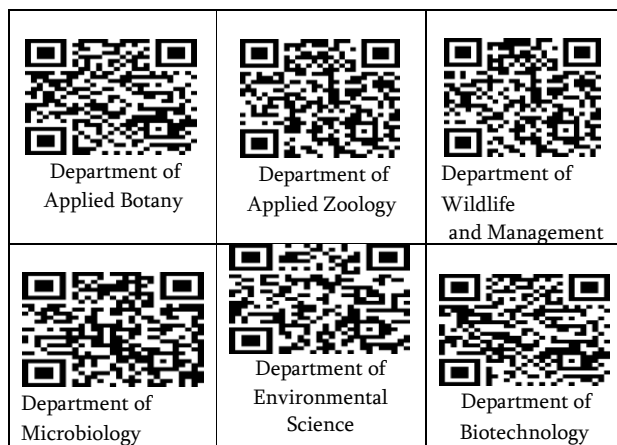
Screenshot 2: Output of QR Code for Kuvempu University homepage

The screenshot 1 is the QR code of Kuvempu University homepage at Shodhganga. This QR code shows the total number of theses of Kuvempu University uploaded to the Shodhganga repository. It also shows the number of theses available at Shodhganga by department wise as shown in the screenshot 2. One can view the department wise statistics of theses uploaded to the repository by scanning the above QR code using QR Code Scanner.

b. Department wise List of Theses of all bioscience departments

The present study covered theses of six departments under School of Bioscience.

Screenshot 3: QR Code for Department-wise List of Theses



Screenshot 4: QR Code for List of Theses of Department of Applied Botany



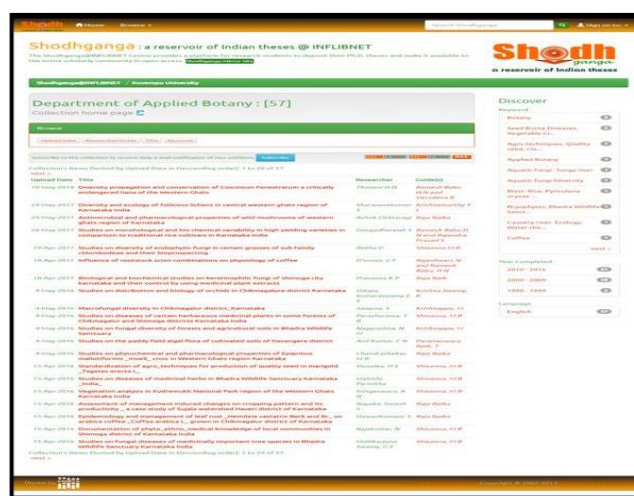
The above screenshot shows the departments come under School of Biosciences. The attempt has been made to generate QR code for all theses of Bioscience departments such as Department of Applied Botany(56), Department of Applied Zoology(37), Department of Wildlife and Management(5), Department of Microbiology(15), Department of Environmental Science(82), and Department of Biotechnology(100). A total of 295 theses have been covered under these departments. When we scan the each QR code, we are able to see the number of theses available in each department.

c. Department of Applied Botany

Using QR Code Generator App, the researcher generated QR Code for link to theses of Department of Applied Botany.

By using QR Code Scanner App one can scan the above QR Code to see the number of theses uploaded to Shodhaganga database. It shows the number of theses sorted by upload date in descending order with minimum bibliographical details like uploaded date, Title of the research, name of the researcher and name of the guide as shown in below the Screenshot. Department of Applied Botany has 56 theses uploaded since 10- May-2018.

Screenshot 5: Theses Collection of Department of Applied Botany @ Shodhaganga



d. QR Code for Guide Wise List of Theses

QR Code for Researcher Guide helps to know about how many researches were done under particular guide. It helps to researcher to know the areas/ topics of the research carried out under the guide.

Screenshot 6: QR Code for Guide Wise List of Theses



Dr.Shivanna, MB

The above QR Code is related to the guide wise list of theses from Department of Applied Botany. Here, the researcher generated QR Code for Dr. Shivanna M.B. Simply scanning the above QR Code using smart device one can get the details of research work

carried out under the guide Dr. Shivanna, M B as shown in below figure.

Screenshot 7: QR Code for Guide Wise List of Theses



e. QR Code for Title

Every PhD thesis requires a title, and a good title can have a profound effect. The title is the very first part of the thesis to be read by research committee members and examiners, and it also serves as one of the primary ways in which researchers interested in the topic will be able to find the thesis in a library catalogue or online search, so the title should be as informative, engaging and elegant as possible. Usually the title search is the most popular search among the users. They can use a title search if they know the complete title of the work they are looking for. The completeness and order of words matter in a title search. Here, the researcher generated QR code for the title.

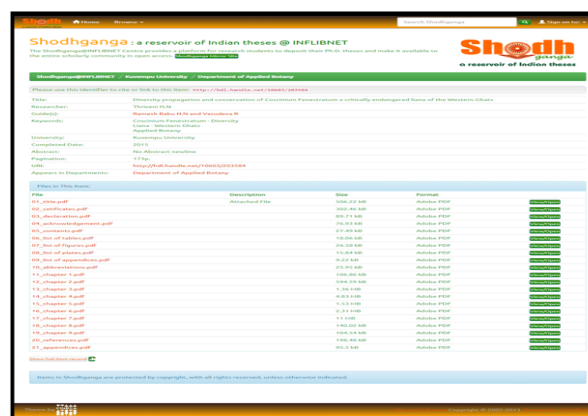
Screenshot 8: QR Code for Title



The screenshot 8 is the example of QR Code for title. Here the attempt has been made to show how title QR code will helpful to the researcher while searching for the complete bibliographical details. Here, one title has been taken to create QR code. By scanning this QR Code one can get complete

bibliographical of the theses as shown in below figure.

Screenshot 9: Viewing Bibliographical Details of Title Using QR Code



X. ADVANTAGES OF USE OF QR CODES IN LIBRARY

- It is always available free of cost in web;
- It can hold much more information than a regular barcode and can be used anywhere at any time;
- QR Code is user friendly technology and users do not need specific expertise for using this technology, only required smart phones like Android phone, iPhone, etc. with QR code scanner;
- It increase the users satisfaction and useful to achieve the fulfill library goals of Ranganathan fourth law i.e. save the time of reader;
- Anybody can generate the QR code using free software;
- It is used in promoting the library services like DDS, SDI and quick reference services etc.
- It helps human errorless when a person particularly search the web [5].

XI. CONCLUSION

QR Code is an innovative technology for the libraries helps to the information professional to

integrate bi-dimensional code composed of black and white pixels into a squared matrix, containing information to be enjoyed with the help of smart devices. A library user can easily get information regarding library collection, e-resource, library web site, Web-OPAC in a user-friendly environment. QR codes provide a flexibility and breadth of opportunities for providing such learning possibilities not available in other ways. Many libraries have already begun implementing services using these codes. Many QR code generator also available to generate QR Code for library collection, architecture design of library building, e- books, visiting cards, bookmarks, user manual or blog.

The present study helps researchers by providing quick access to bibliographical information about the theses. Kuvempu University Library can use these QR Codes to provide easy access to necessary information about the theses collection. Users do not need to memorize the

critical web addresses and they do not need to physically search the theses in the library. Use of this technology helps libraries to promote mobile based services and promote mobile learning environment. Libraries can use QR Codes in other areas like Web OPAC, CAS and Reference Services, etc. The present study, though small yet it is significant and would create awareness and impetus among the library professionals to highlight the issue so that more and more libraries could implement QR code- based services.

XII. REFERENCES

- [1] A. Robin, "QR codes and academic libraries Reaching mobile users," *College and Research Libraries News*, vol. 71, no. 10, p. 526-530. 2010. [Online] available: DOI: 10.5860/crln.71.10.8454
- [2] A. Shaheen, "QR (Quick Response) Codes Application in Academic Libraries: Case study of KRRC (Central Library)". 2013. [Online]

available:<https://www.researchgate.net/publication/301557209>

- [3] P, Lambodara, B. Nivedita, and D. Rupashree. "Use of QR Code in Library. In *Applications of Modern Tools and Technology in Library Services*", edited by Surendra Kumar Pal and Bal Ram (eds), p. 238-243. 2017. [Online] available: https://www.academia.edu/33800175/Use_of_QR_Code_in_Library?auto=download
- [4] <https://shodhganga.inflibnet.ac.in/>
- [5] S. Sur Chandra, and V. Manoj Kumar, "Integration of AIDC Technology in Mobile via QR Code for Enhancing the Library Services: A Case Study of Don Bosco College Central Library, Arunachal Pradesh". *Indian Journal of Information Sources and Services*, vol. 9, no. 2, p.44-48. 2019. [Online] available: <http://www.trp.org.in/wp-content/uploads/2019/04/IJISS-Vol.9-No.2-April-June-2019-pp.-44-48.pdf>