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QR Codes And Its Relevance In Indian Market

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ABSTRACT

QR codes stands for Quick Response Codes. Denso Wave created QR code in 1994 to track the parts of vehicles. A QR code can be considered as an 'image-based hypertext link', which when scanned opens up a specific webpage. One can always customise a QR code that is can make it look more attractive and colourful. A QR code can incorporate various types of information like a website URL, simple text to display, an Email, text message, calendar event, business card etc. Each information leads to a different action. QR codes are increasingly becoming a standard in the Indian market as well. Applications of QR code are virtually unlimited , few application areas in India include aadhaar card, movie tickets booking, IRCTC e-tickets, various tourist sites etc.

Keywords: *E-tickets , hypertext link ,QR codes and URL*

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I. INTRODUCTION

QR codes stands for Quick Response Codes. Denso Wave created QR code in 1994 to track the parts of vehicles. These are two dimensional bar codes possessing white and black colour. These are easily read using a smartphone having QR code scanning software

The trend of owing a smartphone is increasing day by day and so are the QR codes. These codes have a tremendous potential in various field like marketing, advertising, customer service etc. With a huge amount of product related information just a scan away. These can be scanned in both the directions unlike the barcodes, which are scanned along only one direction. A QR code can be

considered as an 'image-based hypert-ext link' ,which when scanned opens up a specific webpage. Apart from QR codes various other types of two dimensional codes exists like:

a) Data Matrix: Quiet similar to QR codes, mostly used on small electrical components as it can be read when 2-3 mm in size.

b) Microsoft Tag: These are customised two dimensional barcodes and can be read by using Microsoft's own tag reader only.

c) EZcode: Theses are two dimensional codes created for smartphone cameras, but these are totally reliant on the Scanbuy servers.

II. UNDERSTANDING THE QR CODES

A QR code can incorporate various types of information like a website URL, simple text to display, an Email, text message, calendar event, business card etc. Each information leads to a different action. A QR code can hold upto1, 817 Kanji characters, 2,953 binary bytes, 4,296 alphanumeric characters, 7,089 numeric characters or a combination of them. Its data capacity is quiet higher as compared to the other two dimensional codes.

Different areas of a QR code are reserved for specific purposes. There exists 40 versions of QR codes. In the Fig. below version 2 is shown comprising of different areas .
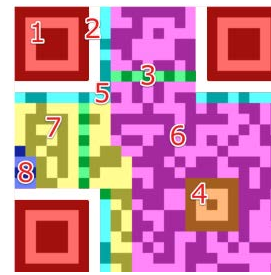

Fig. 1. Structure of QR code Version 2 [6]

Section 1-Finder Pattern: This pattern consists of three similar looking structures, located at the three corners of the QR code. Patterns are based on 3×3 matrix comprising of alternate combination of black and white modules. Finder Patterns facilitate the decoder software to determine the right orientation.

Section 2- Separators: These improve the recognisability by separating the Finder Patters from the actual data and are one pixel wide and usually white in colour.

Section 3- Timing Pattern: Alternate arrangement of white and black modules helps the decoder software in determining the width of a module.

Section 4- Alignment Patterns: These facilitate the decoder in compensating for the moderate image distortions. QR code version 1 doesn't comprise of alignment pattern but with the growing version (size), alignment patterns are added.

Section 5- Format Information: It comprises of information about the chosen masking pattern and the information stored about the error correction level of QR code.

Section 6-Data: In this the data is transformed into a bit stream and saved in 8 bit parts known as codewords inside the data section.

Section 7- Error Correction: In this the error correction codes are saved in 8 bit long codewords inside the error correction section.

Section 8- Remainder Bits: This section comprises of empty bits, if the data and the error correction bits can't be divided into 8 bit codewords without a remainder.

To be read by the scanners the QR code requires a homogenous area around it .This area is known as Quiet zone and it should have the same colour as that of the background colour of QR code and should be wide enough[2].

III. CUSTOMIZING QR CODES

One can always customise a QR code that is can make it look more attractive and colourful by changing its colours ,changing its size , soften edges with round corners, embedding an image inside a QR code , by encrypting the QR code, or by overlaying any logo. This can be done either online or by using Photoshop to create a customised code.

Fig 2. Customised QR codes[5]

The size of a QR code varies with the information contained inside it. More the information in the QR code, more will be the number of squares inside it. So in order to reduce the squares inside a QR code, information contained in it needs to be reduced. This can be done by straight away redirecting the user to a specific webpage and by using shorten URL.As shown in the Fig. below that the code on the left hand side comprises of more information than that on right hand side and hence is hard to scan.

Fig. 3a. QR code with more information

Fig. 3b. QR code with less information

IV. QR CODES SCENARIO IN INDIA

QR codes are increasingly becoming a standard in the Indian market as well. Many companies in India have started using QR codes and have achieved success. The notion of using QR codes for shopping is popular in the west, but with the ever growing use of smartphones ,the people of India have become tech-savvy enough to make use of QR codes for shopping .Few companies have delighted their clients with secretive discounts offers and schemes to attract customers with the use of QR codes. Applications of QR code are virtually unlimited, few instances are:

1. Aadhaar Card

The Aadhaar Card also comprises of a QR code .This code when scanned gives the demographic details of the Aadhaar Card holder like Aadhaar No , Name, DOB , Address and Fathers Name.

Fig 4. Aadhaar Card comprising of QR code[7]

2. Movie Tickets

BookMyShow allows the moviegoers to just scan the QR code which comprises of the Booking ID and to directly print tickets at the venue itself using a scanning machine.

3. IRCTC e-tickets

QR codes on the e-ticket comprises of the ticket as well as passenger details like : PNR number, Train number Quota, name, origin , destination of the passenger, date, time , price of ticket, class of travel, passenger's name, ticket status , berth number and seat number .

Fig. 5: QR Code in IRCTC e-ticket [11]

4. Tourist Sites

Soon there will be QR codes at various tourist sites across India. The visitor just needs to scan the QR code on the signage, installed outside the heritage structure. The code will redirect the visitor to a web-based information system that gives information about the monument and also opens up pictures, videos related to that monument.

V. THING TO KEEP IN MIND

The purpose of scanning a QR code must be stated then and there only, for example there is a QR code in a shopping mall so it must be mentioned that scan and avail exciting discounts rather than just writing scan to visit our website. So the customers should have a reason to scan the QR code. Before placing the QR code one should ensure that it falls within the area that has a working data network.

Also it should be within the reach of the consumers that is, its placement is important. Neither should it be placed too high nor too low. [8]

VI. CONCLUSION

This paper explains the QR code, its structure, Customizing QR Codes and its few application areas in India. The trend of owing a smartphone is increasing day by day and so are the QR codes. These codes have a tremendous potential in various field like marketing, advertising, customer

service etc. With a huge amount of product related information just a scan away. QR codes are increasingly becoming a standard in the Indian market as well. Many companies in India have started using QR codes and have achieved success.

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