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QR Codes in Marketing: An Empirical Study on Awareness and Opinions Regarding QR Code Usage Among Young Indian Adults

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Abstract

In today's international market, brand awareness among consumers plays a very important role in the sales turnover of the company. Every company invests heavily to increase the market share. Consumers engage with various mobile services such as SMS, MMS, and the latest mobile applications in their cellphones. Therefore, the mobile platform offers an exciting opportunity that can be leveraged by marketers for their brands and products. The recent trend that is creating waves in this area of mobile marketing is that of Quick Response (QR) codes. Quick response code, commonly known as "QR code" is the present buzzword in the mobile marketing world. It gives marketers an opportunity to interact with consumers and engage them with their brand. The primary aim of this research is to study the consumers' awareness and opinion about QR codes and intends to highlight various issues related to it. The study also explores the reasons why QR codes can be a particularly powerful means of engaging with consumers and to what extent consumers have accepted the technology particularly the young Indian. Through a field survey data was collected from 240 respondents of age 19 years and above, in Hyderabad through questionnaire. The data was analysed through SPSS. This paper provides practical recommendations to marketers, with regard to implementation of a marketing campaign using QR codes. Results reveal that some respondents do not have the capability to scan QR codes because they don't have the smartphones, they still have a high awareness of QR codes and where these are being shown up in different media. Based on the results obtained, measures were suggested to improve the QR code awareness. Majority of respondents felt that QR codes are not linked to incentives and QR codes are mainly used for informative purpose. Implications and future research issues are also discussed.

Keywords: Quick Response Code, International Market, Print Media, Smartphones, Mobile Marketing, Technology, Marketing Campaign

Introduction

In present scenario, marketing to customers has become increasingly challenging as the number of products and services across industries has increased significantly, while at the same time marketing strategies and customer contact points have proliferated. It is important for the existing organizations to have loyal customers in the competitive market and understand the changing needs of the customers from time to time. The recent rapid growth of the mobile phone market has made mobile marketing one of the most important marketing strategic tools and contact points available to companies today. Mobile marketing can increase customer loyalty by providing customers with timely and informative information. Over the years the mobile phone users have reached a mark of 5.3 billion in the world accounting for 87% of the world's population, according to statistics published by statista.com. Over half of mobile phone users globally will have smartphones in 2018 (emarketer.com). In 2016 India will exceed 200 million smartphone users, topping the US as the world's second-largest smartphone market. Mobile app store revenues worldwide are projected to grow to US $76.5 billion in 2017. About 26.5 million smartphones were shipped to India in the second quarter of 2015, up 44% from 18.4 million units for the same period the

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previous year (Indiatimes.com). Samsung maintained its leadership in the Indian smartphone market with 23% share, followed by Micromax (17%), Intex (11%), Lava (7%), and Lenovo (6%). Smartphone adoption in India is going to be at an all time high. According to a study by consulting firm Zinnov India, smartphones are outpacing the growth of feature phones and are expected to show a massive 36 percent compounded annual growth rate (CAGR) over the next five years making it to the 651 million mark by 2019 (asianage.com). QR code trends continue to gain momentum as smartphone owners grow across the globe, and smart marketers turn to engage marketing to reach mobile consumers. E-Marketer's report (Jan, 2013), statistics showcase that on average, 19% of US respondents (1 in 5) have scanned a QR code ahead of the 15% average in Europe. Interestingly, across both regions research continues to support print is the primary media placement for QR code engagement. Another indication of printing trend research (released by Nellymoser) reported that response rates are higher with QR codes than direct mail. While the primary function of a mobile phone is to enable users to talk to each other, the popularity of other mobile phone services, such as short messaging services (SMS), has grown rapidly (Jayawardhena *et al.,* 2009).

Mobile marketing is still in its early stages, and mobile marketing practices will likely go through fundamental changes as the technology continues to evolve. Research on mobile marketing is also in its early stages, but the literature is growing (Karjaluoto *et al*., 2008). According to Tetere (2011), mobile marketing is a fast growing industry which is gradually starting to transform the marketing world, that implies terms like smartphone, location-based services or mobile Internet. QR (Quick Response) code is a 2-dimensional barcode that can store different kinds of information such as a link, plain text, SMS text message, addresses, URLs, geo-location, email, phone numbers or contact information. QR codes were introduced in Japan in order to track automobile parts but they became well known only when they were used as an advertising medium to distribute additional information to the users. When a user scans a QR code with his/ her smartphone camera using the appropriate QR code software reader, he/ she can get the additional information. Thus, QR codes can be described as paper-based hyperlinks. This novel technology is now used in many areas and latest measurements have been adopted by millions of smartphone users. The explosive growth in the last years indicates that that QR codes are not just a momentary fashion, but a very powerful and versatile tool for the future. The use of QR codes as a tool for marketing has been made possible with the rise of the smartphones and associated apps. Today's smartphone effectively provides users with a bar-code scanner – such as Scan Shot - in their pocket, and pioneer marketers have been quick to see the value of harnessing this ubiquitous technology. See Fig. 1 for an example of a QR code. When the QR code is scanned, the user is promptly brought to a web address (i.e. company's home page, Facebook page, retail store, etc.).

Fig. 1: Example of a QR code

History of QR Code

The idea of QR code was started in 1994 by Denso Wave, a Toyota subsidiary in Japan. Denso Wave used these QR codes as a quick, convenient approach to tracking their vehicles and auto parts. Because of their efficiency in the auto industry, it was not long before other companies began to see how the functionalities of the QR code could be made transferable to their industries. The QR code first became commercialised in 2011 when the telecommunications industry picked up on the trend. Today the mobile smartphone is the biggest driver of QR code commercial popularity (Barcode to 2D 2010).

Feature of QR Codes

1. **High Capacity of Encoding Data:** While conventional bar codes are capable of storing a maximum of approximately 20 digits, QR code is capable of handling several dozen to several hundred times more information. QR code is capable of handling all types of data, such as numeric and alphabetic characters, Kanji, Kana, Hiragana, symbols, binary, and control codes. Up to 7,089 characters can

be encoded in one symbol.

2. **Small Printout:** A QR code can be fitted in small space.
3. **Size:** Since QR code carries information both horizontally and vertically, QR code is capable of encoding the same amount of data in approximately one-tenth the space of a traditional barcode. (For a smaller printout size, micro QR code is available.) The minimum size of a QR code is 0.17 mm x 21, that is, 3.57 mm or so.
4. **Kanji and Kana Capability:** As a symbology developed in Japan, QR code is capable of encoding JIS Level 1 and Level 2 Kanji character set. In case of Japanese, one full-width Kana or Kanji character is efficiently encoded in 13 bits, allowing QR code to hold more than 20% data than other 2D symbologies.
5. **Dirt and Damage Resistant:** QR code has error correction capability. Data can be restored even if the symbol is partially dirty or damaged.
6. **Readable from any direction in 360*:** QR code is capable of 360 degree (omni-directional), high speed reading. QR code accomplishes this task through position detection patterns located at the three corners of the symbol patterns guarantee stable high-speed reading, circumventing the negative effects of background interference.
7. **Structured Appending Feature:** QR code can be divided into multiple data areas. Conversely, information stored in multiple QR code symbols can be reconstructed as a single data symbol. One data symbol can be divided into up to 16 symbols, allowing printing in a narrow area.

Various Types of QR Code

1. QR Code Model-1and Model-2,
2. Micro QR Code,
3. iQR Code,
4. SQRC,
5. Frame QR

Process of Scanning a QR Code

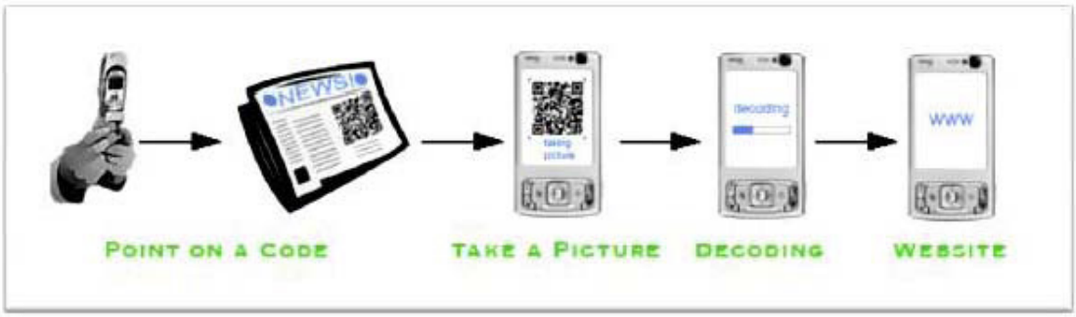


Fig. 2: Competitors and Variations of QR Codes

The process of scanning, decoding, and reading out the content of a 2D barcode, such as a QR code, using a camera phone is known as mobile tagging. In order to read a QR code one must have a QR code scanner. These scanners come built in various camera-enabled mobile phones and third party scanner applications can be downloaded to almost any smartphone. After taking picture of a QR code, the application processes the code and converts it into readable text. The code might contain contact information or a URL for a company's website. To create a meaningful and interactive customer experience, QR codes can be programmed to start up applications such as web browsers, IM, email, SMS, and even streaming video. QR codes hold promise in various arenas, perhaps the most exciting is the various applications they have in the social media space.

Scope of the Study

The study is restricted related to the awareness and opinions regarding QR code usage among young Indian

adults**.** The study is limited to two areas of Hyderabad. The study is conducted during November 2016.

Objectives of the Study

1. To study about QR codes and their history.
2. To study about features and types of QR codes.
3. To study the awareness and opinions of QR codes by young Indians.
4. To study about the usage of QR codes by respondents.

Research Methodology

Sources of Data Collection

The data, which is collected for the purpose of study, is divided into 2 bases:

Primary Sources

The primary data comprises information survey of "QR codes in marketing: An empirical study on awareness and opinions regarding QR code usage among young Indian adults." 240 respondents have been selected in order to explore the information directly from respondents of two areas of Hyderabad, through structured questionnaires.

Secondary Sources

The secondary data has been collected from books, Internet, research reports, articles from newspapers, and websites.

Research Design

a. Research Type: Descriptive method was employed to collect the data from the prospective parents.

b. Sampling Frame: The young adults of two areas of Hyderabad city.

c. Sampling Unit: Adults who use QR codes for various purposes.

d. Sampling Method: The sampling method used here is probability sampling in which systematic random sampling has been used (list collected from colleges, private organisation, govt. departments etc.).

e. Sample Size: A sample of 240 respondents has been selected.

f. Instrument: This work is carried out through self-administered questionnaires and personal interviews.

g. Data Analysis Tools: Data is analysed using charts, graphs through SPSS package.

Review of Literature

Okazaki *et al*. (2009, p.66) opined that in order to fully understand consumer acceptance of QR code technology, it is necessary to define its use as a form of mobile marketing. Messages are consumed solely by the mobile phone owners and interactions can be made personal to the users.

Jayawardhena *et al*. (2008) posit that mobile marketing allows marketers to utilise personalised, interactive messages which have a low delivery cost. It provides unique opportunities to marketers as it is suggested to be the "most dynamic, effective and personal medium for marketing".

Muzaffar and Kamran (2011, p.232) state that as a relatively new marketing channel, consumers' "attitudes towards mobile advertising [are] continually changing" as consumers gain more experience of being marketed to through their mobile phones and the means by which they are marketed to on their mobile phone evolve and develop.

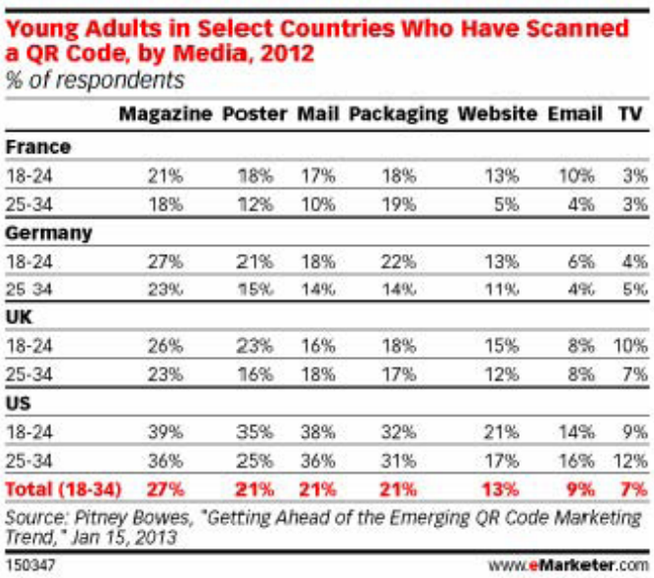
Demir, Kaynak, and Demir (2015) investigated the current use and future intent of use of QR codes in mobile marketing among college students in Turkey and concluded in their study that recognition level of QR codes among college students is high, but adoption level is low.

Abdulla and Aziz (2014) investigated the potential role of QR code for the management library university and different conditions to scan QR codes. They also studied the interest of undergraduate students to use QR code in library university.

Brokaw (2012) studied to explore and compile the data regarding the current functionalities, benefits, limitations, and future expectation of QR codes in print media.

The minimal research available to date suggests that no

more than a third of consumers know what a QR code is (Grey, 2011; Charlton; 2011), with consumer usage rates somewhat below twenty percent (Charlton, 2011). However, another study found that between Q4 2010 and Q1 2011, the usage rates of QR codes grew by 166.5% (Nedeff, 2011). This suggests that the technology is still at its early stage of growth, and its use by consumers will become more widespread.



Young Adults in Select Countries Who Have Scanned a QR Code, by Media, 2012
% of respondents

	Magazine	Poster	Mail	Packaging	Website	Email	TV
France							
18-24	21%	18%	17%	18%	13%	10%	3%
25-34	18%	12%	10%	19%	5%	4%	3%
Germany							
18-24	27%	21%	18%	22%	13%	6%	4%
25-34	23%	15%	14%	14%	11%	4%	5%
UK							
18-24	26%	23%	16%	18%	15%	8%	10%
25-34	23%	16%	18%	17%	12%	8%	7%
US							
18-24	39%	35%	38%	32%	21%	14%	9%
25-34	36%	25%	36%	31%	17%	16%	12%
Total (18-34)	**27%**	**21%**	**21%**	**21%**	**13%**	**9%**	**7%**

Source: Pitney Bowes, "Getting Ahead of the Emerging QR Code Marketing Trend," Jan 15, 2013

150347 www.eMarketer.com

Fig. 3: Young Adults in Select Countries Who Have Scanned a QR code

Data Analysis and Interpretation

Table 1: Types of Mobile Phone

Type of Mobile Phone	*No. of Respondents*	*% of Respondents*
Standard	***48***	***20***
Android/ Smartphone	192	80
Total	240	100

Interpretation: Most of the respondents are using Android phones (80%). Only 20% respondents do not use standard phones.

Table 2: Familiarity with QR Code

Familiarity	*No. of Respondents*	*% of Respondents*
Never Heard	54	22.5
Heard	186	77.5
Total	240	100

Interpretation: Maximum number of respondents (78%) have heard about QR codes. Only 22% respondents are not familiar with QR code.

Table 3: Observation of QR Code

Observed Places	*No. of Respondents*	*% of Respondents*
Billboards/ flexi/ banners	50	20.83
Newspapers/ magazines	72	30.00
Retails stores	58	24.16
Mobiles	32	13.33
Coupons	16	06.66
Advertisements	08	03.33
E-Commerce/ Websites	04	01.69
Others	240	100.00

Interpretation: Maximum respondents observe QR codes on Newspapers (30%), while 24% respondents observe on retail stores, 21% on billboards, 13% on mobiles, and 6% in coupons. The remaining respondents observed QR code on advertisements and websites.

Table 4: Interest of Respondents on QR Code

Gender	*No. of Respondents*	*% of Respondents*
Male	114	47.5
Female	126	52.5
Total	240	100

Interpretation: Female respondents (52.5%) have more interest on scanning QR codes than male respondents (47.5%).

Table 5: Attributes Associate with QR Codes

Attributes	*No. of Respondents*	*% of Respondents*
Fun	112	46.66
Informative	96	40.0
Purchases (Payments)	28	11.66
Others	04	01.68
Total	240	100

Interpretation: Nearly 46% respondents use QR codes

for fun. 40% respondents associate with QR code for informative reasons while almost 12% use for payment purpose.

Table 6: Accessing QR Code

Accessing QR Code	*No. of Respondents*	*% of Respondents*
Websites	16	06.66
Videos	06	02.50
Product package	52	21.66
Social media	38	15.83
Newspapers/ Magazines	78	32.50
Deals/ Discount coupons	10	04.16
Govt. department links (Tax etc.)	18	07.50
Retail stores	16	06.69
Others	06	02.50
Total	240	100.00

Interpretation: Maximum respondents are observed accessing QR codes in newspapers and magazines (32%). Nearly 16% respondents access through social media, 22% through websites and remaining respondents from purchases, deals, coupons, retail stores, government departments, and other places.

Table 7: Location of Scanning QR Code

Location	*No. of Respondents*	*% of Respondents*
At home	52	21.66
At work	84	35.00
Public	12	05.00
Retail store	38	15.83
Supermarket	18	07.50
Restaurant	04	01.66
Govt departments/ Offices	22	09.16
Others	10	04.19
Total	240	100

Interpretation: Nearly 35% respondents scan QR codes at work place. 22% are scan at home, 16% at retail stores, 9% respondents use QR codes in govt offices, 7% scan at supermarkets, and only 1% respondents access them at restaurants.

Table 8: Adoption Levels of QR Codes

Adoption level	*No. of Respondents*	*% of Respondents*
Used	134	55.83
Not Used	106	44.17
Total	240	100

Interpretation: Maximum number of respondents (56%) use devices which support all software applications. 44% respondents have not used the QR codes.

Table 9: Any doubts/ Malicious Expectations Before Scanning QR Code

Doubts	*No. of Respondents*	*% of Respondents*
Always suspicious	44	18.33
Looked somewhat strange	08	03.33
Never thought about it	18	07.50
It is trustworthy	164	68.33
No Comment	06	02.50
Total	240	100

Interpretation: Nearly 68% respondents do not have any doubts regarding QR codes. 18% always have some doubts. 7% respondents never think about the suspicion. 3% respondents have some strange feeling on QR code securities.

Table 10: Victim of Phishing Attack

Response	*No. of Respondents*	*% of Respondents*
Yes	16	6.67
I am not sure	04	1.67
No	214	89.17
No comment	06	2.50

Total	240	100

Interpretation: Nearly 89% respondents didn't get any phishing attacks. 7% candidates got somewhat phishing attack. Remaining respondents have no clarity regarding to phishing attack.

Table 11: Influencing Factors to Use QR Code

Factors	***No. of Respondents***	***% of Respondents***
Social influence	112	46.67
Facilitating conditions	36	15.00
Perceived ease of use	58	24.17
Government encouragement	22	09.17
Others	112	05.00
Total	240	100.00

Interpretation: 46% candidates are influenced by social factors to use QR codes, 24% respondents have perceived ease of using QR codes, 9% respondents are influenced by government encouragement, And 15% candidates depend on facilitating conditions.

Table 12: Usage of QR Codes

Product	***No. of Respondents***	***% of Respondents***
Access additional information	44	18.33
Interact with social media	38	15.83
Access video	24	10.00
Make purchase	98	40.83
Get coupon	112	05.00
Pay taxes	18	07.50
Others	06	02.50
Total	240	100

Interpretation: Nearly 41% respondents linked their usage of QR codes to making purchase, 18% linked to access additional information, 16% respondents linked to interaction on social media, 10% respondents to access videos, And remaining respondents linked the use to taxes and other.

Table 13: QR Codes Used by the Persons form Different Occupations

	No. of Respondents	***% of Respondents***
Students	126	52.50
Government employees	32	13.33
Private employee	36	15.00
Entrepreneurs	26	10.83
Housemakers	16	06.67
Others	04	01.67
Total	240	100

Interpretation: Most of respondents (53%) using QR codes are Students. Nearly 15% are private employees and 13% are government employees. Entrepreneurs using QR codes are only 10%. The remaining respondents who use QR codes are homemakers and other professionals.

Result and Analysis

SPSS V21, a software tool for analysis of social science research, is used in the analysis of the data. We tested the reliability of the survey responses. Reliability means that a measure should consistently reflect the construct that it is measuring (Field, 2009). One of the ways of measuring the reliability of the data is the Cronbach's Alpha values. If this value is below 0.8, we can say that all of the items are reliable and the entire test is consistent (Ho, 2006; Hair, Black, Babin, & Anderson, 2009).

Table 14: Factor Loadings and Cronbagh's Alpha Reliabilities

Total Variance Explained: 63.492 KMO: .848; Bartlett's Test of Sphericity: 1731,796**	Awareness and opinions of QR code attributes.
Cronbach's Alpha	.808
Access additional information	.763
Interact with social media	.792
Access video	.806
Make Purchase	.742
Get coupon	.726
Pay Taxes	.712

Findings

1. Most of the respondents have smartphones which support the QR app.
2. 78% of the respondents are aware/ familiar with the QR codes.
3. 30% of the respondents observe the QR codes in newspaper/ magazines, 24% in retails stores, and

20% on billboards/ flexi banners.

4. Male respondents are more interested than female.
5. 46% of respondents scan QR codes for fun followed by 40% for informative purposes.
6. 32% of the respondents access the QR code through newspapers followed by 21% by product package, and 15% through social media.
7. 35% of respondents scan QR codes at workplace, 21% at home, and 15% at retail stores.
8. 56% of respondents have used the QR codes.
9. 46% of the respondents are influenced by social media.
10. 40% of the respondents use QR code to make purchases and 18% for accessing information.
11. 52% of the respondents are students who use QR codes and 15% are private employees.

Suggestions

1. The use of QRs is growing extremely fast. If QR codes are printed on visiting cards and the user wants to make some changes, QR codes automatically update the changes. Some websites offer free services to make your own QR code, like www.uqr.me.
2. QR codes can used to promote product and increase sales.
3. Mobile marketing firms should target the students with QR codes on various media to attract them for sales because students use QR codes.
4. Marketing firms must focus on the females, they more interested in using QR codes.
5. The mobile marketing strategies should promote the use of QR codes, teach how to use them, and increase adoption levels.

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