Abstract. *Last couple of years observed tremendous growth in QR Code usages in advertising worldwide. But, there is lack of knowledge on orientation of QR Code usage and various trends related to it like linkage with incentives, e-content encoding etc. Further, many expert opine that current application of QR Codes in advertising is somewhat causal and ineffective. This study attempts a preliminary investigation of above issues in print media, using content analysis approach. Analysis of data collected over one year in India suggested that consumer goods marketers are predominantly deploying QR Codes; majority QR Codes are not linked to incentives and QR Codes are mainly used for informative purpose. Analysis further suggested ineffective offline and online application of QR Codes in print advertising. At last, the study gives important implications for marketers and scope of further research.*

Keywords: advertising, 2D barcode, mobile marketing, QR code.

QR CODES IN PRINT ADVERTISING: ELUCIDATING INDIAN VOGUE USING CONTENT ANALYSIS

Singh RAJENDRA
Institute of Management Studies, Devi Ahilya University,
Takshila Campus, Indore, India
e-mail: prajsingh@rediffmail.com

Bamoriya HEMANT
Acropolis Faculty of Management & Research,
Mangliya Square, Indore, India
e-mail: hemantbamoriya@gmail.com

Management & Marketing
Challenges for the Knowledge Society
(2013) Vol. 8, No. 2, pp. 353-368

1. Introduction

The penetration of mobile phones worldwide has been explosive and has already touched the 86.7% mark (Mob Thinking, 2011). The high penetration rate is an indicator of the commercial potential of mobile phones and it comes as no surprise that marketers are showing interest in mobile phones as an advertising medium (Wohlfahrt, 2002). This mobile platform offers diverse modes, matching desired communication viz. SMS (Short Message Service), MMS (Multimedia Messaging Service), Mobile Videos, WAP (Wireless Access Protocol) etc. (Beschizza, 2009). Even the specific characteristics of the mobile phone like geo-targeting ability (through Global Positioning System and Cell of Origin), ubiquity, immediacy, measurability and interactivity support the application of mobile phones in marketing communication (Bauer et al., 2005; Haghirian et al., 2005). Furthermore, in the past years, the mobile phone has gained more and more importance in the everyday life of consumers therefore making it the easiest way for marketers to communicate with them (Pelu and Zegreanu, 2010). Certainly, these advances have drawn attention from both researchers and marketers about various types of mobile phone based marketing tactics (Wohlfahrt, 2002; Trappey and Woodside, 2005; Davis and Sajtos, 2008).

One such marketing tactical tool is the Quick Response Code, generally abbreviated as QR Code (see Figure 1). QR Code is a 2 dimensional barcode (data matrix) which is designed to be scanned by a Smartphone camera, in combination with a barcode decoding application (Denso-wave, n.d.). Various such applications are available like QuickMark, Scanlife, RedLaser, i-nigma, QRreader which connect users to some specific e-content like a website, an email address, e-coupons, SMS, a registration form etc. (Handley, 2012; Bisel, 2011). QR Codes were first conceptualized by Denso Wave, a Toyota subsidiary in Japan in 1994. Normal barcodes had information stored in only one dimension (horizontally) and were seriously limited in the amount of data they could contained. Denso Wave developed this QR Code as a way of holding information in two dimensions (horizontally and vertically); hence a QR Code was able to accumulate 10 times more information than a normal barcode (Denso-wave, n.d.). Further, QR Codes supported quick and convenient tracking of vehicles, as they can be scanned at very high speed with great ease (Okazaki et al., 2012). Currently, various versions of QR Codes (from Version 1 to Version 40) are freely available along with decoding applications (Denso-wave, n.d.).



Source: www.qrstuff.com

Figure 1. **Sample of QR code, version 2**

2. QR Codes in Marketing

Besides QR Code's efficiency in the auto industry, marketers later began to realize that the functionalities of the QR Code could be transferred to the marketing domain i.e. the potential to connect easily and swiftly with customers on the go (the quick part of QR Code) and encourage customers' engagement (the response part of QR Code). Thus QR Codes became commercialized in 2011, with the growth of telecommunications industry and Smartphones (Denso-wave, n.d.). Today one of the most ubiquitous trends in marketing is the use of QR Codes especially in Japan, USA and Western Europe. Further, with the increasing adoption of Smartphones (almost all have bar code scanning capability), they are rapidly gaining in popularity across Asia especially in India, Korea and Indonesia (Pola, 2012; Kent, 2012). QR Codes are open as Denso Wave have not patented them, which means that tools to generate and scan-decode QR Codes are freely available. This enables marketers to easily implement their campaigns and to support consumers to scan the codes used in those campaigns (Matt, 2011a). Apart from it, several inherent characteristics of the QR Code make it a potential tool for marketing communication. QR codes are omindirectional scannable i.e. unlike barcodes; they can be scanned from any angle at 360 degree due to position detection patterns on three corners of the code thus offering further ease to consumers. Perhaps the most beneficial attribute of QR Codes is their interactive capabilities. With the click of a button on a Smartphone, the QR Code allows consumers to interact with the ad they were viewing in a completely different form of media than was presented to them and the ad which previously possessed only visual and tactile functions, becomes digital and interactive in a matter of seconds (Patel, 2012). Another interesting attribute of the QR Code is the error correction capability which means that data can be restored even if a QR Code is damaged up to 30%. QR Codes also offer great versatility to marketers as they can be enlarged to the size of a billboard or minimized to the size of a stamp (QRCodedotcom, 2011). Moreover, QR Codes enable marketers to track the number of scans on each code and identify which

medium the scan came from. This feature is certainly a great aid (although with limitation of possible restricted generalizability of inferences beyond Smartphone owners) to marketers in measuring intensive consumer activity and analyzing the effectiveness of various advertising mediums (Patel, 2012). Further, as QR Codes are simply an image, they can be printed on any surface like newspapers, billboards, product packaging, leaflets and even on the product itself (Bisel, 2011). These monochrome codes can easily to be transformed into "designer" QR code (see Figure 2) by adding colors and putting the brand name and/or the logo in the forefront of the code image (Podfigurny, 2011). Finally at their best, QR Codes can bridge the online and offline worlds as a QR Code provides the possibility of integrating online content say a website and offline content say a newspaper ad. Due to this characteristic, the QR Code supports the execution of multichannel marketing very effectively (Handley, 2012). All the above benefits prove that the QR Code can significantly enhance the return on marketing investment (Podfigurny, 2011).



Source: www.mediapostpublicite.wordpress.com

Figure 2. **Sample of designer QR codes**

QR Codes are not free of disadvantages. One disadvantage is that using QR Codes, only Smartphone users can be targeted as mobile camera and internet connection is a prerequisite (eHow, 2012; Matt, 2011b). But, the real limitation of the QR Code is the lack of offline ability to authenticate source/sponsor of code. For example, anyone can easily generate a bogus QR Code claiming to belong to Ford Motors. This makes the application of QR Codes vulnerable to misuse and fraud. Such bogus QR Codes can send malware into the scanner's Smartphone which could give hackers access to any of the personal information it carries (Sterman, 2011). Despite this, the last couple of years observed tremendous growth in QR Code usages in marketing worldwide as advantages of QR Code seem to outweigh disadvantages. For example, from January 2010 to January 2011, QR Code scans increased by a mammoth rate of 4,549% (Daniells, 2011). Similarly in 2011, between April and June there was an 850% increase in active users, a 400% increase in scanning application downloads, and an 810% increase in total QR Code scans across 128 countries (Tolliver, 2011). Many critics opine that the QR Code itself is very powerful and cost

effective; but for marketers it is still a trouble child. Marketers do not seem to have clear objectives thus failing to drive customer engagement through QR Codes (Jason, 2011; Handley, 2012; Kats, 2012). For example, a QR Code scan simply lead to the homepage of a website which is not optimized for mobile phones or QR Codes are placed in inappropriate places such as on billboards on a speedy highway. Further, the level of awareness of QR Codes among consumers is another problem area - how to get a scanner, how to scan a code, what to expect from a code scan (O'Reilly, 2011; Cummings, 2011). For example, just 36% of US consumers know what OR Codes are for and how to scan them (O'Reilly, 2011).

3. Research methodology

This preliminary study explores the use of QR Codes in print advertising and intends to highlight various issues related to it. As there was no previous research done in the area, the objective was to establish touchstone information about the Indian context and give preliminary insights. The reason for choosing print media was that it is a vehicle where QR Codes are being applied most in India. Other vehicles like product forms, billboards, catalogues etc. have yet to gain visibility in this area. The following research questions were put forward:

Q1. What product categories frequently use QR Codes in print advertising?

Q2. How are incentives linked to QR Code based print advertisements?

Q3. What type of e-content is coded in the QR Code based print advertising?

Q4. How effectively are QR Codes applied in print advertising; in terms of call to action, on-campaign instructions, code functionality, URL shortening and mobile web optimization?

To answer the research questions, a content analysis approach was adopted to do preliminary exploration in the selected research area. The objective was to explore various issues pertaining to the use of QR Codes in print advertising in India. For the study purpose, one leading Hindi daily newspaper and one leading English daily newspaper were selected. The reasons for selecting newspapers as representative of print media were that, firstly, newspapers are predominant among all print media in terms of readership (for example in 4th quarter of 2011, number one newspaper had 7 times more readership than that of the number one magazine in India; IRS Q4'11 Report, 2011). Secondly, top newspapers are published daily in comparison to top 10 magazines which are published weekly or monthly. This makes newspaper a bulkier source of QR Code based print ads. Subsequently, the reason for selecting any newspaper from Hindi and English language was that Hindi followed by English, are the two most used languages (spoken and read) in India (The Times of India, 2010). Further, the basis of selection of specific these newspaper each from Hindi and English language was the Indian Readership Survey (IRS Q4'11 Report, 2011). The selected two newspapers were the most read in their categories, with a readership base of 16.41 million and 7.61 million respectively.

The time period of study was 15th Dec 2011 to 15th Nov 2012. As QR Codes were picked throughout the year, the effect of seasonal fluctuations (for example in festival season of November and December, higher number of print ads appears in newspapers in India) was nullified. Any advertisement with a QR Code, appearing in the two newspapers during the given time period was scanned using an WB Developer Reader V1.4.1/ Samsung Galaxy S II phone. A photograph of each advertisement was also kept in record for future reference and cross check. Simultaneous coding was done extensively for the contents to be analyzed for each advertisement. Duplicate advertisements were omitted and a total of 228 unique QR codes were scanned. Final data was tabulated in SPSS 15 and was thoroughly checked for any kind of error.

4. Analysis

The first research questions sought to identify the product categories that frequently use QE codes in print advertising. The analysis performed explored various product categories. The frequency analysis suggested that apparels (43%) were the prominent product category in terms of usage of QR Codes in print media. Home care products (14.1%), jewelry (14%), electronics (12.3%) and automobiles (10.5%) were the other product categories that had substantial shares in QR Code usages.

Table 1

Linkage of QR Codes to incentives

Product category		Incentives		Total (for Product category)
		offered	not offered	
	Apparels	6.1%	36.8%	43.0%
	Jewelry	4.4%	9.6%	14.0%
	home care	.9%	13.2%	14.1%
	automobiles	0	10.5%	10.5%
	electronics	0	12.3%	12.3%
	Others	0	6.1%	6.1%
Total		11.4%	88.6%	100.0%

Next we looked at the means through which incentives were linked to QR code based print advertisements (Table 1 and Figure 3). QR Codes are reported to have strong potential of offering incentives in a very creative manner. Further, linkage of QR Codes to incentives increases connotative value by offering rewards to consumers who scan codes, encouraging them to be more active with their scanning habits. Thus it increases the value outside of the original ad offering. So for the second research question was important to check the extent of actual realization of said potential of QR Codes in advertising.

In reality, contrary to what articles state, only 11.4% of QR Codes in print ad were linked to some kind of incentives (Table 1). Here also, apparels were the leading product category, followed by jewelry and home care which were offering some kind of incentives once the code was scanned. Overall linkage of QR Codes with incentives was not substantial. Analysis of QR Codes linked to incentives suggested that offering free

downloadable (25.4%) like mp3 was the most common form of incentives, closely followed by e-coupons for discounts (25.2%). In 16.6% of cases a QR Code was linked to a loyalty point. On the other hand, 8.3% of QR Codes were linked to access codes and 8.1% were linked to offers to enter contests, so as to win certain prizes.

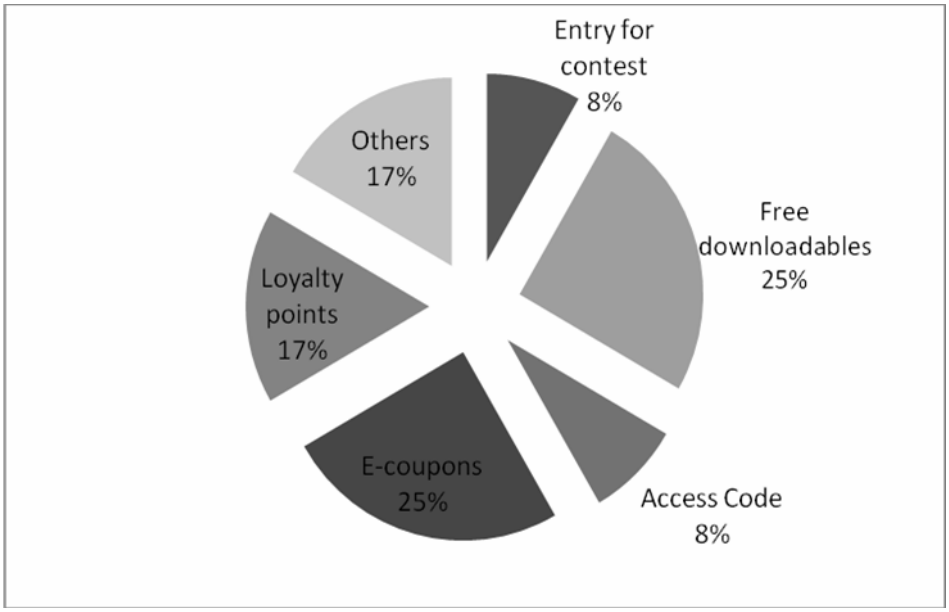


Figure 3. **Types of incentives offered through QR codes**

Answering the third research question (what type of e-content is coded in QR Code based print advertising?) the analysis suggested that the online content of QR Codes based print ad is completely informative (Table 2). This is based on the fact that the scanning of QR Codes led to corporate websites in 1/3rd of the cases and to brand's website in another 1/3rd of the cases. The remaining scans led to some social networking sites (predominately Facebook). Automobiles and electronics were the product categories in which all QR Code scans led to the brand's website, whereas, in case of apparels, the majority of the scans led to social networking sites. But irrespective of product category, other possible innovative e-contents like leading to prefilled registration form, linking to an email address, sample offering, interactive videos etc. were completely missing.

To answer the last research question (how effectively are QR Codes applied in print advertising in terms of call to action, on-campaign instructions, code functionality, URL shortening and mobile web optimization), the analysis was done from two perspectives. First was the offline application of QR Codes involving the concepts of on-campaign instructions and call to action. Second was the online application of QR Codes involving concepts of mobile web optimization, URL shortening and code functionality.

Table 2

E-content encoded in QR codes

Product category		Online link		
		corporate website	brand's website	social networking site
	Apparels	11.9%	10.1%	22.9%
	Jewelry	10.1%	0	4.6%
	home care	4.6%	0	5.5%
	automobiles	0	11.0%	0
	electronics	0	12.8%	0
	Others	6.4%	0	0
Total		33.0%	33.9%	33.0%

In general, on-campaign instructions related to QR Codes involve instructions for consumers on what features are required in a phone to scan a QR code, how to get a QR code reader, how to scan a QR code etc. These instructions are necessary as many experts opine that general awareness of QR Codes among consumers is low (O'Reilly, 2011; Cummings, 2011). For this purpose on-campaign instructions were classified as *full instructions*, *partial instructions* - having only some instructions and *no instructions* (Table 3). In 81.6% of the total cases instructions were completely missing. This was reflecting of a casual offline application of QR Codes in print ads by marketers. Only 5.3% of total print ads had complete instructions for users. Automobile was the only category in which complete on-campaign instructions were present. On the other hand, apparels and electronics product categories completely missed any form of instructions.

Table 3

QR codes and on-campaign instructions

Product category		On-campaign instructions		
		Yes	No	Partial
	Apparels	0	43.0%	0
	Jewelry	0	9.6%	4.4%
	home care	0	5.3%	8.8%
	automobiles	5.3%	5.3%	0
	Electronics	0	12.3%	0
	Others	0	6.1%	0
Total		5.3%	81.6%	13.2%

To assess the effective application of QR Codes in print advertising, second offline application concept was call to action. 'Call to action' helps consumers in anticipating what to expect from code scan. Some experts believe that lacking clear objectives and appeal leads to failure to drive customer engagement through QR

Codes (Jason, 2011; Handley, 2012; Kats, 2012), thus the question of the effectiveness of QR Codes without call to action (or naked QR Codes as generally referred). Here, the majority of print ads (63.2%) had naked QR codes irrespective of product category.

Table 4

QR codes and call to action

Product category		Call to action	
		No	Yes
	Apparels	32.5%	10.5%
	Jewelry	9.6%	4.4%
	home care	5.3%	8.8%
	Automobiles	10.5%	0
	Electronics	5.3%	7.0%
	Others	0	6.1%
Total		63.2%	36.8%

First concept in effective online application of QR Codes in print ads, was mobile web optimization (MWO). MWO insures that a webpage is compatible for viewing on a mobile phone screen. It is much needed in the case of QR Codes because these codes are expected to be scanned by a mobile phone rather than a PC or tablet, especially in Asian countries where mobile penetration is much higher than that of PCs or tablets. The analysis suggested that MWO was applied only in 55% cases and still many of the QR Codes when scanned led to non-optimized webpages, difficult to read on a mobile phone screen (Table 5). Apparels category was dominant in MWO in QR Code based print ads, whereas in the electronics category all QR Codes were non-optimized.

Table 5

QR codes and mobile web optimization

Product category		Mobile web optimization (if applicable)	
		Yes	No
	Apparels	39.4%	5.5%
	Jewelry	4.6%	10.1%
	home care	5.5%	4.6%
	Automobiles	5.5%	5.5%
	Electronics	0	12.8%
	Others	0	6.4%
Total		55.0%	45.0%

URL shortening was the second concept of effective online application of QR Codes in print ads. URL shorteners – popular one are Bitly, Google's goo.gl, TinyURL – convert a long Uniform Resource Locator (URL) into a very-very short web link (Ollig, 2011). When marketers fail to use such shorten link to generate a QR

Code, it results in a cluttered and dense code which often become unscannable. In the study, only 33.9% of the QR Codes used URL shortening, involving some print ads of apparels and automobiles (Table 6). The rest of the product categories did not apply URL shortening.

Table 6

QR code and URL shortening

Product category		URL shortening	
		yes	no
	Apparels	28.4%	16.5%
	Jewelry	0	14.7%
	home care	0	10.1%
	Automobiles	5.5%	5.5%
	Electronics	0	12.8%
	Others	0	6.4%
Total		33.9%	66.1%

At the end, the functionality of QR Codes was studied in terms of linkability to e-content (Table 7). Here, almost all codes were functional when scanned and linked to some e-content. Only 4.4% QR Codes were non-functional and all were belonging to print advertisements of the home care category. One reason of non-functionality of QR Codes (all in the home care category) may be non-application of URL shortening, as all QR Codes belonging to home category did not use an URL shortener (refer to Table 6).

Table 7

QR codes and functionality

Product category		Code Functionality	
		functional	not functional
	apparels	43.0%	0
	jewelry	14.0%	0
	home care	9.6%	4.4%
	automobiles	10.5%	0
	electronics	12.3%	0
	others	6.1%	0
Total		95.6%	4.4%

At last, an overall analysis of effective application of QR Codes was done on the basis of the percentage of QR Code based print ads found positive on particular offline/online application concept (Figure 4; Reference: Table 3 - 7). It suggested that the use of QR Codes in print advertising was not very effective in terms of both offline application i.e. missing proper on-campaign instructions, call to action and online application i.e. lacking use of mobile web optimization and URL shortening at fullest. The only effective application concept found satisfactory was code functionality (95.6%).

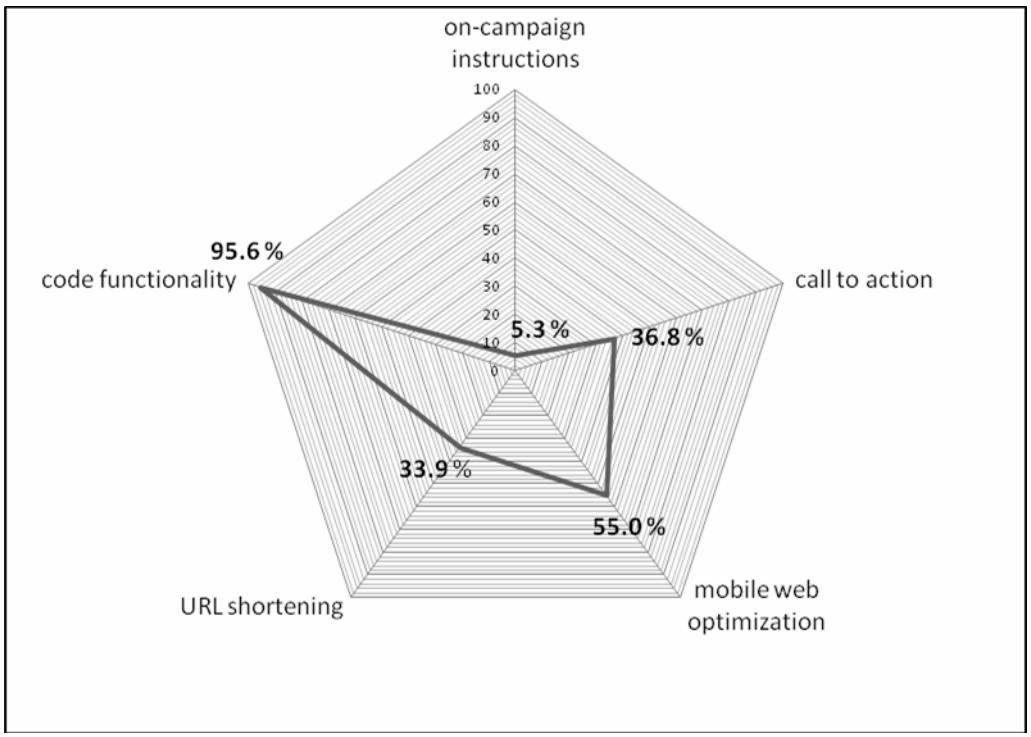


Figure 4. **Current status of effective application of QR code in print advertising**

5. Discussion and further research

QR Codes in advertising are popular in Japan and USA, and are gradually gaining visibility in India. The study was intended a preliminary exploration of the usages of QR Codes in print advertising in India and the various issues related to this. The study used the content analysis technique to gain preliminary insights into the realm of QR Code based promotion and provided some important implications through its findings.

Scanning of QR Codes from various print advertisements appeared in India's two leading newspapers, revealed that apparels is the product category which is predominantly using QR Codes in marketing promotion. Other categories which are using QR Codes are: home care products, jewelry, electronics and automobiles. These are all major consumer goods marketers in India and are deploying a QR Codes based advertising strategy.

The majority of QR Code based print advertisements are not linked to incentives. Looking at the potential of QR Codes in offering both monetary and non-monetary incentives in extremely creative manners (Matt, 2011a) and the role of

incentives in gaining the attention of target customers in the highly ad-cluttered mobile marketing environment (Bamoriya and Singh, 2011; Tsang et al., 2004); there is a huge opportunity for linking QR Codes based promotion with incentives. Doing so may substantially increase advertising effectiveness in terms of gaining customer attention.

Content encoded in QR Codes are totally informational, as all scans led either to a corporate website of the brand being promoted or to a social networking site. Here, linkage to corporate website does not seem to be a good approach in QR Code based print advertising. O'Reilly (2011) also stated that consumers generally do not find much value when a QR Code scan simply directs them to a corporate webpage. In the same line, Hayden (Handley, 2012) stated that marketers should not treat QR Codes as a passive entry to corporate website but plan as a creative approach that might entice a prospective customer to sign up or otherwise get more involved with the marketing offers or with the company. Although there is denial that informational dissemination potential is very important for marketers, QR Codes provide an effective method to disseminate infinite amount of information about a company or its brand. Yet there lays tremendous opportunity for marketers to be more creative in encoding different contents depending on customers' need (for example e-coupons, prefilled registration form etc.) and thus to drive higher customer engagement.

According to Handley (2012) QR Code links the online and offline worlds of promotion and supports effective as well as creative execution of multichannel marketing. Scan results certainly support the above view as all QR Codes are found to be linking print media (offline) to either corporate/brand website or social networking site (online). QR Codes application in marketing promotion is bridging the gap between the offline world and the online world as Poon (2011) stated that the static media such as a newspaper or a poster, can only push a marketing message so far; such media can't interact with target customers. A QR code once placed on such static media, suddenly changes things.

There are tremendous opportunities for improvement in the area of effective application of QR Codes in print advertising. The reason being that most of the QR Code based print advertisements lack effective offline application – in the study conceptualized as proper on-campaign instructions and call to action. Furthermore, most of them also lack effective online application – conceptualized as URL shortening and mobile web optimization. Handley (2012) also quoted in the same line that QR codes have become the poster child of potentially tremendous customer engagement and lead generation tools which are sadly underused, or used in weirdly ineffective ways by the marketers. Such causal approach in application of QR Codes in advertising would alienate customers, as they would find little value in scanning such a code. For example in the study, the scan of a QR Code from a kitchen appliance ad led simply to the corporate website which was not even optimized for viewing on a mobile phone screen. If marketers would follow such causal approach, customers would stop scanning QR Codes as it asks for their time and efforts. Instead

of simply placing a QR Code on any marketing vehicle, marketers should invest in proper planning and think of new ways to engage consumers creatively. In order to be effective, marketers should be prepared to harness the power of QR Codes diligently, through an effectively designed as well as applied QR Code advertising campaign.

There are several possible extensions of the current study. First, the study could be extended to explore QR code usage pattern in various other media like product packaging, flyers, banners, in-store etc. to give a broader picture. Cross media comparison of QR code based promotion would be an interesting study. Second, studies could be conducted for exploring why some industries seem to be more aware and sincere in application of QR codes in mobile promotion than others. It should be of prime concern to identify whether if such differences exists can be assigned to industry structure, profile of target customers etc. Third, research could be carried out to understand mobile users' awareness level of QR codes followed by exploring perception about use of QR codes in advertising, as there is no such comprehensive study especially in the Indian context. Forth, perceived utility, perceived risk, privacy concerns are some of the variables which are found to influence consumers' behavioral intention to participate in SMS advertising (Bamoriya and Singh, 2012). These variables may also affect consumers' behavioral intention to interact with QR Code based advertising, as it is also one form of mobile promotion. Thus, future research could be conducted to explore variables such as perceived risk, perceived utility and privacy concern to have proper understanding of consumers' adoption of QR codes. Such study would be important as according to Rogers (2003) and Dobre et al. (2009) marketing success of any innovation depends on how easily it is diffused among target customers, including innovators. At last, social media marketing is an emerging research area now days. In the current study QR codes are found to be linking to social networking sites (predominately Facebook), so a logical further research would be to explore the integration of QR code based promotion with social media marketing to improve the effectiveness of interactive and multichannel promotion tactics in comprehensive manner.

Acknowledgements

Authors acknowledge the quality of the suggestions received from the two anonymous reviewers and the Editor Office, which not only helped in improving flow and structure of the study, but also helped in exploring some untouched dimensions of the study.

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About the authors

Singh RAJENDRA is Director of the Institute of Management Studies, Devi Ahilya University, India. He has a PhD in management and teaches various marketing specialization subjects at the university. The main research topics of interest are internet marketing and technology management.

Bamoriya HEMANT holds a Master in Business Administration from Devi Ahilya University, India. He is Assistant Professor of marketing in Acropolis Faculty of Management & Research, India. He is reviewer at couples of refereed journals. His research interests include mobile marketing, pharma brand management.