The Report Committe for Lauren Elizabeth Stewart

Certifies that this is the approved version of the following report:

QR Codes: Creative Mobile Media Approaches

Committee:

_____

Gary Wilcox, Co-Supervisor

_____

Sean Thompson, Co-Supervisor

QR Codes: Creative Mobile Media Approaches

by

Lauren Elizabeth Stewart, B.S. Adv

Report

Presented to the Faculty of the Graduate School of

The University of Texas at Austin

in Partial Fulfillment

of the Requirements

for the degree of

Master of Arts

The University of Texas at Austin

May 2010

QR Codes: Creative Mobile Media Approaches

Lauren Elizabeth Stewart, M.A.

The University of Texas at Austin, 2010

Supervisors: Sean Thompson and Gary Wilcox

This report explains what Quick Response Codes are, their history and how they work. It introduces and compares several alternative ways, in addition to QR codes, for consumers to initiate the mobile communication process. Actual use of QR codes in print advertising, outdoor advertising, product packaging and other mediums exemplify how advertisers can use QR codes to integrate traditional media with interactive media, how users respond and interact with QR codes, and how they can be used effectively and creatively in today's emerging media landscape.

Patent Owner, Consumeron, LLC - Ex. 2015, p. 3

Table of Contents

Introduction....1

About QR Codes....2

How QR Codes Work....6

Initiating the Communication Process....7

Alternatives to QR Codes....9

- Short Codes....9
- Image Codes....10
- Near Field Communications....11

Challenges....12

History....16

Creative Uses....17

- Print advertisements and QR codes....17
- Outdoor advertisements and QR codes....19
- Product packages and QR codes....20
- Additional uses....21

Conclusion....24

Bibliography....25

Vita....28

Patent Owner, Consumeron, LLC - Ex. 2015, p. 4

Introduction

Mobile advertising is quickly emerging, although it is at an early stage when compared to established advertising mediums such as television, radio, print and even the Internet. The mechanisms for exchanging data have come a long way and the newest trend in mobile advertising is Quick Response (QR) Codes. These digital tags provide a vital link between print media and mobility and have the potential to reinvent print, by making it digital. Already immensely popular in Japan, the question remains if QR codes will revolutionize mobile marketing in America. As big brands attempt to conquer the mobile medium, the use of QR codes have seemingly popped up overnight on product packages, print and outdoor advertisements. However, the majority of Americans remain unaware of this phenomenon.

The goal of this report is to explain what QR codes are, their history, how they work, alternative ways for consumers to initiate the mobile communication process, and their early uses. In addition, this report explores how advertisers can use QR codes to integrate traditional media with interactive media, how users respond and interact with QR codes, and how they can be used effectively and creatively.

Patent Owner, Consumeron, LLC - Ex. 2015, p. 5

About QR Codes

Figure 1: Common QR Code

A QR code (see Figure 1) is a two dimensional code developed by Japanese corporation Denso-Wave in 1994 with the objective of "a code read easily for the reader" (About QR Code). The QR is derived from "Quick Response," since the code is intended to allow its contents to be decoded at high speeds. QR codes carry information in vertical and horizontal directions, which allows them to carry up to several hundred times the amount of data carried by an ordinary bar code (see Figure 2). Thus, it is capable of encoding the same amount of data in approximately one-tenth the space of a traditional bar code. In addition, QR codes are capable of handling all types of data such as numeric and alphabetic characters, symbols, binary and control codes. Up to 7,089 characters can be encoded in one symbol.

Figure 2: Comparison of QR and Bar Codes

To the untrained eye the codes may look like random black and white patterns contained within square boxes. However, the look and shape is no accident. The square shape of the mosaic codes, which contains small black squares in three of the corners, allows for easier reading for CCD sensors in the scanners of mobile phones to read the codes. The three squares in the corners are position-detection patterns that allow high-speed reading at 360 degrees (see Figure 3), circumventing

the negative effects of background interference.

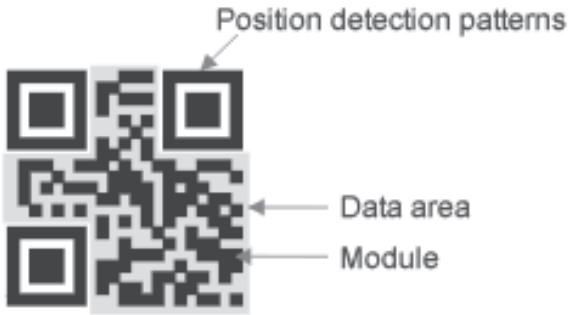

Figure 3: Position detection patterns allow QR Codes to be read at any angle

QR codes are dirt and damage resistant because they have error correction capabilities (see Figure 4). Up to 30% of codewords can be restored even if the symbol is partially dirty or damaged. A codeword is a unit that constructs the data area. In the case of QR Codes, one codeword is equal to eight bits. This is especially important because codes will function even if damaged in shipping (packages), by weather (outdoor) or common wear and tear (print advertisements).

Figure 4: With damage QR codes continue to work

QR codes contain a structured append feature which allows code to be divided into multiple data areas (see Figure 5). Conversely, information stored in multiple QR code symbols can be reconstructed as a single data symbol. This one data symbol can be divided into a maximum of 16 symbols, allowing printing in small areas. (About QR Code).

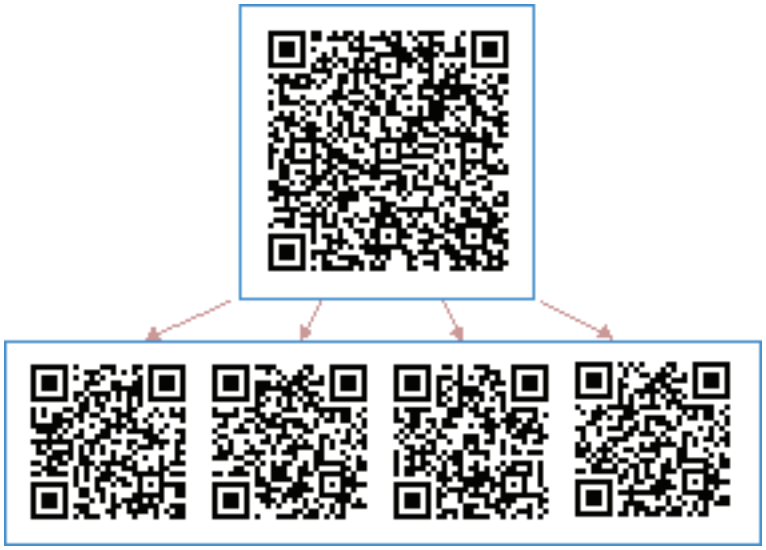

Figure 5: The same data can be read either from the upper symbol or the lower four symbols.

There are several types of QR codes in use today:

QR Code	• Three position detection patterns • Error correction capability • Capable of storing up to 4,296 alphanumeric and 7,089 numeric character	
Micro QR Code	• One position detection pattern • Capable of storing up to 35 numeric characters	
Double QR Code	• Smaller QR code embedded in an original QR code • Both contain different information • Capable of storing twice as much information as original QR code	
Color QR Code	• Uses color to stand out • Same features as original code	
Designed QR Code	• An image up to one quarter of a QR code size can be embedded • The image can be placed anywhere, except in a position detection pattern • Same features as original code	
Movie QR Code	• The Image on the code is not just an image pasted on the QR code, but part of the code itself • Code can be scanned while image is moving • Same features as an original code	

Table 1: Types of QR Codes

How they work

Upon taking a photo of a QR code with a camera phone or other mobile device, the consumer is guided to branded content linked specifically to that code. The graphical codes allow consumers to link directly to mobile sites by scanning them with their phone's camera.

In Japan, mobile devices come with the software preloaded and nearly all of the over 100 million mobile phones in use can read the QR codes. NTT DoCoMo claims that over 80% of the phones on its network are code-reader compatible and the rest are older models or are not fitted with a camera. In the U.S. only a handful of phones such as Google's Android or Nokia's Symbian, come equipped with QR coder readers. This is expected to chance quickly within the year, until then users must successfully download the software, which typically ranges from free to two dollars (Japan - QR Codes). There are dozens of options, though Google recommends QuickMark, which costs ninety-nine cents, followed by BeeTagg and NeoReader.

Initiating the Communication Process

When communicating between buyers and sellers, advertisers may choose to use a push or pull strategy. A push strategy makes use of advertising activities to create consumer demand for a product by delivering or "pushing" information to the consumer from the seller. In the case of mobile advertising, a push strategy would send messages directly to the phones of the target audience, which calls for action from the consumer. That action may be a response through an SMS message, e-mail, downloading a program or widget, the redeeming of a coupon in store or participating in a contest (Summins, Edwards).

In contrast, a pull strategy builds up consumer demand so that they seek out the product, offerings or information and "pull" it through the delivery channel. In this type of advertising, messages are displayed to consumers who voluntarily take action and determine whether to access additional information. In mobile phone advertising the user would be exposed to commercial messages though various channels such as the outdoor, television, print or the web that call for the users to respond either with the mobile phone or through other means. The pull strategy is preferred because consumers seek out the information, thus the process is less intrusive and more engaging (Dou, Li 61).

Wireless advertisers are currently working to improve consumer response and acceptance because users are unlikely to take action unless they believe that the content will prove useful, credible and valuable. (Okazaki 429). Additionally markets must consider communication barriers caused by the small size of mobile keypads. It is often inconvenient for mobile phone users to initiate a communication process by typing a URL or sending an SMS (Dou, Li 61). Thus, the task of convincing mobile phone users to voluntarily start a communication process

with a marketer is daunting. New technologies are uncomplicating the problem by allowing users to effortlessly communicate with mobile marketers (Dou, Li 61).

Alternatives to QR Codes

Short codes: Common short codes (CSCs) are telephone numbers to which messages can be sent from a mobile phone across all participating carriers. CSCs short length, usually five or six digits, render then easy to remember and use. CSCs allow individuals to engage and interact with a brand—to send text messages to a company's mobile application including voting, polling, games, coupons, contests, mobile payments and other interactive applications. Two types, dedicated and shared short codes, are available for use. Dedicated short codes are leased by one company for their sole use and offer the most secure situation for the brand and consumers utilizing the code. Thus, the company is the exclusive owner and content provider of the code and may use unlimited keywords and maintain complete control over routing inbound and outbound messages. A shared CSC is assigned to multiple firms that run multiple applications or services, which are designated by keywords (About CSCs).

CSCs provide easy access to large, addressable audiences, are simple to use, require little cost to execute and are uniquely personal and portable (Neufeld). They are popular in European and Asian nations, however they did not catch on in the United States until the Fox television reality show "American Idol" adopted the codes as a method for viewers to vote for their favorite contestant in the Summer of 2002. The American Idol voting was initially restricted to AT&T customers, though other carriers were soon to follow (Ankeny 8). A unified system for compatible short codes across mobile service providers has developed in CSCs in October 2003. Now, CSCs are a common mode for opt-in mobile campaigns in the United States (About CSCs). Overall, short codes are excellent for SMS voting, but if the purpose is to connect to a web site or branded content, QR codes are superior, since with

QR codes the user only has to take a picture to be directed to desired content. In addition, using short codes is more costly to the advertiser and consumer than QR codes. In order to utilize a dedicated CSC a lease fee of $500-$1000 per month, often with a three month commitment is required. This could be a barrier for small to mid sized companies, though shared CSCs cost much less—about $20 to $30 per month (About CSCs).

In comparison QR codes cost almost nothing for mobile marketers because codes can be generated through free publicly available software applications. Short codes have received criticism due to their "fine print" costs to consumers. Messages sent and received though short codes can be billed at a higher rate than a standard SMS and often subscribe customers to a reoccurring monthly service. These services are added to mobile phone bills until the consumer terminates the service, by, for example, texting the work "STOP." QR codes do not involve fees because they are converted into URLs or text messages within the phone, so SMS transmissions are unnecessary. In addition, QR code reader applications, such as QR Reader, can be downloaded free of charge for phones on which they do not come preloaded.

Image Code: Image code, which is short for image recognition-based codes are another easy access method to connect the real and digital world on mobile phones. Consumers use the camera in their mobile device to take a picture of an item of interest, such as an advertisement, an editorial page in a magazine or a product in a catalog. They then send the image via MMS, e-mail, or through a downloadable application to a mobile marketer and visual matching technology identifies the picture and connects the consumer to relevant information such as a product's web site or a coupon. Snaptell is the leading firm in the image-code business and offers a downloadable application called Snap.Send.Get with a simple premise:

take a photo of the cover of any CD, DVD, book or video game and the application will automatically identify the product and find ratings and pricing information online (Company Overview). However, the application does not simply give you the rating or description once it has located the product. Instead, a list of links are provided so the user must search though multiple online stores for rating, prices and information with no way to quickly view a product across multiple web sites (Kincaid). Thus, more steps are involved and there is less control over content than with the use of QR codes. Snaptell's application can be downloaded and used free of charge, however image codes that require photo transmissions through MMS or e-mail may cost additional fees.

Near Field Communication: Near Field Communication (NFC) is a short-range high frequency wireless communication technology that enables the exchange of data between devices over a distance of approximately four inches. This "swipe" technology is in the near future, with Apple developing a code named Grab & Go. The new application would allow users to transfer data quickly between devices like their desktop computer and iPod by simply tapping their iPod against their iMac, for example. Neil Andrew, head of portal advertising for 3 UK, believes this is the new technology that will work for consumers. "If responding to a print campaign is, for example, going to be a matter of swiping my phone near a poster," Andrew says, "I can see good consumer take-up" (Andrews 19). However, this technology is still in the works, and Sarah Clark, editor of the online publication Near Field Communications World warns, "it has been important not to get too excited—there's a big difference between a company filing a patent application and actually building a new technology into its products" (Clark). This is a promising technology, but since it is still in developmental stages information is unavailable on costs.

Challenges

Data shows that advertisers adopting the use of QR codes may face several challenges. The technology is relatively new in the United States and according to data from a study entitled "Leading linking methods for sending traffic to merchant sites according to US affiliates, January 2009" the least used technology was QR codes, only 1% of those surveyed had used QR codes (see Figure 6). QR codes fell far behind other methods such as the 51% who used text and 50% who used banners. The data is from the March 2009 Econsultancy and MediaTrust, "US Affiliate Census" that took an online survey of 457 US affiliates (eMarketer).

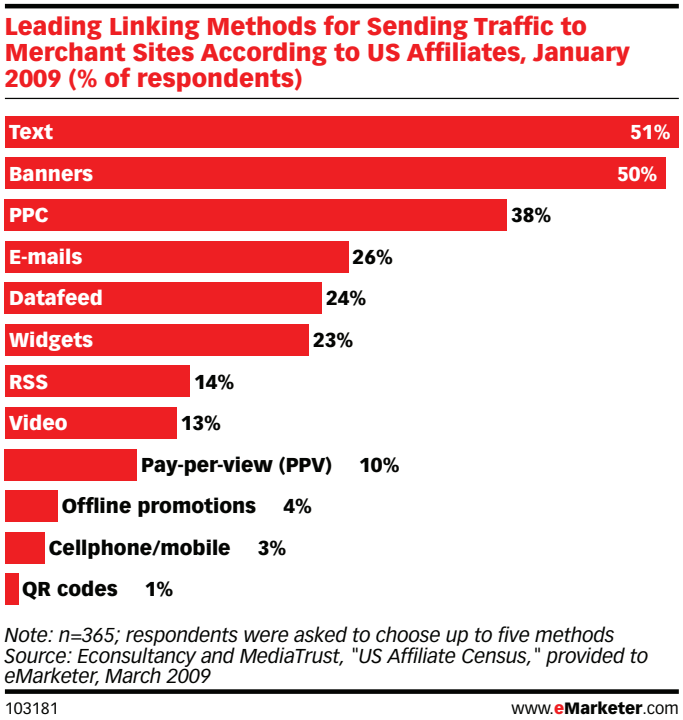

Figure 6

When rating the level of familiarity with mobile advertising formats in the UK, studies show that 5% understand QR codes well, 53% have some familiarity with the codes and 42% have no experience with QR codes (see Figure 7). The Data is from the November 2009 Internet Advertising Bureau report "Snapshot Research" conducted by Work Research that surveyed 106 senior-level UK agency representatives online (eMarketer "Level of Familiarity with Mobile Advertising Formats According to UK Agency Executives, October 2009").

Level of Familiarity with Mobile Advertising Formats According to UK Agency Executives, October 2009 (% of respondents)

	Understand it well	Some familiarity	No experience
MMS/voice/video shortcodes	33%	47%	20%
Ad inserted into normal SMS message	25%	49%	25%
Mobile redemption coupons	24%	53%	24%
Mobile banner ads	23%	44%	33%
Mobile search advertising (sponsored link)	23%	48%	29%
SMS shortcodes	20%	55%	25%
Mobile video ads	16%	41%	43%
Sponsored music, ringtones, ringback	16%	41%	43%
Sponsored content	12%	42%	45%
Other applications (e.g., maps)	12%	38%	50%
SMS which is an ad (like direct mail)	11%	45%	43%
Mobile TV and video clips	8%	42%	51%
Bluetooth downloads	7%	44%	49%
Ads in and around mobile gaming	7%	58%	35%
2D or QR codes	5%	53%	42%
Mobile Web or WAP sites	4%	33%	63%

Note: numbers may not add up to 100% due to rounding
Source: Internet Advertising Bureau (IAB) - UK, "Snapshot Research" conducted by Work Research, November 17, 2009

109750 www.eMarketer.com

Figure 7

However, if America is following Japan's technological lead, things look promising. In 2007 the most preferred method used by mobile phone users in Japan to find more information about an advertisement was through QR codes (see Figure 8). 41.7% choose this message while only 25% never looked up the information (eMarketer "Methods Used by Mobile Phone Users in Japan to Find More Information About an Advertisement, December 2007"). 30% of Japanese mobile phone users preferred QR codes to access web sites on mobile phones (see Figure 9), which trailed behind 58.3% who accessed sited from their favorites or bookmarked sites and 44% who used the start page menu (eMarketer "Methods

Used by Mobile Phone Users in Japan to Access Web Sites on Their Mobile Phones, December 2007").

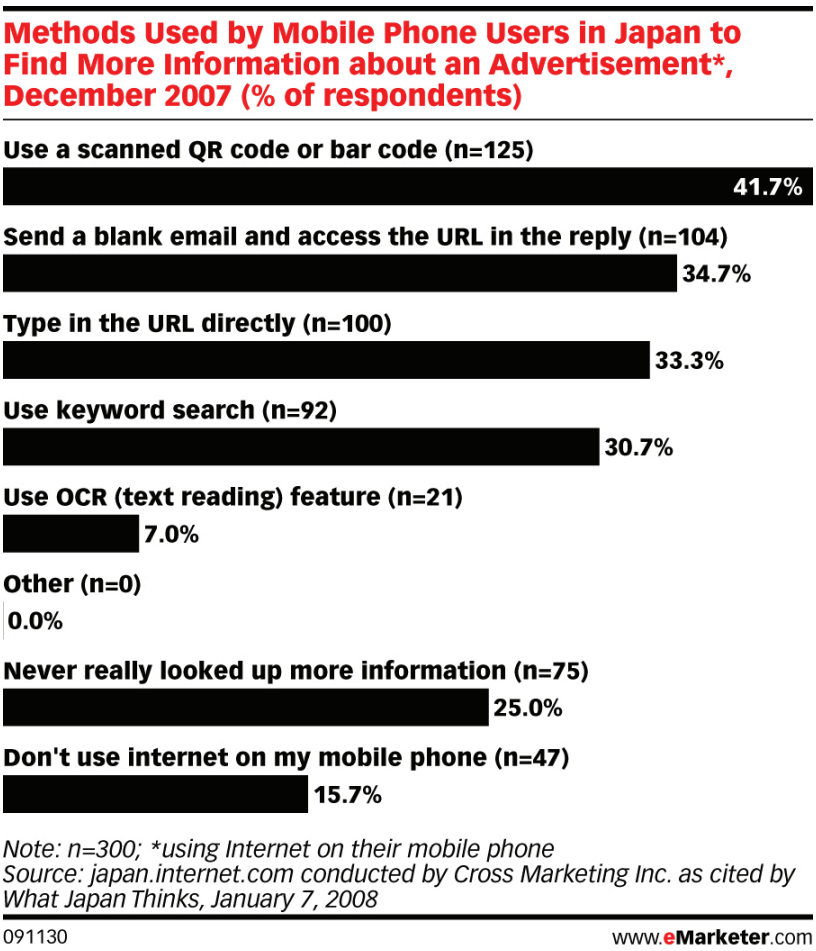

Figure 8

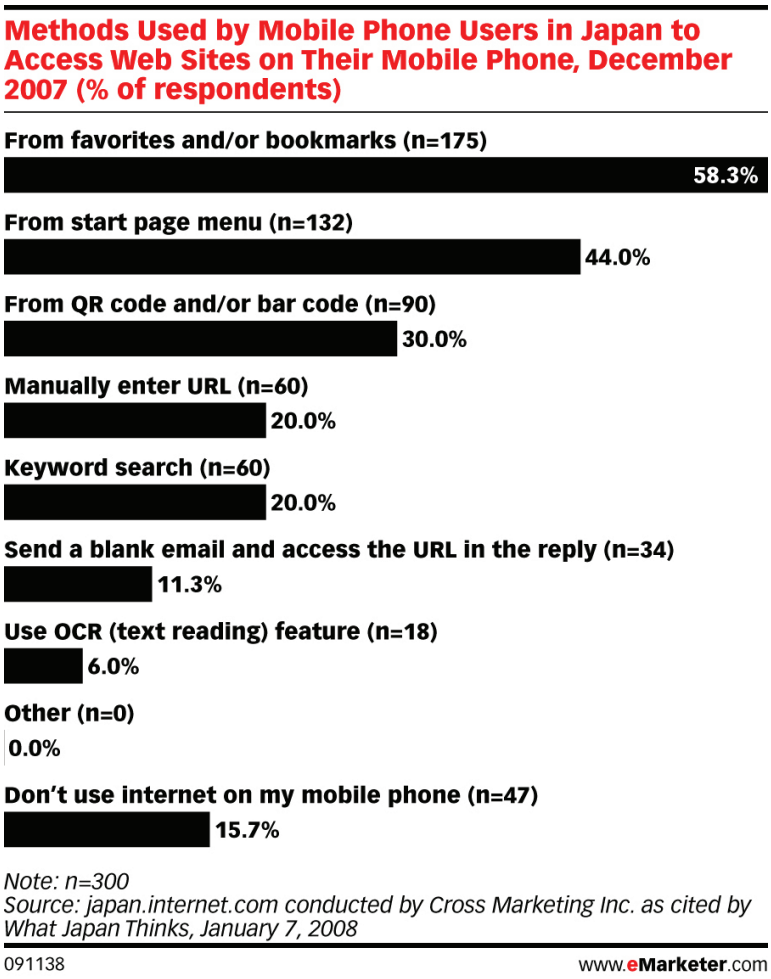
Methods Used by Mobile Phone Users in Japan to Access Web Sites on Their Mobile Phone, December 2007 (% of respondents)
From favorites and/or bookmarks (n=175)
58.3%
From start page menu (n=132)
44.0%
From QR code and/or bar code (n=90)
30.0%
Manually enter URL (n=60)
20.0%
Keyword search (n=60)
20.0%
Send a blank email and access the URL in the reply (n=34)
11.3%
Use OCR (text reading) feature (n=18)
6.0%
Other (n=0)
0.0%
Don't use internet on my mobile phone (n=47)
15.7%
Note: n=300
Source: japan.internet.com conducted by Cross Marketing Inc. as cited by What Japan Thinks, January 7, 2008
091138
www.eMarketer.com

Figure 9

History

QR codes were initially used for tracking parts in vehicle manufacturing by Denso Corporation, a member of the Toyota group. Their use has spread to a much broader context, particularly after gaining a commercial foothold in 2000 and receiving international ISO recognition (Japan – QR Codes).

John du Pre Guantt, eMarketer's senior analyst and the author of the *Mobile Marketing and Advertising Report*, predicted that the global market for mobile marketing and advertising will grow from about $1.5 billion in 2006 to $13.9 billion in 2011. "After a lot of hand-wringing and some spectacular successes-as well as flameouts-mobile operators, brands and consumers will learn from each other about what works and what does not work," says Mr. Du Pre Guantt, "just like they did for online" (Bourne).

Patent Owner, Consumeron, LLC - Ex. 2015, p. 20

Creative Uses of QR Codes

Print ads and QR Codes

In Japan, most QR codes are located on print media. Magazines, flyers, newspaper, direct mail and catalogs have all contained QR codes. QR codes in print media can direct readers to web sites where readers can get more information about advertisers' services or products (Dou, Li 63). For example Emap, a British media company, ran a QR code promotion in the heavy metal magazine *Kerrang* that invited readers to text the word "Kerrang" to a short code in order to receive a code reader, which allowed them to scan a QR code on an ad in the magazine for the band Pendulum. Once the code was photographed with the reader, users were directed to a mobile site where they could access free digital wallpapers and download the band's single free of charge. Chris Shepperson, head of market for entertainment across *Q, Mojo, Kerrang* and *Empire* magazines said, "In effect, what we did was turn the magazine into a broadcast medium… It enabled readers to go beyond the pages of the magazine and access music content on their mobile, even if they were sitting on a train or somewhere else where they couldn't get online" (Mendell 2).

Numerous retailers and high-end brands such as Harrod's, H&M, and Ralph Lauren have made it clear that they are planning to target a new customer base through QR Codes (Mendell 2). H&M placed the codes on billboards and magazine advertisements that allowed consumers to scan the ads to be brought to an H&M page (see Figure 10). There, they could choose the color and size of the clothing on the ad, place the order and the cost was directly deducted from the purchaser's mobile account (Kristan).

Patent Owner, Consumeron, LLC - Ex. 2015, p. 21

Figure 10

In 2008 Polo Ralph Lauren launched a mobile commerce service accessed through QR codes (see Figure 11). The codes were initially offered through a print campaign, though it spread to store windows and mailers. The codes linked consumers directly to a site featuring Ralph Lauren's limited edition 2008 U.S. Open collection. Consumers could also read *RL Magazine*, access style guides Q & A, watch exclusive RLTV videos, watch tennis videos, read tournament articles and fully experience the brand—all in the palm of their hand. The first quarter

Figure 11

revenues grew by 4%, reaching $1.1 billion after the initiation of the campaign and the company expects to bump that figure (Tsirulnik).

QR codes were used on street posters to promote the Barenaked Ladies latest tour. Once photographed, the codes would lead users to a web site where they could watch the band's videos, download ringtones and sample MP3s (Story).

Outdoor Ads and QR Codes

QR codes have been used widely in Japanese outdoor advertisements and are becoming more popular globally. Mindshare, a global media and marketing service company, developed a campaign for Northwest Airlines, the largest foreign airline in Japan, using the codes on giant billboards in high-traffic locations, which became the landmarks of the campaign. Supporting these, pillar wrappings, posters, coin lockers and light boxes were used to grab attention at eye-level. The objective was to position the airline as the technology leader and to collect e-mail addresses of their target market. Through use of the codes NWA successfully enhanced its position as the technology innovator in its category and achieved a huge amount of PR and word of mouth. Web site visits were 35% over target and the campaign was extended as a result (QR Code).

Figure 12: Menu updates outside a restaurant in Spain

QR codes provide daily menu updates outside restaurants (see Figure 12) (Luke). The Walt Disney company released posters in popular subway stations that show Mickey

Mouse, Donald Duck and Stitch partially covered by QR codes and the eyes and nose of each characters can be seen in the center of the QR code. The codes redirect users to Disney Channel's mobile site.

The DVD release of the zombie movie 28 Weeks Later was advertised through QR codes. Billboards which showed nothing but a QR code were placed around London to advertise the DVD (Wray 30). Another creative use of QR codes in outdoor advertising was the World Park mobile interactive experience designed to raise awareness and engagement within NYC parks on Arbor Day. Using QR codes and clues visitors to the parks received a map to take them along a self-guided, interactive tour of New York's Central Park. Code readers scanned location-based "Parkodes"—small digital trees. Each Parkode revealed a question relating to its location. Answers were provided in entertaining ways and every map had a personal scorecard so users could compete with friends across four categories: Science, Pop Culture, Art and History. Throughout the tour users unlocked Central's Parks famous walks, stories, movies, archeology and history (The Experience).

Product Packages and QR Codes

The use of QR codes has gone beyond advertising and into product packaging in order to provide consumers with fast, up-to-date product information. In 2006, McDonald's began placing QR codes on food packaging in Japan (see Figure 13). Once the codes are scanned, customers may view the nutritional information for the food that are eating including the amount of calories, sodium, fat, protein and carbohydrates. Information is available for individual items as well as

Figure 13: QR codes on McDonald's wrappers

meals, and although it may be too late once the food has been purchased, allergy information is also given (White).

Marks & Spencer, a major British retailer, introduced codes on juice packaging in its Food To Go range in an eight-week trial earlier this year. Consumers could access information about the product, daily offers and jokes. The codes provided an opportunity to communicate with the customer without increasing packaging size or label space, with a message tailored to the mobile phone screen. The company is yet to conduct an analysis of the results of the test (Park).

Additional QR Code Uses

English electronic dance music duo, the Pet Shop Boys, made heavy use of QR code technology throughout their music video "Integral" released in October 2007 (see Figure 14). The Rumpus Room produced the video, which contains over 100 subliminally integrated links that directed fans to web sites with information about current issues surrounding civil liberties, as well as specific content by No2ID and Mark Thomas. People could get involved in specific campaigns when the video was paused. Using QR codes offered the flexibility of doing a digital project within a film

Figure 14: Scenes from the Pet Shop Boys "Integral" music video

experience, which is advantageous because film cannot be changed once it has been made. QR codes, however, can be used to direct people to dynamic content. Since the video's launch the campaign has received over 1,000,000 views and has been mentioned in over 600 blogs and web sites.

The Sun UK, with a distribution of 8,000,000 readers daily, featured a two-page spread on the video as did numerous other national newspapers and industry magazines. The video remained at the front of Apple Quicktime for several months, receiving 6,000 unique users a day (Pet Shop Boys-Interactive Film; Farber 10).

In 2009 Google launched Favorite Places, a collection of over 100,000 businesses in the U.S. identified as favorite places on Google based on users' interaction with local business listings. Businesses were chosen based on how many Google users looked for more information about a business, looked for driving directions to the business, and more. Each business received a window decal with Google's logo and a unique QR code. Once photographed the code will take users to that businesses' mobile Place Page on Google where they can read reviews, find coupons, star the business as a favorite and more (Google Favorite Places).

One unique take on the technology is gravestones. Japanese gravestone maker Ishi no Koe, which means "Voice of the Stone", created gravestones with QR codes embedded in them. Through the codes, visitors are able to view photos, videos, family and other information about the deceased. The device also keeps track of each time the code is scanned so relatives can keep track of how often the site is visited. The company plans to use the technology to develop a new way to pay respect to the dead that would not require users to physically be at the cemetery, which they see as a fitting alternative for today's younger generation (Novak).

Patent Owner, Consumeron, LLC - Ex. 2015, p. 26

Despite innovative beginnings, challenges lie ahead for advertisers. QR codes run the risk of becoming the bane of creative advertisers. Often, it appears that QR codes are simply placed wherever possible, without design or atheistic considerations. The use of color and graphic designs within the codes can counteract this problem, but advertisers must consider the brand or campaign's strategy when placing QR codes. Fortunately, QR codes function in a wide range of sizes, which offers art directors design flexibility.

Patent Owner, Consumeron, LLC - Ex. 2015, p. 27

Conclusion

QR codes are setting the stage for an explosion for mobile communications and advertising. Advertisers must recognize the opportunities in the mobile space—it is not merely about the sheer number of mobile devices in use, but the opportune nature of the mobile phone as a marketing medium. "The fact is that mobile is now a lifestyle technology," says Mr. du Pre Guantt, "which is good news for marketers." Mobile devices are portable, personal and data-intensive, which makes them an ideal connecting point between the real and digital worlds. Mr. du Pre Guantt also believes, "Brands, agencies and carriers will need to cooperate in deeper, richer and more complicated and interrelated ways or risk losing out on the world's most prevalent interactive platform." QR codes are the way to conquer this platform. They are ideal because the consumer typically initiates the conversation with the brand allowing advertisers to implement a pull strategy with consumers, integrate traditional and digital media and engage consumers.

Bibliography

"About CSCs." *CSCA: Common Short Code Administration*. N.p., 2010. Web. 4 May 2010. <http://www.usshortcodes.com/csc_about.html>.

"About QR Code." *QRCode.com*. Denso Wave Incorporated, 2010. Web. 3 May 2010. <http://www.denso-wave.com/qrcode/qrfeature-e.html>.

Andrews, Neil. "Second Opinion." Editorial. *Revolution* Dec. 2008: 19. Print.

Ankeny, Jason. "The Long and Short of Texting." *Wireless Review* July 2003: 8-9. Print.

Bourne, Vanson. "The Hottest New Media Platform of 2007 Is Right in Your Hand." *eMarketer*. N.p., 9 Jan. 2007. Web. 4 May 2010. <http://totalaccess.emarketer.com.ezproxy.lib.utexas.edu/Article.aspx?R=1004430&Ntt=The+hottest+new+media+platform+of+2007+is+right+in+your+hand&No=-1&xsrc=article_head_sitesearchx&N=0&Ntk=basic>.

Clark, Sarah. "Apple's Mobile Commerce Ambitions are Set to Kickstart NFC." Editorial. *Near Field Communications World*. N.p., 15 Apr. 2010. Web. 4 May 2010. <http://www.nearfieldcommunicationsworld.com/2010/04/15/33420/apples-mobile-commerce-ambitions-are-set-to-kickstart-nfc/>.

"Company Overview." *SnapTell*. A9, 2009. Web. 4 May 2010. <http://www.snaptell.com/company/index.htm>.

Daniels, Chris. "The Code Breakers." *Marketing Magazine* 112.8 (2007): 8. Print.

Dou, Xue, and Hairong Li. "Creative Use of QR Codes in Consumer Communications." *International Journal of Mobile Marketing* 3.2 (2008): 61-67. Print.

"The Experience." *The World Park*. N.p., 2010. Web. 4 May 2010. <http://www.theworldpark.com/nyc/#slide_3>.

Farber, Alex. "QR Codes Get Backing from Major Publishers." *New Media Age* 13 Dec. 2007: 10. Print.

"Google Favorite Places." *Google*. N.p., 2010. Web. 4 May 2010. <http://www.google.com/help/maps/favoriteplaces/business/index.html>.

"Japan - QR Codes." *Budde Comm*. N.p., 28 July 2008. Web. 4 May 2010. <http://www.budde.com.au/News_and_Views/2008/July/JAPAN_-_QR_Codes.aspx>.

Kincaid, Jason. "SnapTell: Instant Product Lookup from the iPhone. You Want This." *TechCrunch*. N.p., 19 Nov. 2008. Web. 3 May 2010.

Kristan, Ines. "New Generation Code." *Vizuarna*. N.p., 9 Dec. 2009. Web. 4 May 2010. <http://blog.vizuarna.si/tag/qr-code/>.

"Leading Linking Methods for Sending Traffic to Merchant Sites According to US Affiliates, January 2009." *eMarketer*. N.p., 1 Mar. 2009. Web. 4 May 2010. <http://totalaccess.emarketer.com.ezproxy.lib.utexas.edu/Chart.aspx?R=84256&Ntt=QR+Codes&No=6&xsrc=chart_head_sitesearchx&N=0&Ntk=basic>.

"Level of Familiarity with Mobile Advertising Formats According to UK Agency Executiives, October 2009." *eMarketer*. N.p., 17 Nov. 2009. Web. 4 May 2010. <http://totalaccess.emarketer.com.ezproxy.lib.utexas.edu/Chart.aspx?R=90823&Ntt=QR+Codes&No=-1&xsrc=chart_head_sitesearchx&N=0&Ntk=basic>.

Luke. "10 Creative QR Code Examples." *Lukerative*. N.p., 25 Apr. 2009. Web. 4 May 2010. <http://www.lukerative.co.uk/blog/2009/04/25/10-creative-qr-code-examples/>.

Mendell, David. "Cracking Quick Response Codes." *Adweek* 12 Jan. 2009: 2. Print.

"Methods Used by Mobile Phone Users in Japan to Access Web Sites on Their Mobile Phones, December 2007." *eMarketer*. N.p., 7 Jan. 2008. Web. 4 May 2010. <http://totalaccess.emarketer.com.ezproxy.lib.utexas.edu/Chart.aspx?R=72213&Ntt=QR+Codes&No=8&xsrc=chart_head_sitesearchx&N=0&Ntk=basic>.

"Methods Used by Mobile Phone Users in Japan to Find More Information about an Advertisement, December 2007." *eMarketer*. N.p., 7 Jan. 2008. Web. 4 May 2010. <http://totalaccess.emarketer.com.ezproxy.lib.utexas.edu/Chart.aspx?R=72205&Ntt=QR+Codes&No=7&xsrc=chart_head_sitesearchx&N=0&Ntk=basic>.

Murphey, David. “Mobile: Crack the Code.” *Marketing* 6 Feb. 2008: 30-31. Print.

Neufeld, Evan. *Common Short Codes:Cracking the Mobile Marketing Code*. *Youra*. M:Metrics, Oct. 2007. Web. 2 May 2010. <http://www.youra.com/stats/mobileuse.pdf>.

Novak, Asami. “Japanese Gravestones Memorialize the Dead.” *Wired*. N.p., 23 Mar. 2008. Web. 4 May 2010. <http://www.wired.com/underwire/2008/03/japanese-graves/>.

Okazaki, Shintaro. “How Do Japanese Consumers Perceive Wireless Ads? A Multivariate Analysis.” *International Journal of Advertising* 23.4 (2004): 429-454. Print.

Park, Jill. “QR Codes: A New Dimension.” *Packaging News*. N.p., 3 Feb. 2010. Web. 4 May 2010. <http://packagingnews.co.uk/channel/converting/news/980776/>.

“Pet Shop Boys - Interactive Film.” *The Rumpus Room*. N.p., 2010. Web. 4 May 2010.

“QR Code.” *Mindshare*. N.p., 2010. Web. 4 May 2010. <http://www.mindshareworld.com/what-we-do/case-studies/@north-west-airlines-qr>.

Story, Louise. “Scan This.” *Thee Blof*. N.p., 20 Aug. 2009. Web. 4 May 2010. <http://diegoguevara.com/blog/?p=197>.

Summins, Mona, and Kevin Edwards. “Push Technology.” *SearchSOA.com*. WhatIs.com, 31 July 2010. Web. 4 May 2010. <http://searchsoa.techtarget.com/sDefinition/0,,sid26_gci213345,00.html>.

Tsirulnik, Giselle. “Polo Ralph Lauren Goes Mobile.” *Mobile Marketer*. N.p., 15 Aug. 2008. Web. 4 May 2010. <http://www.mobilemarketer.com/cms/news/commerce/1545.html>.

White, Sarah. *McDonald’s Tags Food with High-Tech Nutrition Information*. Calorie Lab, 2007. Web. 4 May 2010. <http://calorielab.com/news/2006/09/15/mcdonalds tags-food-with-high-tech-nutrition-information/>.

Wray, Richard. “Join the DOts: Camera Phone to Decode New Ad Widget.” *Guardian* 5 Sept. 2007: 30. Print.

VITA

Lauren Elizabeth Stewart attended Montgomery High School in Montgomery, Texas. In 2005 she entered The University of Texas in Austin, Texas. She received a Bachelor of Science from The University of Texas at Austin in May, 2009. The same year she entered the Graduate School at The University of Texas at Austin.

Permanent Address: 205 Kings Lane, Montgomery, Texas 77356

This report was typed by the author.

Patent Owner, Consumeron, LLC - Ex. 2015, p. 32