

# The Expectations of Quick Response (QR) Codes in Print Media: An Empirical Data Research Anthology

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## ABSTRACT

Quick Response codes, more commonly referred to as “QR codes” are changing the way marketers and consumers view print media. QR codes are the seemingly perfect bridge to mending the gap between the tactile and virtual world. The focus of this study is an exploration and compilation of data and research regarding the current functionalities, benefits, limitations, and future expectations of Quick Response (QR) codes in print media. To enhance and build on the findings collected from outside research, a survey was administered solely for the purposes of this study at the University of Wisconsin – La Crosse to uncover QR code awareness and effectiveness, as previous research is continuing to find that QR codes are still facing adoption issues due to technology and content hindrances. Because of their interactive capabilities, QR codes have infiltrated several types of print media in a short amount of time, but are QR codes just today’s passing fad or a global shift in mobile marketing?

**Keywords:** quick response, barcode, print media, smartphones, mobile marketing

## INTRODUCTION

*What is a QR Code?*

QR Codes, “QR” abbreviated from “Quick Response”, are a rapidly growing marketing phenomenon that first started to be used in the consumer market in 2011 (“Barcode to 2D”, 2010). The QR code has infiltrated the world of print media as a quick and easy way to bridge the gap between the tactile and virtual world of advertising media. The QR code is a two dimensional (datamatrix) barcode that is designed to be scanned by a smartphone camera, in combination with a barcode decoding application (“Barcode to 2D”, 2010). See Figure 1 below 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 home page, Facebook page, YouTube page, etc.).



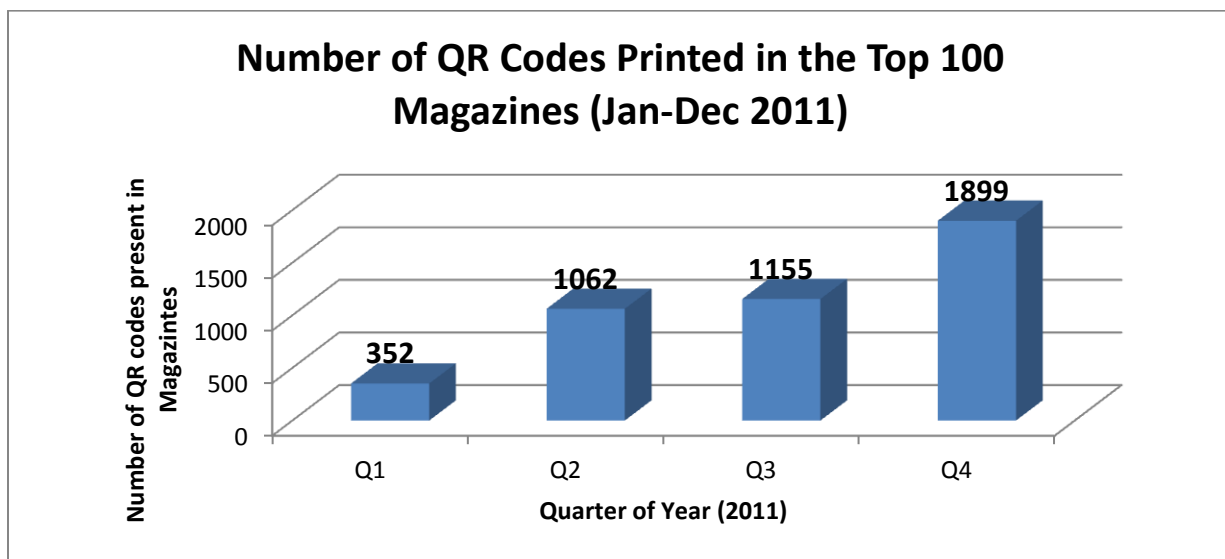
**Figure 1.** Example of a QR Code

The idea of the 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 transferable to their industries. The QR code first became commercialized 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).

The process of scanning a QR code is relatively straightforward in theory, but is taking longer to catch on than marketers would have hoped. For the process to work correctly, a series of steps must be followed in the correct order. First, a reader encounters a QR code on a billboard, magazine page, cereal box, etc. The reader then takes out his or her smartphone, scans the code with their barcode scanning application (app), and is directly brought to some form of online content; usually relevant to the advertisement or product they found the QR code on (“Barcode to 2D”, 2010). This process can all be done within a matter of seconds, making the transformation of data from print, to a user’s mobile phone, to the mobile web almost instantaneous. In a day and age where technological fluency and curiosity is flourishing, one would think that smartphone users would be scanning every QR code in sight. This however is not the case, and adoption of QR codes is taking general consumers longer to grasp than marketers anticipated (“Barcode to 2D”, 2010).

*The Rise of the QR Code*

Though consumer adoption has been relatively slow, the increase of consumer exposure to QR codes has been hasty, much in part to marketers seeing QR codes as an innovation that they can run with and easily incorporate into ad campaigns and print-based promotional mediums. Looking at the magazine industry alone, the rise of the QR code is enormous. According to Nellymoser research in 2011, there were 4468 QR codes printed within advertisements in the top 100 magazines over the course of 2011. As shown in Figure 2 below, the year started off with 352 QR codes in Quarter 1 (January through April) and by Quarter 4 (September through December), the number of QR codes printed in the top 100 magazines had increased to 1899, which is an astounding 439 percent growth in the magazine industry alone (“QR Codes in Magazine”, 2011).



**Figure 2.** The Number of QR codes Printed in the Top 100 Magazines (Jan-Dec 2011); Source Data from Nellymoser.com, 2011.

Despite the rapid growth and consumer exposure, many business journalists, tech bloggers, and media experts are convinced that QR codes are merely a fad or just another instance of ‘shiny object syndrome’ where a new

technological advancement such as the QR code is released and marketers feel they have to jump onboard with the trend in order for their company to give off the “innovative impression” to both consumer and competitors (Patel, 2012). Ultimately, research is suggesting that the “newness” of the QR code will eventually die down and the next “big thing” in technology will enter the market and soon take over the QR code. A different opinion suggests that QR codes *are* in fact the latest marketing trend, and for many businesses, staying innovative is crucial to staying competitive in the industry. With an extremely efficient cost structure, easy generation processes, and the capability to turn a simple poster into an interactive informational seminar or point-of-purchase location in a matter of seconds; it is hard to make many solid arguments as to how a QR code would not be somewhat beneficial to a business, at least in a branding or imaging sense. For retailers especially, a well designed QR code campaign can not only drive sales, but provide customers with the information they need to make a buying decision (Binder, 2012).

Though there are apparent inconsistencies in the idea of whether or not QR codes are sustainable long term, previous research shows that QR codes are continuing to rapidly gain user awareness and adoption with each passing day. In just one calendar year, from January 2010 to January 2011, QR code scans increased by a rate of 4549% (“Infographic”, 2011). These types of large figures in combination with the background information described above are what sparked the desire for primary data in this individual study. The study will now delve deeper into the empirical research that was conducted to better gauge the accuracy of the background data presented about QR codes and narrow the data regarding awareness and adoption of QR codes to a more focused, predictable level. A combination of the three research methods provide the support and basis for the expectations and predictions made in the discussion and conclusion sections of the study.

## METHODS

There were three different methods used when compiling data and research for this study. First, literature reviews, articles, and previous studies performed on both smartphones and QR codes were examined from academic journals, trade publications, popular press publications, relevant subject matter blogs, previous studies performed on relatable subject matter, and discussion boards from LinkedIn, a professional social networking site. Each of these mediums assisted the study by providing a broad basis of background information, demographic and geographic data, general statistics, and also by expressing the popular media opinions on what effects QR codes are currently having in the world today.

The second method used in this study was a series of three informational interviews held with a range of subject matter experts found via a LinkedIn group dedicated solely to the promotion of QR code idea generation. Knowledge and opinions from these experts in the industry add validity to the study, and their personal insights help to paint a more accurate picture where QR codes will take us in the future and also give support to the predictions made in the discussion and conclusion sections of the study.

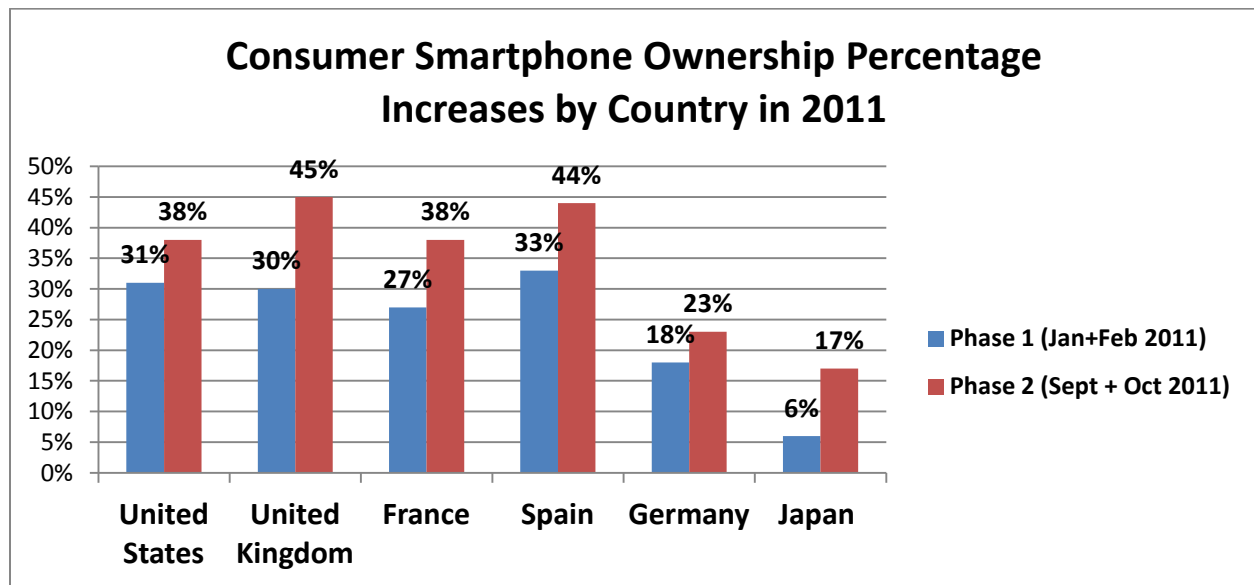
Third, an online survey developed exclusively for this study was conducted and sent to a sample of 58 undergraduate college seniors at the University of Wisconsin – La Crosse. Each member of the sample was enrolled in a Spring 2012 marketing capstone course at the University. Of the 58 who were contacted to participate in the survey, 44 responses were received from participants, a 75.86 percent response rate. The purpose of the survey was to capture college student awareness and opinions regarding QR codes and to determine whether or not QR codes are both attractive and effective to members who fall in the target age group (18-45) of QR code marketing. To conduct this study, approval was needed from the University of Wisconsin – La Crosse Institutional Review Board (IRB). Approval from the IRB for this study was granted after the proper documentation was submitted and an instructional online training course in Protecting Human Research Participants issued by the National Institutes of Health’s (NIH) Office of Extramural Research was passed.

## RESULTS

### *The QR Code Market*

If the QR code were to be viewed as a product, it would still be in somewhat of an emerging market, or in other words, in the very early stages of its “product life cycle.” This is because of the technology requirements needed to scan a QR code; a smartphone and a barcode scanning application. Analyzing the general smartphone market is the first step towards getting a better grasp on the more narrowed QR code market.

Analysis of smartphone trends can be taken from a study released in February, 2012 by Google and Ipsos OTX MediaCT titled “Our Mobile Planet: Global Smartphone Users” in which six thousand individuals across the US, UK, France, Germany, Spain and Japan were polled over the 2011 year (“Our Mobile Planet”, 2011). According to their results, 38 percent of Americans own a smartphone. As shown in Figure 3, this percentage increases upon analyzing foreign markets, up to 45 percent of consumers in the UK and Spain owning a smartphone (“Our Mobile Planet”, 2011). As with any new to the market “product”, this technology hurdle is expected to decrease and it is likely that the number of Americans owning a smartphone will increase to at least 50 percent by 2015 (Cane, 2012).



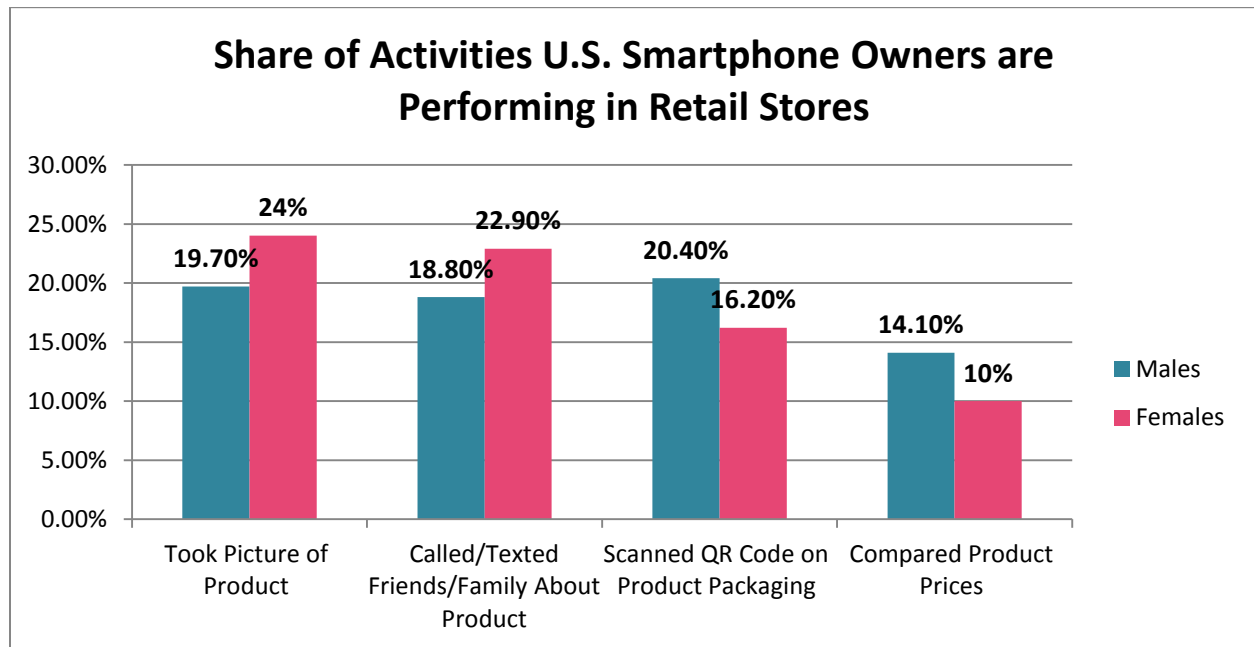
**Figure 3.** Consumer Smartphone Ownership Percentage Increases by Country from Jan/Feb 2011 to Sept/Oct 2011. Source Data from Google and Ipsos OTX MediaCT study. “Our Mobile Planet: Global Smartphone Users” (Feb 2011).

Possibly the most important take away from the Google and Ipsos OTX MediaCT study was the actual speed at which smartphone penetration is increasing in the world today. As shown in Figure 3, smartphone penetration in western countries increased 23 percent (US) and 50 percent (the UK) from January 2011 to October 2011. Of these smartphone users, almost 100 percent use their device to go online every day (“Our Mobile Planet”, 2011).

The Google and Ipsos OTX MediaCT study also found that 85 percent of smartphone users seek local information about stores and businesses in their community and about 20 percent go on to make a purchase after obtaining or finding information on their smartphone.

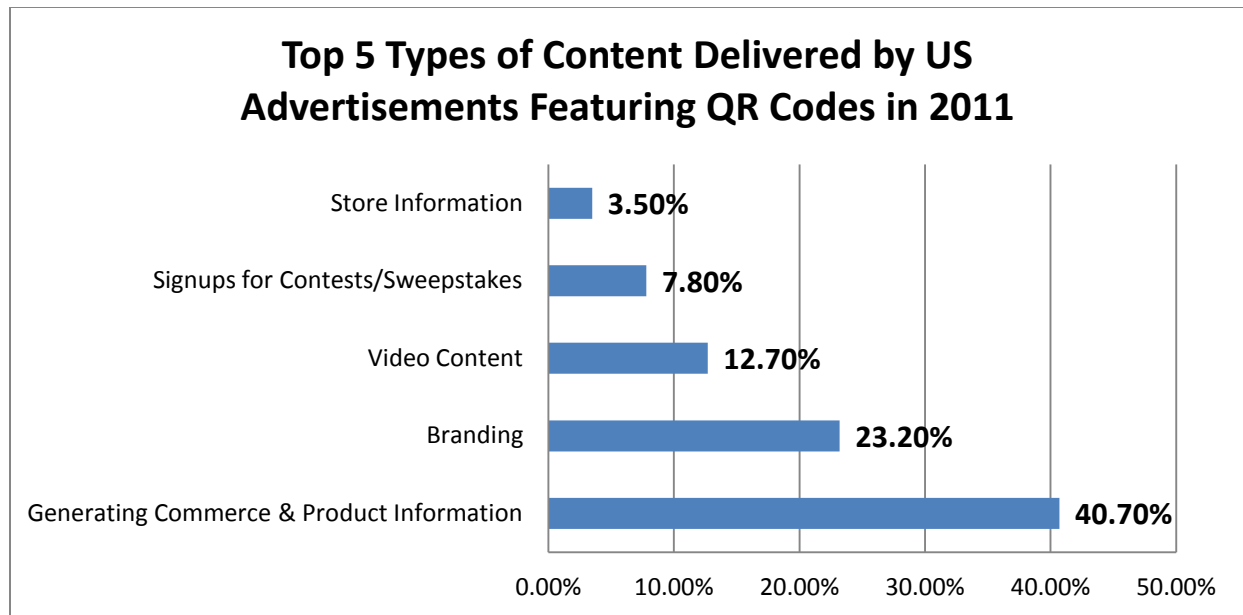
Tying generic smartphone data to QR codes becomes the next challenge for marketers aspiring for success with QR code campaigns. It is the hope of marketers that the use of QR codes will fill in the gaps of seeking local information. Instead of Google searching or trying to type in a company website on a mobile phone, QR codes will be used to speed up the consumer information search process. With a simple scan, a smartphone user can be directed to specific product informational content, coupons or specials on the product being scanned and even point-of-purchase actions. A 2012 study performed by comScore, “2012 Mobile Future in Focus”, gives further support to QR code research by showing what actions customers are taking in a retail setting to obtain the products they desire (“comScore Releases”, 2012). This report captured the mobile behaviors of 24,000 respondents spanning across eight countries—United States, United Kingdom, France, Germany, Italy, Spain, Japan, and Canada.

As seen in Figure 4 below, scanning a QR code is not the only way to obtain product information, but 20.40 percent of males and 16.20 percent of females who are smartphone users in the United States have scanned a QR code on product packaging. These percentages are only slightly behind other activities consumers are engaging in while in retail stores with their smartphones, such as taking a picture of the product or calling a friend or family member about the product. This research argues for the continuation of QR codes that assist the consumer in retail settings to be printed on product packaging in the future.



**Figure 4.** Share of Activities United States Smartphone Owners are Performing in Retail Stores. Source Data from comScore MobiLens, 3 mon.avg. ending December 2011, United States

Shoppers today are increasingly tech-savvy and hungry for engaging mobile content (Binder, 2012). In the chart above, of those consumers that did scan a QR code, 73 percent did so to “find product information”, 32 percent did so “to uncover a coupon or special offer” and 25percent did so to “find event information”. These percentages are in stark contrast with the information consumers actually receive when they scan a QR code. According to a 2012 study from eMarketer, “Mobile Barcodes Drive Traffic to Brand Sites from Print”, 40.7 percent of QR codes found in United States print advertisements link to some form of product information, a brand/company website, or a purchase opportunity (“Mobile Barcodes”, 2012). As shown in Figure 5, approximately 12.7 percent of QR codes offered video content, and only 7.8 percent of QR codes lead to signups for online product newsletters, contests, or sweepstakes and less than 1 percent led to coupons or special offers.



**Figure 5.** Top 5 Types of Content Delivered by Unites States Ads Featuring 2-D Barcodes (QR Codes) 2011. Source Data from eMarketer.com, adapted from Competitrack, “Black, White and Read All Over.” 2/1/12

*Comparing QR Code Data*

It is reported that as of December, 2011, approximately 23.64 million U.S. smartphone users had scanned a QR code (Pozin, 2012). While this number may sound impressive, one must keep in mind that there are approximately 118.2 million Americans (roughly 38 percent) that own a smartphone. Therefore, as displayed in the tables shown above, only 20 percent of American smartphone users are scanning QR codes (“comScore Releases”, 2012).

The research data in the studies analyzed above did not reveal the answers to important questions like how many Americans actually used QR codes on a regular basis, how many have scanned a code more than once, or how many total smartphone users even have the barcode scanning app available on their phone that would give them the capability to scan QR codes. For this reason, primary, exploratory research was needed to attempt to answer these unmeasured questions. Ultimately, the intent of the online survey in this study is to provide measurable results that, upon analysis, allow for the capability to take what was learned in the small scale survey and extrapolate the numbers to make large-scale representative predictions.

*QR Code Online Survey*

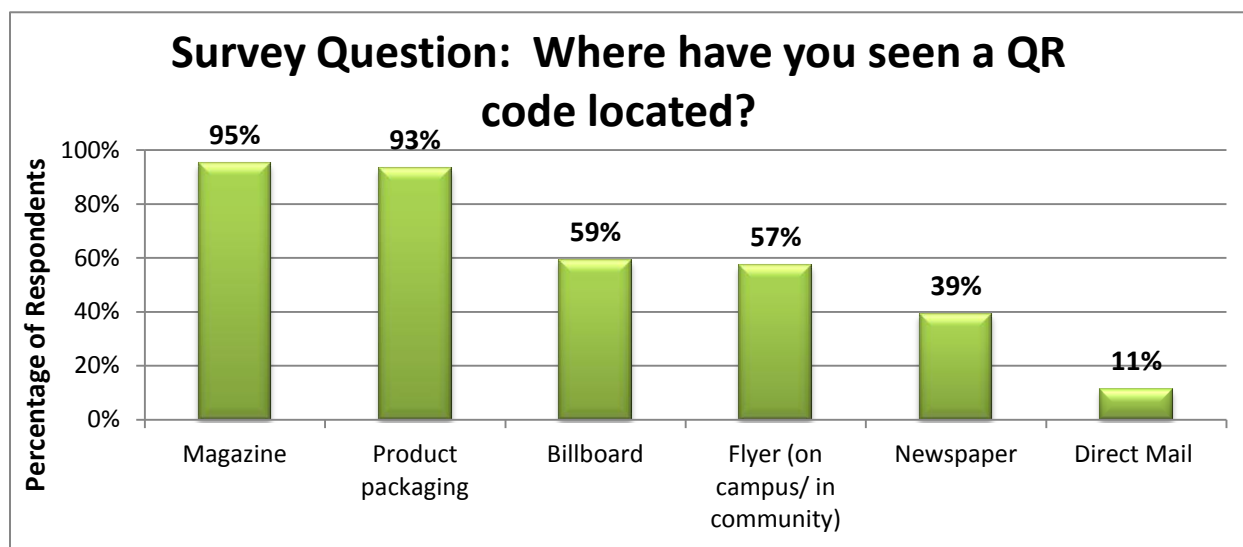
**Selection of Demographic.** Identifying and studying the college demographic is important in terms of analyzing the QR code market. By understanding what college students think about QR codes and what their behaviors are toward QR codes, brands can better identify what they should do with QR codes to engage young consumers—typically the group that can be counted on to drive our popular culture and “make or break” trend, especially a technological one, in the marketplace. “Without adoption or buy-in from this segment, (QR codes) will continually struggle for relevancy” (Gahran, 2012).

**Sample Characteristics.** The online survey was distributed using Qualtrics Survey Software to 75 undergraduate marketing students currently enrolled in a Marketing capstone course at the University of Wisconsin-La Crosse. Marketing students enrolled in their last, or second to last semester of college were solely targeted for this study as they have been immersed in the world of media and their familiarity with up and coming marketing trends like QR codes should be relatively high.

The survey generated 44 results which yields a 58.67 percent response rate. The age range of those who participated in the survey was 21-25, with a mean age of 22.07 years, a median age of 22 years, and a mode age of 22 years. The respondent age range for this survey fell into the desired age range for the study, as research showed that the target market for QR codes in general is aimed at consumers ranging from age 18-45 (“Barcode to 2D”, 2010). Of the respondents, 44 percent were male and 56 percent were female.

**Survey Results.** The online survey showed that 71 percent of the respondents owned a smartphone. 71 percent is a much greater percentage than the United States average of 38 percent, but because the sample was taken from only college students, the percentage of smartphone ownership was expected to be greater than the national average. Of the students that answered “yes” to owning a smartphone, only 47 percent had a barcode scanning app downloaded on their phone. This means that only 47 percent of the students surveyed had the capability to scan a QR code.

Just because college students do not all have the capability to scan QR codes, they still have a high-awareness of QR codes and where they are showing up in advertising. When students were asked if they knew what a QR code was, without prompting using an image as an example, 63 percent answered “yes” that they knew what a QR code was. When shown an image of a QR code however, 98 percent of students said that they had seen a QR before. In other words, while the term “QR code” is not familiar to all students, nearly all students recognize a QR code when presented with an image. These results indicate that QR code awareness and recall is high in the college-student segment. The locations that students have seen QR codes and what percentage of the students has seen a QR code in the designated location are represented in Figure 6 below.



**Figure 6.** Where have you seen a QR code located? Source Data from 2012 online survey; primary research collected for “The Expectations of Quick Response (QR) Codes in Print Media: An Empirical Data Research Anthology.”

Magazines are where most students are seeing QR codes (95 percent), followed by product packaging (93 percent), billboards (59 percent), and fliers (57 percent) and newspapers (39 percent). Other places students mentioned seeing a QR code was on direct mail and on signs at local retailers and restaurants.

Of the respondents who had a smartphone, but did not have a barcode scanning app, 76 percent listed that the reasoning behind not having a barcode scanning app on their smartphone is that they simply “would not use a barcode scanning app on (their) cell phone.”

Of the respondents that did have both a smartphone and a barcode scanning app downloaded on the smartphone, 93 percent have scanned a QR code. Of those who have scanned a QR code, 93 percent have scanned 1-5 QR codes in the last 6 months (October 2011-March 2012), while only 7 percent have scanned more than 5 QR codes over the course of the 6 months.

Of the respondents that have scanned a QR code, 54 percent have scanned for informational purposes, 23 percent for purchasing intent, and 77 percent have scanned a QR code for fun or out of curiosity. Only 7 percent of respondents said that scanning a QR code has caused them to purchase a product that they normally would not have.

Another interesting finding was that 100 percent of students with the capability to scan a QR code answered that they would be more likely to scan a QR code if they knew that it brought them to a coupon for a product they wanted and that 77 percent predicted that the popularity of QR codes will increase in the next 5 years.

## DISCUSSION

### *Benefits of QR Codes*

QR Codes undoubtedly bring benefits to both consumers and marketers, with an unmatched technological capability to quickly provide more information to a consumer who is interested in the company or brand.

The appeal of QR codes to marketers is clear. QR codes are easy to create and implementing a QR code into an advertisement is far less expensive than a company having to develop its own smartphone app (Patel, 2012). Marketers find value in QR codes because they can be placed just about anywhere people will have time and a reason to take out their smartphone and scan the code. QR codes also offer versatility as they can be enlarged to the size of a billboard or minimized to the size of a stamp (Guluk, 2012). Additionally, QR codes offer the ability to measure consumer activity, as companies using QR codes have the ability to track the number of scans on each code and identify which medium the scan came from—newspaper, magazine, billboard, etc. This is certainly a benefit to marketers in identifying which mediums they want to continue placing advertisements. In a retail setting, QR codes can be placed on signs within the store directing customers to a checkout, restroom, or specific aisle for the product for which they are looking. When shoppers have the opportunity to access this kind of information on their own, it frees up salespeople on the sales floor and can increase productivity (Patel, 2012).

Arguably the most beneficial attribute of QR codes is their interactive capabilities. With the click of a button on a smartphone, a QR code allows consumers to interact with the company of the ad they were viewing in a completely different form of media that was presented to them—an ad that previously possessed only visual and tactile functions can become digital and interactive in a matter of seconds. Just one QR code has the ability to instantly bring up internet links, text messages, sound recorders, mp3 downloads, or instructional videos to a user's smartphone. They can even spark e-commerce or generate a lead (Patel, 2012). Ultimately, marketers see QR codes as another way to engage customers and keep the brand top of mind (Tolliver-Walker, 2012). Another positive attribute of QR codes are their branding capabilities. QR codes can be easily customized to a brand. Consumers are able to “scan on the go” and retrieve the information later when time allows. “If a marketing campaign is done properly using a QR code, the consumer will have a great experience” says Michael Carmine. “Organizations can lose a consumer if the marketing campaign is poorly executed.”

If a QR code campaign is implemented properly, a user can immediately interact with brand, allowing the business to experience immediate returns in customer satisfaction. Home Depot had a well executed marketing campaign when they began using QR codes in their Home and Garden center. QR codes were placed on each of the plant identification stakes in each potted plant. The consumer was then able to scan the code and find a wealth of knowledge about the plant, such as what conditions it grows best in, and how to care for the plant (Carmine, 2012). Quikrete used a similar informational branding approach when it added QR codes to its bags of do-it-yourself concrete. The QR code brought consumers to a mobile-optimized website with an instructional video on how to mix the product, a quantity calculator, and a list of recommended products to go along with the Quikrete. Heinz catsup used yet another branding approach when they wanted to draw consumer attention to their eco-friendly PlantBottle Packaging. A QR code was placed on the back of the catsup bottle, and when scanned, provided a variety of customer engagement tools including a sweepstakes to win eco-friendly prizes such as a hybrid car, an eco-trivia game, and PlantBottle facts (Tolliver-Walker, 2012). Each of these actual QR code examples demonstrates unique branding and customer engaging techniques that no other form of advertising or media can even come close to.



### *Limitations of QR Codes*

With any technological advancement, there are certain drawbacks that come with providing the innovation as a marketer and receiving the innovation as a consumer.

After careful analysis of both the primary and secondary research on QR codes, three foreseeable drawbacks that will potentially affect QR code adoption and usage in the future have been identified. First is the issue that not all consumers have the capability to scan a QR code, and of those that do, may not necessarily have the knowledge of how to scan a QR code. What many consumers have trouble understanding is that a user cannot simply take a picture of a QR code on their smartphone; they actually need the right application installed on their phone to scan and provide content (Patel, 2012). The confusion or uncertainty of how QR codes work, and how they are to be scanned is a hurdle that both consumers and marketers must combat together. Educating the consumer is the answer to this limitation. “You will always have early adopters, however, in order to get more consumers to take advantage of this technology, an organization must help educate and specifically state what can be gained from scanning the QR code,” explains Michael Carmine, the Director of Employee Relations and New Media Technology at Southern Utah University. “The majority of QR Codes today do not have a call to action. Consumers are left wondering why they should scan the QR code, and what the reward is for them if they choose to scan the QR code.” To reduce this kind of uncertainty, marketers must use specific call-to-action statements that give instruction on how to scan the QR code in front of them, give insight as to what kind of information they will receive after scanning the QR code, and possibly even offer the opportunity to download a barcode scanning app, if the consumer does not have one currently downloaded on their smartphone.

The second limitation to QR code adoption is the lack of uniformity among barcode scanning applications available on each smartphone depending on phone brand and service provider (Patel, 2012). Some smartphones come with a standard bundle of apps that include a barcode scanning app, while others leave it up to the consumer to download their own apps at their own convenience—a hindrance that can only be overcome if the consumer chooses to download the barcode scanning app themselves. Downloading an app usually means that the consumer would find value in the app need the app to feel useful, therefore the content in QR codes must be thought of as “valuable or useful” in the consumers mind before they will go through the trouble of downloading another app onto their smartphone.

Lastly, is likely the largest limitation holding back the QR code today—the issue of QR codes bringing consumers to sites or other online content that either contains little to no useful information or bringing them to a website that is not adapted for mobile browsing. If the smartphone user finds that they are receiving either inadequate content or experiencing difficult page navigation on their first few scans, they will most likely remember their bad experience the first time and be hesitant to keep scanning QR codes in the future, even for a product, event, or activity they may find value in. Consumer lack of interest in the message or services QR codes provide is a limitation that all marketers must consider upon fighting low QR code usage rates. It is the marketer’s job to start placing more emphasis on the content and message the QR code is directing the customer to, which includes the location of the landing page. Some marketers are so excited to have found a new gimmick that they forget the purpose of a QR code in the first place (Gluck, 2012). Organizations need to optimize their websites and landing pages for mobile browsing if they want consumers to invest the time and effort of scanning the QR code (Carmine, 2012). If the content from a QR code is not helpful or mobile friendly and contains misleading information, a smartphone user will soon lose motivation to scan QR codes all together (Pozin, 2012).

Despite the current limitations QR codes are facing, marketers are staying loyal to QR codes and continuing to find new ways to utilize them through effective marketing campaigns (Patel, 2012). With the proper education and repeated exposure of the codes in daily mediums of print advertising, experts in the area continue to believe that QR codes are not leaving print media in the near future, and that the process of scanning the codes will soon become as standard or routine as performing a Google search or sending a text message (Cane, 2012).

### *Cost to Maintain vs. Return on Investment*

The cost to maintain a QR code is low. Once the QR code is created, companies are left with little else to do besides track the scans. “The real money comes in marketing costs,” Carmine explains. “The ROI comes from the overall campaign itself and dollars spent.” This being said, there are options for companies to partner with more expensive QR code generation companies in exchange for more demographic information on their customers.

Carmine again explains how “one could partner with an organization such as ScanLife (a QR code generation company) where the cost of creating the QR code is more expensive; however the background information you gain from the customers is invaluable.”

There are many examples of QR code campaigns that have been successful in generating sales and boosting revenue. One example is the case where Taco Bell and MTV partnered together to print QR codes on cups and boxes available at Taco Bell. With the quick scan of the QR code placed on the cup, customers were granted access to exclusive MTV music content. The content within the QR code was changed each week so the concept remained fresh in the minds of consumers and stimulated repeat visits. In just 10 days, the campaign had generated over 100,000 scans and Taco Bell saw a 5 percent increase in revenues (Tolliver-Walker, 2012).

Another example comes from restaurant chain, Applebee’s Neighborhood Grill and Bar. Applebee’s-owned Thomas & King franchise locations across the United States began using QR codes on tabletops as part of a multichannel campaign to promote quick lunchtime service. Applebee’s started the campaign in June 2011, and by October 2011, had boosted their lunch sales by 9.8percent, all by featuring a tabletop ad with either a man or cat with a QR code over their mouth. As seen in Figure 7 below, consumers were then able to scan the QR codes to reveal the “mouths” and interact with the campaign’s YouTube channel while they waited for their food (Johnson, 2011). The ability to place QR codes somewhere that already has a captive audience, such as restaurants, has given marketers the technology to keep customers entertained and simultaneously drive sales.



**Figure 7.** Cat-themed QR code promotion used in Applebee’s Neighborhood Grill and Bar campaign to promote quick lunchtime service. Source: Mobile Commerce Daily

### *Future Predictions*

Are QR codes here to stay? The answer to this question is relatively simple—nobody knows. In 1999 marketers thought e-commerce was going to take over the commercial world and drive brick and mortar stores away. The challenge to this theory, however, was that consumers were hesitant to use credit cards online in fear of identity theft and the unknowns of paying upfront for a product they did not receive at the exact point of purchase. These factors caused a much slower consumer transition into e-commerce than was what projected by marketers in 1999. This type of slow-moving adoption could be exactly what QR codes are facing in the market today—a lot of familiarity, but, present challenges to adoption (Cane, 2012).

The challenge of adoption is only a hurdle standing in the way of QR codes. QR codes should not be discounted simply because of slow adoption or content issues. QR codes are without a doubt, a revolutionary tool with the ability to cross global and linguistic boundaries. As mentioned earlier, QR codes may not be effective in every consumer market, but in time, it is expected that QR codes will surely find their place in commercial niche markets. Their capabilities are just too valuable to simply forget about or push to the side. Similar to email, it may be safe to say that QR codes will never totally disappear. QR codes are now a part of our society. They influence how we interact with products, how we do business, and have the potential to revolutionize point-of-sale tactics. Again, email can be used as a comparative example to the issues QR codes are facing. With email, “spam” and messages that contain content consumers pay little to no attention to frequently appear in user mailboxes. Users have come to accept the occasional annoyance and are not electing to get rid of their email accounts altogether because of the lack of relevant content in some of the messages they are receiving. Most experts will agree that the email system will not be leaving the civic and commercial world in the near future. Similarly, QR codes face the same issue, with irrelevant or extraneous content showing up on occasion, but as a technology in general, are not expected to be leaving the market. First because smartphone users are increasing, and second because we will continue using smartphones for our own personal benefits and if gaining information to our smartphones means QR codes, we are going to continue to scan codes that provide direct benefit to us (i.e. for information, for fun, for point-of-purchase reasons) and ignore the quasi “spam QR codes” in a similar way we ignore quasi “spam emails”.

QR codes make it possible to transact business anywhere in the world with the click of a button on a smartphone. There are plenty of uses for the QR code, but like stated above, only a select few in niche markets will be the QR codes to survive—these are the QR codes that add value and provide companies with the ability to make money. The underlying conclusion that should be taken and drawn out of the results of this study is that engaging consumers through the use of QR codes is about both context and action. With the correct context and scenario, there is great potential for the future of the QR code—but without it, they are nothing. As the market stands today, it is both viable and practicable to project that future QR codes containing point-of-purchase capabilities and value-added money-making purposes will become soon become ubiquitous.

## **LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH**

QR Codes have only recently gained popularity in the United States commercial markets starting in 2010 and are still a relatively new tool as of early 2012. For this reason, little scholarly research has investigated awareness or the effectiveness of QR codes in a marketing sense. This study had to rely heavily on research and information collected from trade magazines, popular press mediums, past research studies conducted for different purposes, and information posted on professional social networking sites, such as LinkedIn. Obtaining data and information from these mediums always run the risk of credibility issues and author biases. Future studies may have the opportunity to explore through and obtain information from QR code research studies and advanced levels of research that were not available or had not yet been published over the time frame of this study (January 2012 – April 2012).

Moreover, the online survey conducted for this study was limited to a select number of students, all who fell within a desired target age range, but, were the same major and relatively the same age. Future studies should use a much broader sample that could capture the true QR code target market age range, 18-45. A larger sample consisting of more than just collegiate seniors would give a less concentrated, more accurate picture of the true awareness of the total QR code target market and allow for more accurate future predictions.

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