Consumers' Perceptions of QR Codes

Southern New Hampshire University

Marketing Research

Patrick Tobin & Nathan Richard

Abstract:

This study was conducted to further marketers understanding of consumers' perceptions of QR codes. *Consumers' Perception of QR Codes* uses quantitative and qualitative research to determine the appropriate findings that resulted from the study. There were three instruments utilized within this study to obtain primary data pertaining to consumers' perceptions of QR codes; an experiment, a focus group, and a survey. The experiment was constructed to analyze the relationship between consumers' perceptions and the amount of change in the composition of a physical QR code. The focus group contained five members from Southern New Hampshire University. The group's discussion was structured and mediated to extract data pertaining to consumer perceptions of QR codes, consumer usability of QR codes, and amount of value QR codes add/offer to consumers. The survey, containing 21 questions, was structured to evaluate the same parameters learned from focus group discussions. Being that this study was an exploratory study, further research is expected to be conducted beyond the conclusions of this research. More specifically, further research should be conducted in relation to why consumers perceive there to be benefits to scanning a QR code; yet the majority of respondents indicated that they scan few QR codes. Further research should help clarify the cognitive dissonance experienced by consumers interacting with QR codes.

Introduction

Online marketing, particularly mobile online marketing, has been gaining greater attention and recognition by marketers throughout the Untied States (Sago, 2011). A QR code is a matrix bar code that is read by photographing it with the camera of a smartphone or other mobile device that is equipped with a bar-code reader (Dictionary.com). These codes allow consumers to obtain or be directed to a particular source or piece of online content by scanning the code with their mobile device. QR codes have the ability to bridge the gap between offline content and online content and could possibly create an interactive shopping experience for consumers.

However, there are a variety of questions that come to mind when considering using a QR code in a marketer's marketing communication efforts. Where does one put a QR code? Does the location of the QR code influence the probability that the code will be scanned? What will the QR code reveal when it is scanned? Marketers have limited knowledge of QR codes but current research can suggest certain characteristics about the nature of QR codes and consumers perception of them.

Previous research concluded that the perceptual factors are the strongest predictors of consumers' behavioral responses (Jong-Hyuok, 2012). Other studies have revealed that consumers identify perceptual factors, such as perceived ease of use and benefit, as the major factors influencing the appeal/desirability of QR code usage (Okazaki, 2012). Because perception can vary from place to place and person to person, cultural and geographic differences have been found to affect different consumers perceptions (Sago, 2011). The most noticeable difference is found between consumers in the United States and Japan (Sago, 2011). Consumers in Japan have widely adopted QR codes and they have become integrated into their

daily lives (Sago, 2011). Lastly, previous research determined that the type of product that is associated with a QR code will influence the expected usage rate by consumers (Narang, 2012). The degree of involvement (consumers' assigned amount of interaction or attentiveness with certain products) relates to consumers desirability to scan QR codes; QR codes associated with high involvement products have a greater probability of being scanned (Narang, 2012).

This study's objective will be to analyze consumer's perceptions of QR codes and their current knowledge of them. This study will take a more in-depth look at the perception of QR codes and how consumers respond to them. In this study respondents answered questions pertaining to an experiment, participated in a focus group, and answered questions in an online survey. Marketers can benefit from the findings of this study by applying the results to their marketing strategies that involve QR code marketing.

Experiment Methodology

This experiment was designed with the focus of establishing the possible differential threshold of the composition of QR codes. It was hypothesized that consumers may generalize QR codes based on the composition of the code itself. Since the codes may appear to be similar when placed next to each other or when closely positioned. If consumers generalize QR codes based on the physical appearance of the code they may also generalize the concept of QR codes. QR codes can be used for a variety of different reasons. When scanned, the code can produce product information, an interactive application, or discount opportunities; the code can produce whatever online content the marketer wishes for it to produce. However, if consumers generalize all QR codes as the same does it matter what the code produces? This is the question that this experiment is centered around.

Due to consumers inability to accurately post-rationalize behavior the true purpose of the experiment was disguised from the respondents while they were answering questions. While the intention was to interpret the respondents' perceptions of QR codes other logos, symbols, and images we distributed throughout the presentation to maintain the innocence of the consumers' perceptions. The logos, symbols, and images were selected because they looked similar or different (depending on the perception one has) because they were in alignment with the overall focus of the experiment but held no value to the study itself.

The experiment was administered using a combination of a PowerPoint presentation and a paper answer sheet. Respondents where given the instructions on both the PowerPoint presentation and the paper answer sheet. Respondents were given one second to observe the symbols, logos, images, or QR codes and then given ten seconds to record their answer on the answer sheet. The respondents were only shown two images at a time and did not have the opportunity to return to the previous question. The respondents were required to choose from a specific set of responses. The responses that the respondents were allowed to chose from were A.) Exact Same B.) Similar C.) Slightly Different D.) Very Different. The responses are qualitative measures of the amount of difference/similarity between the two images that were presented on the PowerPoint presentation. Fourteen slides were shown containing two images each during the course of the presentation and out of the fourteen images seven images contained two QR codes. There were a total of five manipulations that were applied to the QR codes throughout the presentation. One QR code was selected as the control code and it was duplicated and both of the same exact QR codes were shown in the same slide; this represented a 0% change in the composition of the black boxes of the QR codes. Using a picture editing software

the composition of the black boxes within the QR code we removed until the QR code was changed by 10%, 20%, and 30%.

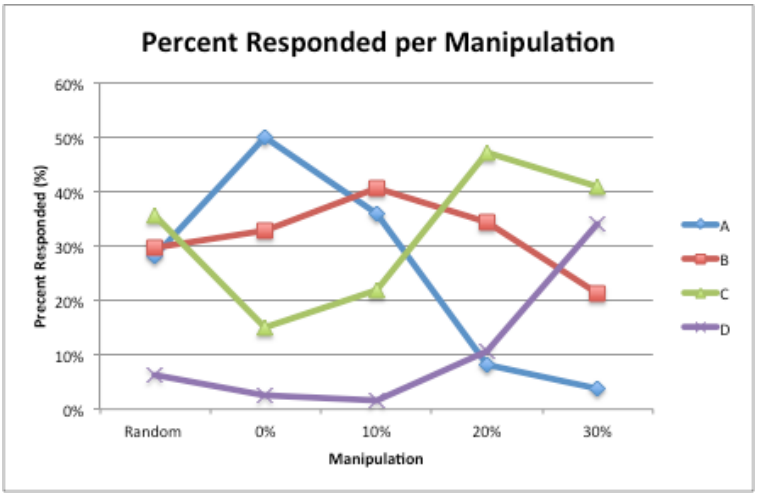
A convenient sample population strategy was utilized to recruit respondents for this experiment. Students from the Southern New Hampshire University were utilized due to time and financial constraints of the study. These students age ranged from 18-23 years and the majority of the respondents were participating or are in the process of completing an undergraduate degree. Professors were also recruited to administer the survey while teaching or before teaching their courses. Respondents answered questions in a classroom setting and did not observe the images alone. A total of 200 respondents participated in the experiment and after editing and coding there was a total of 188 usable respondent answers available for analysis. After the data was collected, edited, and coded Minitab 16 statistical software was used to analyze the results. The one-way ANOVA test is used to test the significance/impact that the manipulation had on the respondent's answers.

Analysis

In order to preform the analysis of the data the statistical software Minitab 16 was used. The data that was collected from the paper answer sheets was transcribed into excel. The excel spreadsheet was set up in a way so that the respective manipulations could be easily read in Minitab 16. A matrix was used to distinguish the manipulations throughout the questions that were asked during the experiment. Other questions were peppered throughout the presentation, as previously stated, inserted into the presentation to disguise the true purpose of the experiment in order to maintain the innocence of the respondents' perceptions. This was necessary because of consumers inability to accurately post-rationalize behavior.

After setting up the excel spreadsheet in a way that would easily read by Minitab 16 the respondents answers were transcribed into excel. The data was cleaned and edited to ensure that only the respondents that fully answered all questions to the best of their ability and correctly were used. A total of 200 respondents answers were transcribed and 188 of the 200 respondents were usable.

After the editing was completed the appropriate questions were identified and the obsolete questions were removed from the matrix along with the respondents' answers to them. The graph below shows all of the respondents' answers to the questions containing QR codes given the respective manipulation. The graph below shows that given a manipulation consumers seem to identify that there are differences between the composition of QR codes. When analyzing the date it is important to recognize the order that the images were shown and what manipulation was applied (see the answer sheet in the appendix). The data shows that consumers generally notice the differences within the composition of the QR code but the randomly selected QR code shows the most relevant/usable data. This was the first slide (the slide showing two randomly selected QR codes) and shows the most likely visual that a consumer might see in the retail environment. Companies will not waste their time trying to make their QR codes 10%, 20%, or 30% different from that of their competitors. But, they would benefit from understanding consumers' ability/perception of what is generalized and what is different. If consumers do not generalize



the QR code based on its physical composition then why do consumers generalize QR codes to have the same meaning or concept? Certainly all QR codes use the same technology but the concept or the way that different marketers use them is different.

The table below lists the respective *p* values for the appropriate responses given a certain manipulation. *P* values that are 0.05 or less represent values that have significantly impacted the respondents' desire/probability to choose the respective answer that correlates with the assigned *p* value. Cells that are highlighted gray represent the *p* value that is most significant for the respective response given a certain manipulation. For example, the *p* value for the 10% change in the composition of the black boxes in a QR code is 0.150, which was assigned to the response B, similar.

Table of *p* Values for One-Way ANOVA Test

Answers→ Manipulations ↓	**A (Exact Same)**	**B (Similar)**	**C (Slightly Different)**	**D (Very Different)**
Randomly Selected Code	**0.961**	**0.759**	**0.668**	**0.812**
0% Change	**0.057**	**0.843**	**0.058**	**0.375**
10% Change	**0.760**	**0.150**	**0.622**	**0.545**
20% Change	**0.290**	**0.740**	**0.182**	**0.935**
30% Change	**0.184**	**0.051**	**0.416**	**0.002**

Focus Group Results and Analysis

When doing research, qualitative data can become very important when attempting to understand consumer behavior about QR codes. Patrick and Nathan decided to use a focus group to identify areas of research to survey. For the focus group, a convenient sample of five people was used. These people were either SNHU students or faculty. The questions and topics

discussed in the focus group were all structured around finding out what consumers think of QR codes.

For the first question, "What do you know about QR codes?", the common response was that they are a code you can scan with a smartphone that brings you to a website. What is interesting is that none of the respondents knew that "QR" stands for "Quick Response". All respondents said that they all knew how to scan a QR code. The second question, "How did you learn about QR codes?", revealed several factors in regards to consumer education. When asked this question, all of the respondents said that they learned what QR codes were based on their own curiosity. None of the respondents said that they learned about QR codes from a marketer. When they were curious about the QR codes, a few respondents said they asked their friends what they were and how to use them and that is how they learned. Another respondent said that they learned about QR codes through observing a friend scan a QR code. All of the respondents said there was nothing wrong with learning this way, however, they thought more people might scan QR codes if marketers gave instructions on how to scan a QR code.

The third question, “Have you ever scanned a QR code in the past 6 months?”, was answered with all very similar answers. The respondents all said yes, but four out of the five respondents said that they only scanned a QR code because they wanted to know what it was and how to do it. The fifth respondent said that they scanned a QR code because they were participating in a competition and he was forced to scan the code for the competition. None of the respondent's have continued to scan QR codes, but still think they could be useful.

The fourth question, “Has your experience with scanning QR codes been positive or negative?”, was answered much differently than expected. All of the respondents said positive. The reason they said it was positive was because the application was easy to use. However, four

out of respondents said that they page the QR code took them to was of no interest to them. Also, they said the reason they do not scan codes now is because they do not really see any incentive to scanning them. Another point that they brought up when asked this question is that they do not like viewing webpages from their mobile phones, especially if it is not a mobile friendly website. When that happens, the respondents said they feel frustrated.

For the fifth question, what type of webpage do you think a QR code should bring you to, the respondents said it has to be a page with "useful" information. In other words, according to the respondents, consumers do not want a QR code to take them to a page that is just general information about the company. When scanning the QR code, they want incentives for scanning the QR code and there has to be a benefit to scanning it. One of the respondents said that they would like a QR code to bring them to customer reviews of a certain product. Another respondent said that they would like it to bring them to a coupon or some discount. A few of the respondents also said that if it is an expensive purchase that requires a large amount of research, they would do it using a computer, not a smartphone, making a QR code associated with an expensive product obsolete. The answers to question six, “Do you think QR codes are an effective tool to point consumers to a webpage?” was an overwhelming yes. However, they said it is not effective in the sense that consumers, in their opinion, are not likely to scan them. They do think that marketer's can use them effectively depending on how they use them and in what context they are being used.

The respondents do think that QR codes are likely to be more effective in certain industries. For example, they think that in industries where there is a long sale cycle and long decision-making process, QR codes are not likely to be scanned. Again, the theme of context matters. Also during this question, the respondents brought up how they all perceived it to be

easier to search for a webpage rather than type in the specific webpage address in the browser address bar.

For question number eight, all respondents said that the QR code must be placed on product packaging somewhere easily visible. To increase the likelihood of them scanning it, they would also like to know a little bit about the page that the code will bring them to, otherwise, they perceive no benefit in scanning it. Lastly, they said that marketers need to be careful when using QR codes on round product packaging to ensure that the code is scan-able. A survey was then used to test the information learned during the focus group (available on poster).

Conclusions

The data shows that the respondents generally noticed the differences in the composition of the QR codes given a particular manipulation. What does this mean? It means that given the environment that the respondents were in and the way that the questions were structured the respondents were able to notice differences. However, it is important to recognize that the *p* values for the randomly selected QR codes show that there is no significant impact of any of the responses. In other words, that manipulation did not have a significant impact of the respondents' desirability to chose any of the responses. Since this manipulation most closely represents the composition of QR codes in the average retail environment that a consumer might encounter a QR code it shows the most relevant results or holds the most value for this study. Although the results show no significant impact of any response that respondents could choose from the results do support to the findings in the focus group. Respondents in the focus group did not refer to QR codes as being different from each other they referred to QR codes as one single entity that could be used differently. So these results show that in that context the respondents did not generalize or differentiate the QR codes from each other but saw them as QR codes.

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