This study describes a questionnaire survey of undergraduate and graduate students at The University of North Carolina at Chapel Hill administered in March 2020. The survey was conducted to gauge current usage, perceptions, and future intent of QR codes of college students. The results of the study showed that all participants have seen QR codes, many have scanned them, but one-third of the participants recorded not liking QR codes due to their understanding that a third-party app is required or other methods of retrieving the same information was more convenient.
BARRIERS TO ACCESS OR SIMPLE DISINTEREST? A STUDY OF THE
PERCEPTION OF USE OF QR CODES AMONG COLLEGE STUDENTS

by
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of the School of Information and Library Science
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Chapel Hill, North Carolina

April 2020

Approved by

_____________________________

Robert Capra
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INTRODUCTION

QR code usage in the U.S. has not become as ubiquitous with the rise of smartphone owners, as some would think (Ratna, 2019). Articles online written in the past couple of years about QR codes, specifically in regards to the U.S., have titles such as “Are QR codes dead?” or “Will QR codes make a comeback in 2019?”, indicating that while the familiarity is present, usage is lacking (Kavanagh, 2018; Ratna, 2019). The upside of those articles suggests that with the increase of technology in mobile phones and mobile phone usage itself, the prevalence of QR codes in the U.S. will have an uptake in the upcoming years.

QR codes were created in 1994 in Japan for manufacturing sites because they were able to hold more information than the bar code (Ozkaya, Ozkaya, Roxas, Bryant, & Whitson, 2015). The first iPhone came out in 2007, but even after iPhones became a household name, using smartphones to scan QR codes still had a few barriers that prevented scanning. First, users had to have had a smartphone, then they had to download a third-party app that could scan QR codes, and finally they had to get at a close enough angle for the app to recognize the code. As the app recognized the code, it would bring the user to a website that likely wasn’t optimized for a mobile screen, further dampening the experience.
As Apple and Android products have removed the need to download third-party apps to scan QR codes, and responsive sites are more common, the user experience of accessing QR codes have improved. The current primary usage of QR codes is to hold information which have been used as access to links, coupons, social media, and in other countries, mobile payment. The larger technology companies have realized the market impact QR codes have had on other countries such as China, who leads in QR code usage for shopping (Scanova, 2018). For these reasons, it is important to gain insight into change of QR code usage and understanding the sentiment towards QR codes and what barriers may exist in the process of scanning.
LITERATURE REVIEW

QR Codes in the Marketplace

QR codes are used for a variety of reasons, and in countries where QR code usage is high, it is typically used for marketing purposes and for mobile payments. In terms of marketing, one can find QR codes in a variety of places like product labels, flyers, magazine ads, business cards, and many other places. After scanning a QR code, they can lead to many results such as a static webpage, a nutritional page that encompasses more information than can fit on packaging, a voucher or coupon, or to a product page showing a specific item or piece of clothing. The study by Albastroiu and Felea (Albastroiu & Felea, 2015) found that of the 365 participants who completed their questionnaire, which included questions about their purpose of scanning and perceptions of usefulness from scanning, over 70% scanned a QR code to receive more information about a product. Supporting Albastroiu et al., Cata, Patel, and Sakaguchi (Cata, Patel, & Sakaguchi, 2013) concluded from their study that the use of marketing with QR codes should be used as a means to offer further information for a user to help make a decision, or as a call-to-action (ex: customer secret offer).

CNN Business reported that in 2016, China’s QR code usage for transactions amounted to over 1.5 trillion USD (Wang, 2017). WeChat Pay and Ali Pay, by Alibaba, are two of the systems in China using QR codes for payment, while Apple and Android Pay’s technology are gaining in popularity in U.S. and Europe (The Economist, 2017).
Scanova (2018) reports that a study by Scanlife in 2015 found that the highest age range to scan QR codes ranged from 34-44 was 27%, while combining the 18-24 and 24-34 age ranges amounted to 29%, but they also note that other forms of social media have added QR codes to their platform since, so the numbers may have increased for the latter age group in terms of the present day.

Acceptance and Intent

With the increase in mobile phone usage, mobile commerce has also increased. Now people can order packages from Amazon, not only from their computers, but from the app on their phone. With an online survey, Shaw and Sergueeva (Shaw & Sergueeva, 2016) asked about convenience and acceptance of using smartphones for mobile commerce. They found that if users found certain features convenient as opposed to risky, for example, storing credit card information on the site for future purchases, that would lead to higher acceptance. Kim and Woo (Kim & Woo, 2016) also focused on user acceptance but with QR codes and the traceability of food. To assess user acceptance, they used the Technology Acceptance Model (TAM) with a 5-point Likert scale for measurement and found that users were more likely to accept the use of QR codes because they felt that the information that they would receive from scanning the QR code was beneficial.

Another way to gauge QR code usage would be asking users about future intent. If users come to accept QR codes as a means to an end, where the end benefits the user, they are more likely to have the intentions of using QR codes in the future. A study of college students in Turkey compared QR code usage between males and females and
found double the number of students recognized QR codes to those who have actually used them. Their study also indicated that females were using QR codes more than males, and therefore more likely to use them in the future (Demir, Kaynak, & Demir, 2015). Another article that examined user intent studied it from the perspective of curious and overwhelmed users. The researchers decided to use a professional research firm to distribute the online survey to users in Spain because they have high mobile internet use, with 85% mobile usage accounting for all internet use. From the study, they found that curiosity is a factor for intent to scan, but complexity in design, or the “overwhelming” factor was not statistically significant in terms of intent (Okazaki, Navarro, Mukherji, & Plangger, 2019).

**Attitudes and Perceptions**

How users feel about scanning QR codes have an impact on whether or not they will end up scanning the QR code. Lo’s (Lo, 2014) article discusses how attitudes towards innovation can impact acceptance and use of technology like QR codes, surveying through online forums, where most users were in the age range of 19-24 (47%). In the findings, acceptance of QR codes had a positive correlation to attitudes towards innovation, while the “Desire for Uniqueness: Avoiding Similarity” was negatively correlated with QR codes, because QR codes were noted to be commonplace. Phuong and An (Phuong & An, 2017) and Watson et al. (Watson, McCarthy, & Rowley, 2013) both focus on attitudes of the consumer on mobile marketing, using questionnaires with Likert scales for measure. The former study found, which confirmed a couple of their hypotheses, that the perceptions of enjoyment and
usefulness are both strong factors in determining the attitude of mobile marketing (Phuong & An, 2017). The latter study found the opposite in sentiment such that they found that users prefer their mobile phones remain for personal use only and found contact from companies were intrusive and an annoyance (Watson et al., 2013).

Users’ perceptions can influence their attitude towards adoption or use of technology, whether it is perception of usefulness or value, ease of use, or risk. If users perceive the technology to be easy to use, or has a beneficial or useful outcome, they will be more likely to use that piece of technology, and in this case, they would scan the QR code. If there is any perception that there is no inherent value, it is difficult to use, or if there’s any possible association of risk, users may hesitate to use or adopt the piece of technology. Shin et al. (Shin, Jung, & Chang, 2012) uses TAM to predict user intent of QR codes and found that with the integration of interactivity into the acceptance model, there is a social aspect that gives users the space for interaction. Ozkaya et al. (Ozkaya et al., 2015) also discusses TAM and how perceived usefulness increases the probability of use, but their findings actually showed the opposite where they didn’t have a significant correlation with QR code usage rate.
METHODOLOGY

This study used a survey for the method of data collection using the University survey tool, Qualtrics. The survey was distributed through the University MassMail system and through department listservs. To gather the perceptions of QR codes in terms of ease of use, usefulness, attitudes, and future intent, the 16-question survey featured demographic questions, questions using the Likert-Scale rating, and open-ended questions that would follow “Yes/No” questions (see Appendix A).

Research Question

In this study, I wanted to answer the question: what are the perceptions of QR codes among college students in the United States? While this study may be similar in question to Demir et al. (Demir et al., 2015), and other studies included in the literature review, this study will focus on perceptions of QR codes in 2019 of U.S. college students. Over 10 million households are expected to have scanned a QR code by the end of the year, and this study will hopefully discover if there are barriers to perceptions of use, and if that matches with the projected usage, or if students have negative perceptions of QR codes (Scanova, 2018). With questions taken from Demir et al. (Demir et al., 2015), I will also ask the following questions to supplement the larger research question:

- How well are QR codes known among college students?
- Where do college students encounter QR codes?
• How interested are college students to use QR codes now?
• How likely are college students to use QR codes in the future?

Sample & Recruitment

The sample was a convenience sample, consisting of college students 18 and older, both undergraduate and graduate, on the University of North Carolina at Chapel Hill’s campus. This project was reviewed by the UNC Institutional Review Board, IRB Study # 19-3219 and determined to be exempt from federal human subjects research regulations prior to distribution of the survey. Emails were sent through listservs to different departments and the University’s MassMail for participant recruitment. Participants also had the opportunity to be entered into a drawing to receive compensation of $10 for completing the survey. After the study was completed and the contact information is no longer needed, the names and contact information was permanently deleted to maintain anonymity of the participants.

Data Collection

For the survey, I used Qualtrics since the service is already provided to the school for use at no cost and it also offers analytical features. The questions ask for age, department, international vs. non-international student, and questions on a 5-point Likert scale to ask about perceived ease of use, usefulness, attitudes, and future intent (see Appendix A). It is important to collect department information in case the information is skewed to one department, like Computer Science, who may be assumed to have a higher exposure and understanding of technologies like QR codes. For the question of
international vs. non-international students, some countries in East and Southeast Asia have higher rates of QR code usage. There was not a limit of responses to be collected, and the survey was posted for 11 days to allow time for analysis.

Data Analysis & Results

A total of 196 students participated in the survey, 34.7% \((n = 128)\) of which were graduate students \((n=68)\) and 65.3% of which were undergraduate students. 80.6% \((n = 158)\) of participants identified as “Female”, 15.8% \((n = 31)\) as “Male”, 3.1% \((n = 6)\) as “Other” with 4 participants who wrote in Non-Binary, and 0.5% \((n = 1)\) chose not to disclose their gender. Of the 196 participants, only 3.1% \((n = 6)\) answered “Yes” to the question “Are you an International Student”. 34.7% \((n = 68)\) of participants responded that they were graduate students, while 65.3% \((n = 128)\) of participants indicated that they were undergraduate students.
The survey also included the question, “What is your field of study [major(s) and minor(s)], which was left as an open-ended question. After normalizing the data, four categories were identified, Fine Arts and Humanities, Natural Sciences and Mathematics, Social Sciences and Global Program, and Health Sciences, where the first three categories were pre-defined by the University (Departments, Curricula, Centers & Institutes, 2020). The fourth category, Health Sciences, was identified to encompass majors such as Public Health, Epidemiology, among other majors in the health sciences. 7.1% \( (n = 14) \) of participants fell under the Fine Arts and Humanities field, 18.9% \( (n = 37) \) fell under the field of Health Sciences, 38.3% \( (n = 75) \) of participants were categorized under the Natural Sciences and Mathematics field, and 35.7% \( (n = 70) \) were in the Social Sciences and Global Programs field.

After the demographic questions, the survey went on to ask participants about their knowledge of QR codes, and 100% of participants reported that they have seen a QR code. For the open-ended questions, coding schemes were created for qualitative analysis. Participants were asked if they have seen a QR code, to report two to three times they have encountered them, and whether or not they scanned them. From most of the participants’ answers, they could be separated as to where they have encountered them, and what or how they encountered them. Most participants noted the places they encountered QR codes on campus, in class, stores, and museums. Participants encountered the QR codes mostly through flyers, posters, on social media, advertisements, as links to access things like forms and websites, presentations, surveys, product labels, food packaging, and coupons. When asked the last time the participant
has seen a QR code, 41% of participants ($n = 81$) noted that they have seen a QR within the last month.

Although all participants reported to have seen a QR code, only 83% ($n = 163$) participants reported to have used a QR code. If participants answered “Yes” to using a QR code, they were asked an open-ended question to write two to three times they have used them. Most noted using them in class, on campus, at conferences and in stores, while less reported places were at museums, amusement parks, an art exhibit, and Starbucks. Participants reported scanning the QR codes mostly to access something (more information, links, websites), for surveys, in social media apps (Snapchat, Venmo), on flyers, posters, as a link, and to sign-in (club meetings).

To gauge intent and possibly future use, we asked participants if they liked using QR codes and why or why not. Over one-third (37%, $n = 72$) of participants indicated that they did not like using QR codes, while 63% ($n = 124$) reported that they liked using QR codes. When asked to explain why they liked using QR codes, the most popular sentiments were because they were easy, convenient, quick and simple to use. Other words to describe why they liked them were “futuristic”, “handy”, and “high information
density”. Those who indicated they did not like using QR codes noted reasons such as it would require them to download an app, they preferred to type in a URL or search for it online, or they are confused about how to scan them. Participants were also asked how often they thought other people their age used QR codes. Overall, 37.8% \((n = 74)\) participants answered, “Once a month”, 30.1% \((n = 59)\) selected “2-3 times a year”, and 19.4% \((n = 38)\) selected “Once a week”. The graph below indicates the frequency selected over the age ranges indicated by participants.

The survey asked participants to rate if they thought QR codes are “cool”, “useful”, “risky”, and if the participants agreed with the statement “I am technologically savvy,” using the Likert-scale statements ranging from “Strongly agree” to “Strongly disagree”. Most participants selected “Agree” for the sentiments that QR codes are cool
and useful, and for the statement regarding their technology savviness. In regard to the sentiment that QR codes are risky, most participants recorded that they neither agree nor disagree with the statement.

<table>
<thead>
<tr>
<th>I think QR codes are cool</th>
<th>I think QR codes are useful</th>
<th>I think QR codes are risky</th>
<th>I am technologically savvy</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>24</td>
<td>12.2%</td>
<td>42</td>
</tr>
<tr>
<td>Agree</td>
<td>61</td>
<td>31.1%</td>
<td>87</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>43</td>
<td>21.9%</td>
<td>42</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>41</td>
<td>20.9%</td>
<td>17</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>14</td>
<td>7.1%</td>
<td>2</td>
</tr>
<tr>
<td>Disagree</td>
<td>7</td>
<td>3.6%</td>
<td>4</td>
</tr>
<tr>
<td>Strongly disagree</td>
<td>6</td>
<td>3.1%</td>
<td>2</td>
</tr>
</tbody>
</table>

Lastly, participants were asked what brand of phone they owned. The majority of participants selected “Apple” at 79.1% (n = 155), 16.3% (n = 32) selected “Android”, 4.1% (n = 8) owned Google brand phones, and 0.5% (n = 1) selected the option “Other”.
DISCUSSION

The purpose of this study was to understand the perceptions of QR codes among college students by asking where students encounter and use QR codes, what their usage rates are, and gauging their feelings towards QR codes. To address the first research question, “How well are QR codes known among college students?”, the study found that 100% \((n = 196)\) participants have seen a QR code before and 83% \((n = 163)\) participants have used a QR code. From the follow-up questions after participants indicated they have seen and used a QR code, answering the second research question asking where students encounter QR codes, students reported seeing QR codes around campus, in class, in stores, museums, restaurants and at conferences. They reported using or scanning QR codes for purposes of accessing more information, surveys, scanning them within social media, on flyers and posters.

The third research question asks how interested college students are in using QR codes now, and the fourth asks how likely college students will use QR codes in the future. As noted earlier, 83% of participants have used QR codes before, but only 63% \((n = 124)\) reported “Yes” to the question “Do you like using QR codes?” and explanations of why they liked them were because they are easy to use, convenient, simple, and fun. Also, when participants were asked to rate the following statements, “I think QR codes are cool”, “I think QR codes are useful”, and “I think QR codes are risky”, over 50% of participants reported “Agree” and “Somewhat Agree” for the first
two statements and was mostly neutral or disagreed with the third statement. From the data, it seems that college students have positive sentiments towards QR codes and most participants are using them now, which could indicate future intent to use QR codes.

**Limitations**

Originally the study was supposed to have two phases, phase one which was the survey to gather a generalized understanding of the perceptions of QR codes, and phase two which was going to be a usability study asking participants to think-aloud while completing the task of scanning a QR code. Due to time limitations and the COVID-19 pandemic, the scope of the study had to be reduced to only recruiting participants for the first phase. Also, at the time the link to the survey was sent out, the University was also sending out communications regarding how the University and students should move forward, possibly hindering the number of responses obtained. With the second phase of the study, it would have provided richer data in terms of sentiment towards the act of scanning QR codes. Convenience sampling was used as the sampling method for this study due to the lack of resources to further distribute the survey to other student populations.
CONCLUSIONS

Although QR codes have existed since 1994, there is still a portion of the population of smartphone users who may not know how to scan a QR code or necessarily find it easy to do so. From the follow-up question asking participants to explain why they did not like QR codes, many reported that they did not have a QR code scanner app, did not want to download the app, do not seem useful, or they preferred to type in the link or search for it online. According to Ratna (Ratna 2020), Apple updated the iPhone in 2017 to have a native QR code scanner within the camera app, and the Android 8, which also came out in 2017, has native QR scanning capabilities. If the study would have been able to deploy the second phase (usability study), the think-aloud may have been able to capture the feelings and possible misunderstandings of how users go through the process of scanning QR codes.

With the data from the survey, there is a notable portion of students who do not like QR codes. Despite their sentiment, many have scanned QR codes, and all of the students are aware of and have seen QR codes before. This is not to say that all college students have the same awareness or sentiments regarding QR codes. When encountering a QR code, rarely are there detailed instructions on how to do so besides asking the user to scan the code in order to access a link, event, or website. It is possible that because users may be aware of what a QR code is, those who create QR codes assume that users know how to scan them, which from the study shows that this is not
necessarily true. Future research on QR codes could focus on asking the users to describe the steps of scanning a QR code in detail to identify where the pain points in the process exist. From this research, maybe new language around scanning QR codes could be written, which could remove the idea that another app would be required to scan a QR code and teach users how to scan with the native scanner on their phones.
BIBLIOGRAPHY


APPENDIX

Appendix A: Survey Questionnaire
QR Codes Online Survey

Survey Flow

- Standard: Block 1 (1 Question)

Block: Default Question Block (4 Questions)

- Standard: Block 2 (6 Questions)
- Standard: Block 3 (12 Questions)
- Standard: Block 4 (1 Question)

Page Break

Start of Block: Block 1

Thank you for considering participating in the QR Code Online Survey! The next section will discuss the purpose of the study, address questions regarding your participation and will request your acknowledgment to participate in the study.

End of Block: Block 1

Start of Block: Default Question Block

IRB Study #19-3219 Title of Study: Barriers to access or simple disinterest? A study of the perception of use of QR codes among college students

Principal Investigator: Teresa Phan
Principal Investigator Department: School of Information and Library Science
What are some general things you should know about research studies? You are being asked to take part in a research study. To join the study is voluntary. You may choose not to participate, or you may withdraw your consent to be in the study, for any reason, without penalty. Research studies are designed to obtain new knowledge. This new information may help people in the future. You may not receive any direct benefit from being in the research study. There also may be risks to being in research studies. Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study. You will be given a copy of this consent form if requested. You should ask the researchers named above, or staff members who may assist them, any questions you have about this study at any time.

What is the purpose of this study? The purpose of this research study is to understand if there are barriers to using QR codes and perceptions surrounding them.

Are there any reasons you should not be in this study? To be in this study:

- You must be over 18 years old
- You must be a UNC Chapel Hill student

How many people will take part in this study? There will be approximately 100 people in this first phase of the research study.

How long will your part in this study last? Your part in this first phase of the study will last approximately 10-15 minutes.

What will happen if you take part in the study? (Phase 1) You will be asked to complete a survey asking demographic questions and questions regarding your perceptions and use of QR codes. If you own an apple cellular device, you may be invited to participate in the second phase of the study. (Phase 2 - May not be scheduled due to time constraints) You will be asked to set your phone to "Do Not Disturb" mode so your phone will not show notifications while it is open. The researcher will then ask you to plug your phone into the iPhone USB connected to the MacBook. Once connected the researcher will then use QuickTime to initiate the screen recording of your phone screen as you complete the task. You will have only one task and will be asked to use your phone to scan a QR code, even if you have not scanned one previously. You will be given a scenario that will ask you to complete the task as if the scenario were real. For the study, you will be asked to think aloud about what you are doing as well as what you are feeling, and the think aloud process will be recorded using an audio recorder. At various points in the study, we will ask you to fill out some questionnaires about the tasks and your experience. At the end of the session, we will play back these recordings, pausing at points to ask you questions about what you were doing at the time. We will also make audio recordings of this part of the session.
What are the possible benefits from being in this study? Research is designed to benefit society by gaining new knowledge. You will not benefit personally from being in this research study.

What are the possible risks or discomforts involved from being in this study? You may feel mild embarrassment if you are not able to find the information requested by the tasks. There may be uncommon or previously unknown risks. You should report any problems to the researcher.

What if we learn about new findings or information during the study? You will be given any new information gained during the course of the study that might affect your willingness to continue your participation.

How will information about you be protected? All the data you provide will be stored using a participant id number. We will not associate your name or other personal information with the data, and you will not be personally identified in any report or publication about this study. We will store the research data on password protected computers, on UNC storage (e.g., UNC OneDrive and storage.unc.edu), and on the Qualtrics questionnaire system. Aggregated and/or data that does not contain personal identifiers may be exchanged among the project team members using UNC's email system. There may be times when federal or state law requires the disclosure of research records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information. In some cases, your information in this research study could be reviewed by representatives of the University, research sponsors, or government agencies (for example, the FDA) for purposes such as quality control or safety.

What if you want to stop before your part in the study is complete? You can withdraw from this study at any time, without penalty.

Will you receive anything for being in this study? You will be entered into a drawing to receive compensation of $10 for completing the survey. If we discontinue your participation for not following instructions, you will receive nothing.

Will it cost you anything to be in this study? It will not cost you anything to be in this study.

What if you are a UNC student? You may choose not to be in the study or to stop being in the study before it is over at any time. This will not affect your class standing or grades at UNC-Chapel Hill. You will not be offered or receive any special consideration if you take part in this research.

What if you have questions about this study? You have the right to ask, and have answered, any questions you may have about this research. If you have questions about the study (including payments), complaints, concerns, or if a research-related injury occurs, you should contact the researchers listed on the first page of this form.
What if you have questions about your rights as a research participant? All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, or if you would like to obtain information or offer input, you may contact the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

Participant’s Agreement: Your participation is completely voluntary, and you can withdraw at any time. To take this survey, you must be:

- At least 18 years old
- You must be a UNC Chapel Hill student

I have read the information provided above.
I am over 18 years old, and am a student at UNC Chapel Hill.
I voluntarily agree to participate in this research study.

If you meet these criteria and would like to take the survey, please read the statement below and click the button to indicate your agreement to participate in the study.

☐ By clicking this box, I am confirming the above statements and agree to participate in the study.

End of Block: Default Question Block

Start of Block: Block 2

Demographic Questions

1. Please enter your age:

________________________________________________________________

2. What is your gender?
   o Female
   o Male
   o Other _______________________________________________________
   o Prefer not to disclose

3. Are you an International Student?
   o Yes
   o No

4. What is your student status?
   o Undergraduate
   o Graduate
5. What is your field of study [major(s) and minor(s)]?

________________________________________________________________
End of Block: Block 2
Start of Block: Block 3

Example of QR Code

6. Have you seen a QR Code before? (Not counting the image above)
   o Yes
   o No

Display This Question: If Q6 = Yes

7. If "Yes", in the text box below, please describe 2-3 times you've encountered, whether or not you have used them:
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________
   ___________________________________________________________________

8. When was the last time you have seen a QR code? (Not counting the image above)
   o Today
   o Within the past 2-3 days
   o Within the past week
   o Within the past month
   o Within the past 3 months
   o Within the past 6 months
   o Within the past year
   o I have not seen a QR code within the past year
9. Have you used a QR Code before?
   o Yes
   o No

Display This Question: If Q9 = Yes

10. If "Yes", in the text box below, please describe 2-3 times you have used them:
    __________________________________________________________________
    __________________________________________________________________
    __________________________________________________________________
    __________________________________________________________________

11. How often do you think other people your age use QR codes?
   o Multiple times a week
   o Once a week
   o Once a month
   o 2-3 times a year
   o Once a year or less
   o Never

12. Do you like using QR codes?
   o Yes
   o No

Display This Question: If Q12 = Yes

13. If "Yes", please explain why:
    __________________________________________________________________
    __________________________________________________________________
    __________________________________________________________________
    __________________________________________________________________
Display This Question: If Q12 = No

14. If "No", please explain why not: ____________________________________________________________

__________________________________________________________________________________________

15. Please rate the following sentences:

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Somewhat agree</th>
<th>Neither agree nor disagree</th>
<th>Somewhat disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think QR codes are cool</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>I think QR codes are useful</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>I think QR codes are risky</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
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</tr>
<tr>
<td>I am technologically savvy</td>
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</tr>
</tbody>
</table>

16. What brand of cellular device do you own?
   o Android
   o Apple
   o Google
   o Other ____________________________________________

End of Block: Block 3

Start of Block: Block 4
If you would like to be entered into a drawing based on chance in which each subject has equal odds of receiving $10 as compensation, please fill out the sections below:

- First Name ____________________________________________
- Last Name ____________________________________________
- UNC Email Address (non-UNC email addresses will not be processed) ____________________________________________

End of Block: Block