Literature Study

QR within Ordering Systems

The purpose of this document is to observe, research and analyze the functionalities of QR and its usage within the Online Ordering System and Point of Sales environment.

How does QR work?

"QR codes – essentially a kind of barcode that allows transactions to be touchless – have emerged as a permanent text fixture from the COVID-19 pandemic," reports New York Times contributor Erin Woo. "Restaurants have adopted them en masse, retailers including CVS and Foot Locker have added them to checkout registers, and marketers have splashed them all over retail packaging, direct mail, and billboards."

HOW TO CREATE QR CODE FOR YOUR BUSINESS
Before we begin, you should know that the secret to maximizing the effectiveness of your QR code is pairing it with a hybrid point of sale (POS) system.

We recommend prioritizing the POS system vendors that offer barcode scanners. This hardware allows you to easily read popular 2D barcodes such as QR codes. In most cases, basic scanners can be purchased for less than $100. However, advanced barcode scanners may cost you up to $1,000 per unit.

After investing in a QR scanner, follow these six simple steps to generate a QR code for your unique business:

- Select a QR code generator
- Optimize content for mobile devices
- Paste URL into the QR code generator
- Choose between a static or dynamic QR code
- Test and share your QR code with your customers
- Optimize your QR code over time

There are plenty of great QR code generators. Some paid QR code generators offer advanced features such as analytics and reporting, enhanced customization, and more. Meanwhile, most free QR code generators offer all the basics needed to get started. Here is a list of our favorite QR code generators:

- Visualead
- QR-Code Generator
- QR-Code Monkey
- QR Stuff

- <u>Scanova</u>
- <u>QRickit</u>
- <u>QRTiger</u>

Are QR codes safe?

As mentioned earlier, QR codes are inherently a secure technology. They simply direct users to the data encoded within their native smartphone camera apps or standalone QR code readers. This data can be in the form of a website URL, a PDF file, **landing page**, questionnaire, video or audio, and more. The use cases are almost endless.

Essentially, a QR code is simply a gateway that seamlessly takes users from a physical touchpoint to a digital destination. No manual effort is required on the user's part. All you have to do is point your camera at the displayed code.

QR codes are, at their basic level, a physical-digital medium.

But since they're widely deployed as a digital portal in the physical world, attackers with malicious intent usually find new ways to hack into your device or use **social engineering** to get your private information.

They do not conduct live-tracking on a person.

It's important to understand how QR code tracking works and how the technology can benefit businesses by collecting data they allow.

This contradicts the prevalent myth that using QR codes can compromise your privacy and **digital security**. Again, just a misunderstanding! Scanning a QR code doesn't enable a live tracker on the user's phone. QR code generators cannot, in any way, obtain your personally identifiable information (PII) or place a tracker to monitor your live location or other activity.

QR code Risks

Now that we've covered how QR codes work and the data companies can collect, let's get to the heart of QR code security risks.

QR codes themselves don't pose an intrinsic **data security** risk, but the digital target they refer to does.

Here are some ways scammers and hackers exploit QR codes:

- **Social engineering or phishing attacks:** Clicking on a malicious link is the same as scanning a malicious QR code leading to the same link. Scammers use social engineering tactics like pairing QR codes with suspicious frame text like "scan to get X" to trick people into scanning to gain access to their devices. They can also exploit your curiosity and place a dangerous code in high-traffic public areas without any accompanying text.

- **Replacing genuine QR codes in public places with malicious codes:** A simple QR code trick cybercriminals use is to replace original codes placed by a company at a specific touchpoint with counterfeit ones. When users scan such a code, they're directed to a phishing site or prompted for a malware attack.

- **QR code phishing attacks on emails:** QR codes can also be deployed in email as part of a larger social engineering attack, as they're more likely to breach standard email protection. When users scan their codes, they're taken through a process that eventually requires them to enter their credentials or other information.

- **Financial theft:** Fraudsters can take advantage of QR codes' popularity as a payment method. They can place QR codes as a form of payment but have your money sent to the wrong account or even have a higher amount than required sent from your account.

- **Clickjacking using QR codes:** Another tactic is to direct users who scan a QR code to a legitimate-looking website that contains actionable content, such as buttons that encourage visitors to click through. In most cases, they usually result in downloading malware onto your device or other forms of privacy infringement.

Best QR code security practices for businesses

Instilling confidence about your QR codes' security among your audience can increase scan and conversion rates. Here are some guidelines and best practices to follow.

Custom brand your QR code

Incorporate every aspect of your unique branding kit into the QR code design and use consistent **QR code templates**. This includes adding colors, gradient patterns, company logos, and custom borders, all in line with your brand identity. Ensuring the landing page that the QR code instantly links to also matches your brand can be a huge plus.

Make sure your code contains your custom brand or company domain if you have the option. Free online QR code generators allow you to create static QR codes that link to your domain. And all too often, these codes have URLs that contain lots of alphanumeric characters, a major put-off to a user who might actually be interested in your QR-linked digital content.

SSL-certify your webpage

Make sure the website the QR code links to is SSL certified and encrypted. **SSL certificates** signal your users that their data is safe and prevent attackers from creating fake versions of your website. Users will now see "http://" or anything other than "https://" as warning signs. Website browsers mark websites without an SSL certificate as "not secure".

Invest in a compliant QR code generator

Your QR code generator should comply with the General Data Protection Regulation (GDPR) and other applicable data privacy laws. If your QR code partner is GDPR compliant, they should protect your data from outsiders or other third parties.

A secure QR code generator always offers enterprise-level security protection with **data encryption**, limiting access to personal information and data confidentiality.

Opt for QR password protection

If sensitive data is shared via the QR code channel, grant access to the encrypted content to a select group of people and no one else. Password gating allows you to do this, especially when exchanging confidential information like bank statements and essential personal identification documents.

Partner with a certified QR code solution provider

Your **QR code solution provider** should be SOC-2 Type-1 and SOC-2 Type-2 certified. The SOC 2 certification was developed by the American Institute of Certified Public Accountants as an assessment method for the secure management of data by companies. Sharing the same with your customers will serve as a strong endorsement of your QR code's security when scanned.

Use an SSO-enabled QR code generator

It'll help if your QR code generator has a **single-sign-on (SSO)** login. As a business looking to engage your audience through QR codes, you may be involved in their creation and editing at scale. To ensure high-volume security, you need SSO capability so that only those with permission to access the code management platform can actually use it.

As QR code adoption increases, so does the need to ensure better QR code security
To reiterate, there's nothing built into QR codes that makes them more dangerous than using a web browser or an application on your smartphone. However, QR codes can be cleverly tinkered with as an offline-to-online channel for cybercriminals and other malicious actors.
It's vital to ensure that QR code security best practices are followed from both a user and business perspective. As mentioned earlier, users need to look for ways to determine the security and authenticity of a QR code scan. And for businesses, communicating and signaling the authenticity of their codes is critical to getting more scans, clicks, and ultimately conversions.

Summary

QR Code allows for touchless transactions, usually added to checkout registers, with marketing strategies all over packaging, mail and billboards.

For businesses, QR codes should be paired with a hybried POS system.

6 steps to generate QR for businesses:
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QR Code is easy to obtain: just need a QR code generator.

How do we make sure of the security in generated QR codes?
QR codes do not conduct live-tracking on a person, which means personal data is secured.

However the risks that are involved may be more directed towards social engineering and trickery: **phishing, malicious QR codes that redirects to harmful links.**

How to ensure safety and security of your business' QR code?
1. Custom brand your QR code
2. SSL-certify your business' webpage
3. Invest in a compliant QR generator
4. QR password protection
5. Partnership with QR code solutions provider
6. Use SSO-enabled QR code generator

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