QR CODES
IN PAYMENTS

INTRO AND ORIGIN OF THE QR CODE

The 2020-2022 pandemic increased demand for contactless transactions. According to Checkout.com, "Smartphones and their cameras have unlocked an entirely new way to make a payment — the QR code." QR payments use information in the barcode-like image about the merchant and payment provider to complete a transaction. By 2025, as many as 30% of all smartphone users will use them to pay.

The Quick Response (QR) Code System was built by a team led by Masahiro Hara, who worked for the Japanese company Denso Wave in 1994 to eliminate the need for multiple barcodes, according to NHK World Japan. Since its birth, QR code use in payments has surged, especially in Asia, where its popularity has grown as ATMs and point-of-sale (POS) terminals have declined.

This guide will examine key payment options for QR codes and explain the uses, benefits, and potential risks to consider for a merchant considering this technology.

QR CODE PAYMENTS IN PRACTICE

POPULAR QR CODE IMPLEMENTATIONS

Advertisements and Fast Purchases

Advertisers are always looking for ways to improve customer reach and ease of adoption for their products and services. The challenge with most ads we see in our everyday lives is that unless there is an easy and frictionless call to action, the likelihood of an advertisement turning into a sale drops dramatically.

QR-enhanced advertisements allow consumers to take immediate action in both the research and purchasing of a product or service by redirecting the consumer to the retailer's e-shop, allowing them to select an item and checkout in real time.

Enable Digital Wallets and Hosted Payment Pages

Digital Wallets are payment systems for mobile devices that store payment information, like credit cards, bank account details, and passwords. They reduce the friction by eliminating the need to re-enter sensitive payment information for each transaction. According to Juniper Research, "more than 60% of the global population will be using digital wallets by 2026; the increase is mainly driven by super apps and QR-based payments."

By comparison, a hosted payment page is a web page that can be accessed via a QR code that provides an easy way to check out but does generally require entry of the payment details at the time of checkout.

In a typical scenario, the merchant at a physical store selects the QR payment option. This option triggers the generation of a QR code which contains specific information about the purchase. The cardholder will then use a Mobile App to scan the QR code provided by the merchant. The cardholder validates the amount to be paid/sent to the merchant account, verifies themselves, and completes the transaction.

Some real examples:

- China's WeChat is one of the earliest examples of a digital wallet that supports QR payments. It allows consumers to store account information, verify their identity with biometric authentication tools, and pay. It also allows a merchant to use a similar digital wallet experience to receive payment from the consumer.

- In the Bahamas, the "Sand Dollar" is the digital version of the Bahamian dollar (B$). It allows greater flexibility and accessibility for residents who want to participate in financial services via mobile application or a physical payment card to access a digital wallet.

- Most major public transportation entities have embraced digital wallets to enable mobile applications to purchase tickets, add additional funds to the consumer's account, and use the QR code to enter the subway.
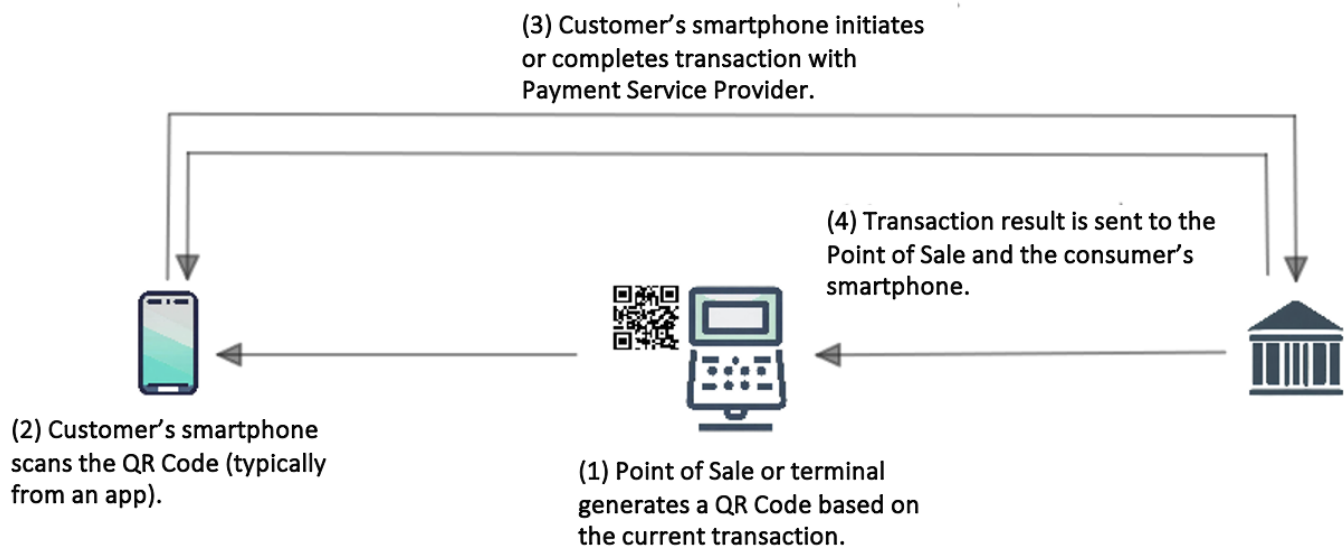
MERCHANT VS. CONSUMER-GENERATED QR CODES

Below are two of the most common scenarios for implementing QR code-facilitated payments.

Merchant-Generated QR Code

In this scenario, a merchant's device displays a QR code for a consumer's device to read. Order and merchant information was initially embedded in a static QR code, which doesn't change. Many payment solutions now use one-time or dynamic QR codes, which are considered more secure against potential fraud.
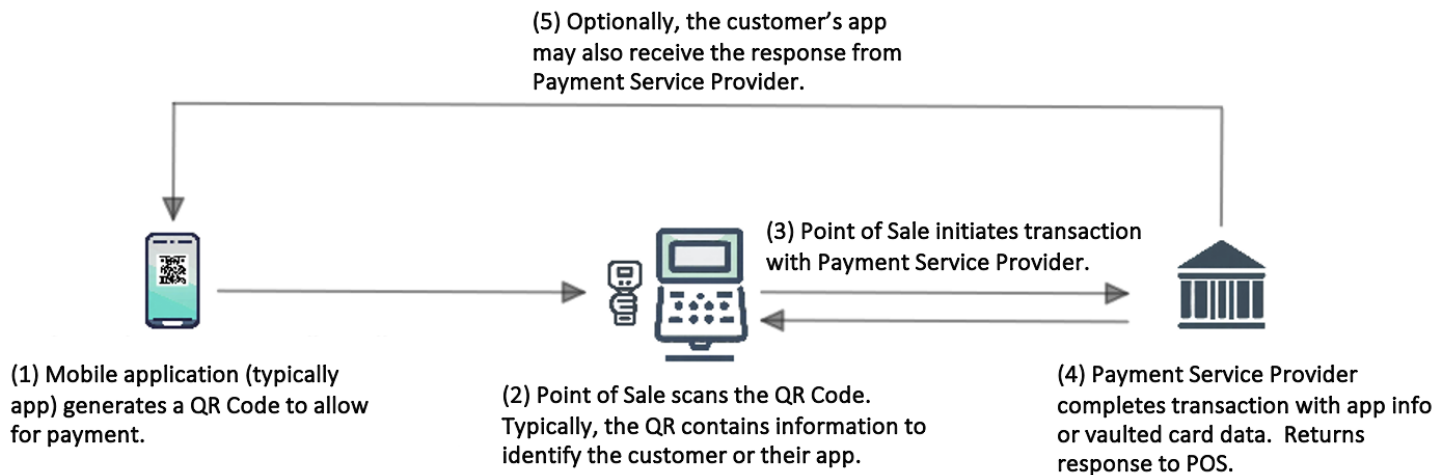
Once the QR code is scanned through the customer's device, the customer can pay via a "digital wallet" installed on their device or by being redirected to a checkout page, as shown below.

(3) Customer's smartphone initiates or completes transaction with Payment Service Provider.

(4) Transaction result is sent to the Point of Sale and the consumer's smartphone.

(2) Customer's smartphone scans the QR Code (typically from an app).

(1) Point of Sale or terminal generates a QR Code based on the current transaction.

Consumer-Generated QR Code

In this scenario, an app on the consumer's device generates a unique QR code containing their embedded payment information, which the consumer presents to the merchant.

The merchant's device reads the code via a compatible POS system or a dedicated QR code scanner. This allows the merchant's system to identify the consumer's account or connect to their digital wallet and initiate the payment transaction, which the customer must then authorize to complete the transaction.

(5) Optionally, the customer's app may also receive the response from Payment Service Provider.

(3) Point of Sale initiates transaction with Payment Service Provider.

(1) Mobile application (typically app) generates a QR Code to allow for payment.

(2) Point of Sale scans the QR Code. Typically, the QR contains information to identify the customer or their app.

(4) Payment Service Provider completes transaction with app info or vaulted card data. Returns response to POS.

QR CODE ADVANTAGES AND RISKS

ADVANTAGES OF QR CODE ADOPTION

The primary advantages to adopting QR codes in your payment applications:

- **Easy to use:** Consumers do not have to be technologically savvy, and all that is needed is a mobile device.

- **Less costly:** Implementing QR payments can reduce the need to purchase or lease more expensive specialty hardware.

- **Less error-prone:** The QR code eliminates the need to key order/transaction and payment details at the time of purchase, thus reducing the likelihood of errors.

- **Faster:** The QR codes reduce friction during checkout by eliminating the need to handle credit cards or cash. In restaurants, wait staff can provide QR code tabs that do not require the staff to be present during payment.

- **Versatile:** Multiple payment options are supported with QR codes.

- **Secure:** The user does not directly share personal data in clear text format.

RISKS ASSOCIATED WITH QR CODE PAYMENT USE

While QR codes offer a convenient and fast way to make payments, there are also some risks associated with their use.

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- **Fraudulent QR codes:** Hackers may create fraudulent QR codes to steal sensitive information or redirect payments to their accounts. This can be avoided by verifying the source of the QR code and ensuring it comes from a reputable and trusted source.

- **Malware**: QR codes can be used to distribute malware that can infect a user's device and steal sensitive information. To avoid this risk, users should scan QR codes only from trusted sources and ensure their device has up-to-date anti-virus software installed.

- **Network vulnerabilities:** As with any electronic payment, hackers can intercept QR codes if the network used to process payments is not secure. To mitigate this risk, users should use secure networks to make payments and avoid using public Wi-Fi networks.

In all cases, it is up to the consumers and merchants to verify the source of the QR code and validate the payment details before authorizing a transaction. Merchants can further minimize risks by using dynamically generated QR codes or working with a reputable QR code company and changing them more frequently. Finally, as with all electronic payments, merchants should establish and maintain best practices for securing their payments environment.

A LOOK INTO THE FUTURE

QR code use in digital payments is likely to grow exponentially in the next 5-10 years, and according to a report by the World Economic Forum, QR code payments are expected to reach $2 trillion by 2025. Several factors are contributing to more widespread adoption:

- The rising popularity of mobile payments

- The growing adoption and "trust" in digital payments

- The increasing availability of QR code readers among merchants of all sizes

In countries other than in the U.S., the use of QR codes in digital payments is already widespread. China has a substantial mobile-first population, and mobile payments and QR code payments are used for everything from buying groceries to paying for public transportation. QR payments in the U.S. are still in the early stages of adoption but can expect growth of 240% in users between 2020-2025, according to Onix Systems.

As we have seen, QR codes are a convenient and secure way to transact. They are more accessible than traditional payments, such as credit cards, which require a physical card, specialized hardware, and infrastructure. As with any payment solution, successful payment technologies start with understanding the offering, evaluating the benefits and risks, and implementing a solution that best fits the merchant's needs. By following these guidelines, merchants can prepare to meet these technologies' rising popularity and adoption.

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