



QR code payments

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Using QR codes for payments

These days, quick response (QR) codes appear everywhere, from signage to restaurant menus to direct mail to Super Bowl advertising. These square-shaped, black-and-white codes have origins of use within the supply chain industry but are now used throughout the merchant landscape, from marketing to payments.

As companies and consumers have grown increasingly comfortable with QR codes, more companies are adopting them for payments. Influenced by COVID-19, contactless payments rapidly gained in popularity over traditional payment methods, a trend likely to continue over the next five years. Today, 4% of consumer transactions globally use QR codes,¹ and that number is expected to increase at a Compound Annual Growth Rate (CAGR) of 16.1% by 2030.²

More and more merchants are deciding to offer a QR code payment option to help make payments faster, safer, and more accessible. They may partner with a QR code payment provider or create their own code-generation systems. Payment solutions may vary between a merchant-presented mode or a customer-presented mode.

In this report, we'll explore the choices available to merchants and key considerations for a successful implementation.

Original use of QR codes

QR codes were founded in 1994 and were initially used to track automobile vehicles and parts during manufacturing.³ With the increased prevalence of the internet and ubiquity of mobile devices, QR code applications have expanded. As consumer preferences evolve and commerce continues to be influenced by digital transformation, QR codes can be used in a merchant's ecosystem in various ways.

Figure 1. While QR codes began in supply chain, they are now used throughout the merchant landscape, from marketing to payments
 The companies listed below are examples of how organizations' are using QR codes






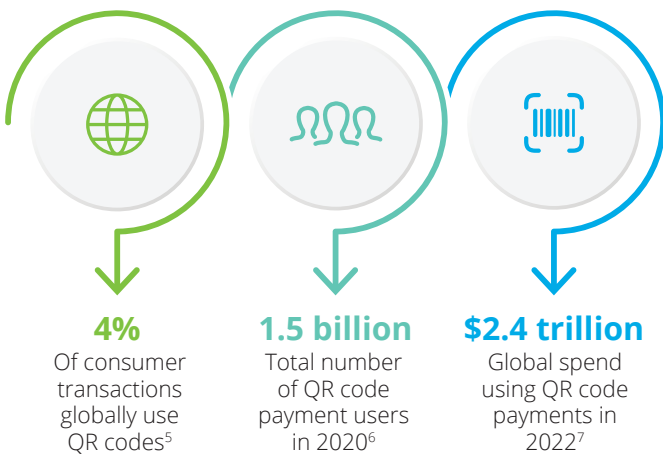
| Report focus | | | |
|--|---|--|---|
| Payments | Returns | Loyalty | Marketing |
| Ubiquity of QR codes has boosted their adoption for payments. Based on business goals, merchants are partnering with QR code payment providers (e.g., Venmo) or creating their own systems. Solutions vary between merchant-presented mode and customer-presented mode for QR code payments. | Expansion of e-commerce requires a robust merchandise return program. QR codes enable integration with couriers and other physical retailers to operate a return program. Most commonly known is Amazon, which has integrated with Kohl's for merchandise return powered by QR codes. | Integrating QR codes into sales channels can help businesses track and manage relationships with existing customers. QR codes provide the ability to maintain functionality across online and offline channels; for instance, benefits for purchases with cash can be tracked just as well as a mobile order, through the scan of a QR code. | QR codes can help modernize marketing by unifying offline and online efforts, prompting customer engagement with the brand and refreshing campaigns with the help of dynamic QR codes. Presence of QR codes on print and digital media can streamline tracking of customer purchases across channels. |
|  |  |  |   |

Figure 2. QR code use in payments is forecasted to grow over the next five years
QR code payments provide opportunities for merchants to enable new payment methods for their customers, which customers are actively using

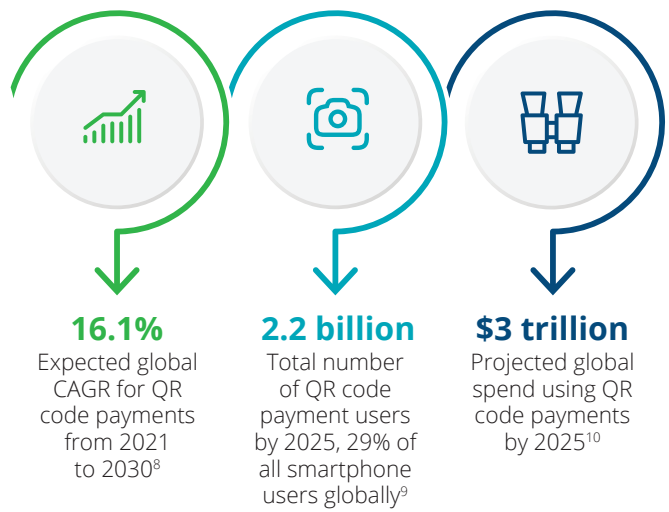
Current trends

QR code payment usage is gaining steam among consumers



Future forecast

The future of QR code payments is forecasted to grow both in number of consumers and the value of transactions



Enhancing the customer experience

Merchants and their customers—representing a wide range of industries and business categories, from retail to quick service to airlines—can benefit from using QR codes for payments. New merchants can start accepting payments quickly. And more-established merchants can offer an additional payment acceptance option while improving the overall experience of the customer checkout journey.

Three key features of QR code payments benefit customers and merchants alike:

- **Contactless payment experience:** Using a digital payment option eliminates the need for cards or money to change hands, a safety precaution that helps reduce the spread of germs.
- **Faster payment, service, and settlements:** Digital transactions enable immediate payment, convenience, accurate records, and prompt settlement between financial institutions.
- **Affordable and accessible functionality:** Lower setup and transaction costs help merchants pass savings along to consumers. QR code payment options are readily available to consumers through their mobile devices.



Dunkin' runs customer rewards and payments with QR codes

Dunkin' refreshed its mobile app in 2019 to use QR codes in customer-presented mode to allow loyalty members to earn points for all purchases regardless of payment instrument (including cash). If a customer pays with the QR code on the Dunkin' app, the payment and loyalty scan occurs in a single scan, enabling a faster, easier checkout experience for Dunkin' guests. Members can also scan their loyalty ID QR code to earn their points and then pay any way they'd like.

Examining QR codes in a merchant environment

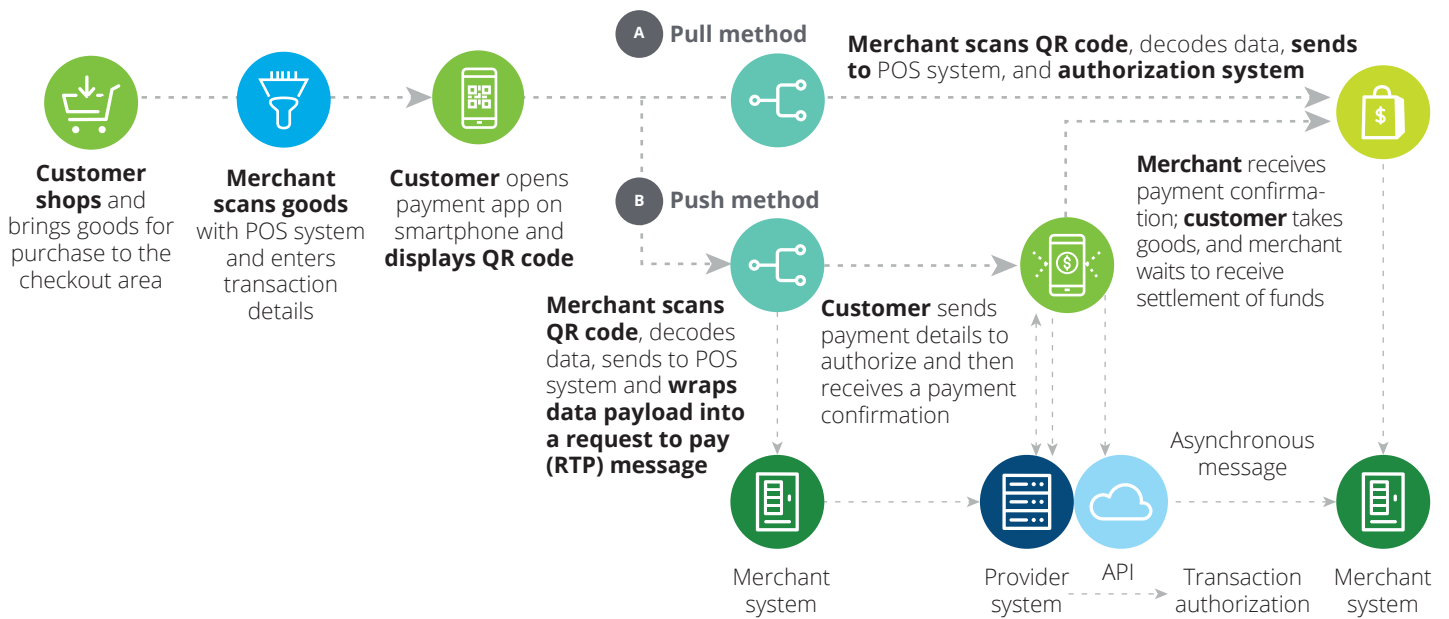
Merchant choices surrounding QR code payment implementation impact the customer checkout journey, whether the QR code is presented by the customer or merchant.

Currently, merchants have two choices to consider when implementing QR payments:

- **Customer-presented code:** The customer presents a QR code for the merchant to scan. Merchants can choose to build their own app for a customer-presented method or choose to accept third-party apps, such as Zelle, Venmo, or PayPal. Loyalty and payments can be combined, just as in the merchant-presented method, allowing for quick and easy checkout.

Figure 3. Customer-presented QR code payments, with static or dynamic customer QR codes, rely on the merchant capability to scan QR codes at checkout
The customer-presented QR code payment method can initiate a push or pull payment, affecting the customer experience at checkout as illustrated in this example of a retail merchant environment

Customer journey: Customer-presented method



Source: Anant Nautiyal et al., [QR code merchant payments](#), GSMA, August 2020.

- Merchant-presented code:** The merchant's point of sale (POS) system produces a QR code, or a static code is presented at the point of interest for the customer to scan with a mobile device. In most cases, the customer manually inputs payment details during the first use of the app. A unique code is generated for each transaction with dynamically generated QR codes.

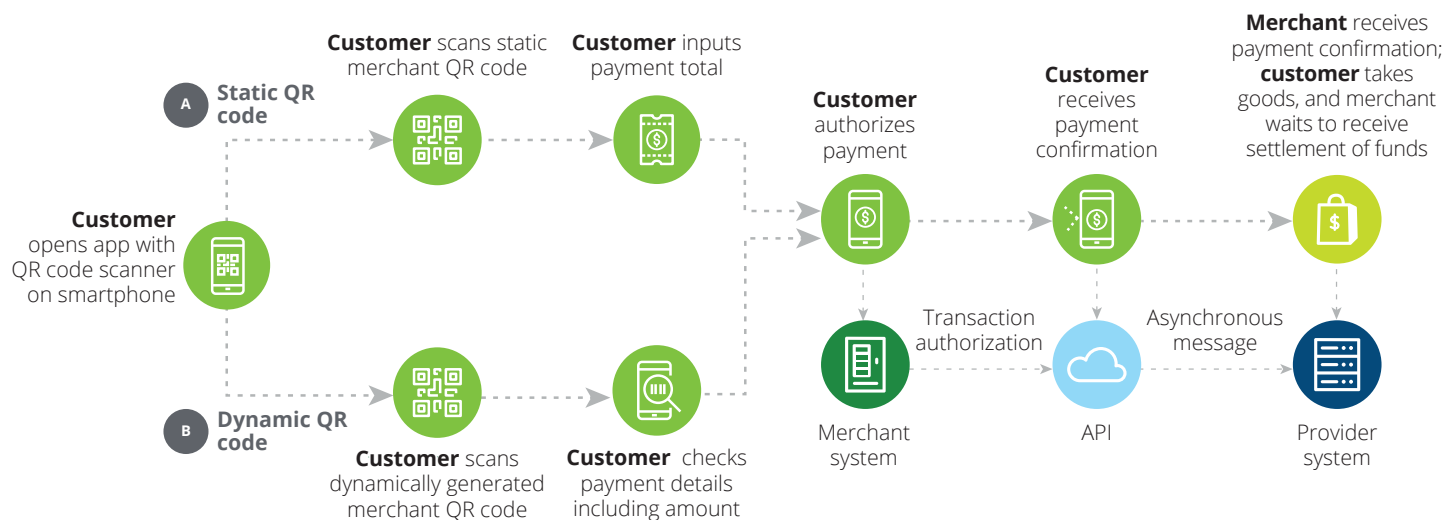
The merchant-presented method allowed many small merchants to begin accepting electronic payments. Merchants can display a single static code for consumers to scan, eliminating the need for expensive POS infrastructure.

At present, there is no clear winner in how to make and accept QR code payments. The choices made by heavyweight merchants will likely influence customer expectations about using QR codes for payment. While many POS terminals offer the ability to both generate and scan QR codes, it is expected that one option or another may eventually dominate in specific markets or within a merchant category.

Whether merchant- or customer-presented, consumers will continue to look for ease of use, simplicity, and security in making payments.

Figure 4. Merchant-presented QR code payments can be completed with dynamic or static QR codes; the customer journey is largely similar in each option
 Merchant presented dynamic QR codes are typical of larger, more sophisticated merchants with POS capability to generate and display dynamic QR codes. Static QR codes are seen most often with smaller merchants who may be transitioning from cash-only acceptance

Customer journey: Merchant-presented method



Source:
 1. Anant Nautiyal et al., [QR code merchant payments](#), GSMA, August 2020.
 2. Mastercard, "[Mastercard merchant presented QR](#)," accessed May 2, 2023.

Evolving security and privacy controls

Any form of payment may present security risks, and QR code payments are no exception. Security threats may vary based on implementation decisions, and merchants must evaluate their QR code payment ecosystems to implement the necessary security controls.

Dynamic codes consideration

QR codes can be used to commit fraud by replacing or covering a static QR code with a fraudulent code that can route the payment to a different destination. Allowing the customer to present the code or utilizing dynamic digital codes at checkout can help prevent this type of fraudulent activity. Merchants should also consider periodically changing their QR codes to ensure they weren't changed by malicious actors.

QR code monitoring consideration

As payments are initiated through QR codes on the customer's phone, risk of payment fraud can occur on the customer side due to visibility of the customer's screen during the payment journey, or loss or mishandling of their personal device. Customers should consider ways to protect themselves, as well. Customers should pay attention to the web pages and mobile apps that open while scanning QR codes to ensure the actions on the phone resulting from the scan are authentic and intended for the right party, otherwise they risk having their code scanned by a malicious actor, possibly resulting in stolen funds. The customer may not immediately recognize the payment information has been stolen, resulting in increased rates of chargeback, thereby impacting merchants. In addition to implementing security software on QR code display devices to protect from targeted attacks on their systems, merchants should also monitor their transaction reports daily to confirm payments are being received accurately from customers, and review any customer QR code issues that are identified immediately.

While QR code payments offer convenience and speed, merchants and customers must remain watchful for potential security risks. By implementing necessary security controls, such as utilizing dynamic codes, merchants can reduce the risk of fraudulent activity. Customers should also take precautions, such as verifying the authenticity of web pages and mobile apps when scanning QR codes, to protect themselves from potential theft and fraud. By working together and staying informed, both parties enjoy benefits of QR code payments while minimizing associated security concerns.

Merchants should also consider periodically changing their QR codes to ensure they weren't changed by malicious actors.

Key considerations

While enabling QR code payments offers many benefits, merchants need to evaluate key considerations, including impacts across the business and to the customer's payment journey and cybersecurity of the payment acceptance ecosystem.

- **Businesses:** QR code payments can be enabled by partnering with third-party providers such as Venmo and PayPal or by developing in-house systems. Merchants need to analyze which path will best suit their business goals. They must also determine the integration between QR code payment and other value-added services, such as loyalty programs.
- **Customers:** Customers can interface with QR codes to make payments in two different methods—customer-presented mode and merchant-presented mode. Businesses will need to align their customers' payment journey with the objectives of the checkout experience and the business need.
- **Security:** QR code payments often utilize smartphone cameras. Reliance on an additional technology component can introduce novel security vulnerabilities. Additionally, security considerations and controls need to be implemented based on the technical implementation decisions made related to the standards chosen for presentation methods and the type of QR code payments offered.

As companies explore implementing QR codes in the merchant environment and how they might fit with existing solutions, these are some key questions to consider:

- Who else on your team should be thinking about QR code payments?
- Are your customers already using QR code payments with other merchants? How much education will be needed?
- What other forms of payment do you already offer, and how does this fit within the customer journey?
- What would drive your customer to this payment method? Do you need to consider loyalty or other marketing customer journeys?
- Does your merchant environment have the necessary connectivity to offer/accept QR code payments?
- Will you accept third-party providers' QR code payments or develop an in-house method?

QR code-based payments continue to be popular with consumers; however, merchants should consider their customer and business needs before adding a new payment form factor. QR codes offer considerable advantages to merchants and consumers, including convenience, accessibility, and speed, all contributing to an enhanced customer experience.

Ready for the next step?
Contact us to begin your journey
to implement QR code-based
payments today.

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