2D barcodes case study

Better food safety and supply chain efficiency in Zhejiang Province, China

In 2022, more than 7,000 food production companies already put QR Codes powered by GS1 on their products - which were then scanned by consumers more than 111 million times to get more information

Challenge

Authorities in Zhejiang Province, China wanted to help the province's 125,000 food sector companies achieve better traceability to protect citizens, make more product information available to consumers and boost supply chain efficiencies.

Solution

The Zhejiang Provincial Administration for Market Regulation launched a project designed to progressively put next generation barcodes on millions of products and help retail points of sale upgrade their barcode scanning equipment and technology.

Benefits

Tens of thousands of Zhejiang food companies are already benefitting from more accurate traceability and more modernised processes; tens of millions of Zhejiang consumers now have faster, easier access to product information.

Zhejiang Province on the eastern coast of the People's Republic of China is home to 65 million people. It's also one of the most active regions in the development of China's digital economy. It is no surprise, then, that Zhejiang Province is the location of an ambitious and important project designed to enable more efficient food supply chains, increased food safety and more transparent exchanges with consumers.

An innovative, province-wide project

In May 2022, the Zhejiang Provincial Administration for Market Regulation, or Zhejiang AMR, launched a project designed to progressively implement next generation barcodes for millions of products across the province, to help food companies achieve traceability and to boost transparency between those companies and consumers.

The project—called the Zhejiang Food Traceability Chain—was created and implemented with the support of GS1 China.

The Zhejiang Food Traceability Chain is a food safety and traceability supervision system through which pre-packaged food and edible agricultural products are labelled with QR Codes powered by GS1. Data about the movements of these products across the supply chain is collected in a database that allows businesses, regulators and consumers alike to access product information.

That database contains information based on GS1's global standards, which means it can smoothly interact with many other databases in China that also house data based on GS1 standards – including the ones behind applications and services such as Alipay, WeChat, government regulatory platforms and more.

Next generation barcodes to meet new expectations

After fifty years of transforming how people buy and sell products, traditional barcodes—those familiar black-and-white vertical lines—are now evolving to respond to new business and consumer needs. Both GS1 DataMatrix

barcodes and QR Codes powered by GS1 bring a whole range of ways to improve business operations and deliver new experiences for consumers.

And that's because they can hold a lot more information. For example, in addition to holding a GS1 Global Trade Item Number® (GTIN®), these high-capacity next generation barcodes can also have a product's batch or lot number, serial number and expiry date. Furthermore, by connecting to the web, additional information from an item's brand owner or manufacturer can also be made available.

China has been a leading country in promoting and implementing these next generation barcodes powered by GS1.

Behind the scenes

The Zhejiang Food Traceability Chain has benefitted from having a range of different stakeholders, each bringing their areas of expertise to this highly collaborative project.

Zhejiang AMR is focused on all aspects of modernising food safety governance processes, systems and capacity. They also have a key role in supervising the transformation of the whole food supply chain.

The Chinese government is promoting the use of the latest label printing technologies, like laser marking and UV-printing; they are also encouraging companies across the supply chain to upgrade their barcode scanning equipment and technology.

GS1 China and the Zhejiang Branch of GS1 China are working with food companies in Zhejiang Province to promote the use of GS1 standards and providing traceability technical support.

The choice of QR Codes powered by GS1

Zhejiang AMR chose to use QR Codes powered by GS1 for the Zhejiang Food Traceability Chain project for a variety of reasons.

These high-capacity barcodes are very reliable – and because they are encoded with GS1 standards such as the GTIN, they provide a globally-unique way to identify trade items all the way down to the batch or individual product instance. This sort of identification is what makes traceability possible, and in doing so, helps protect consumers from counterfeits or expired products and simplifies recall and return processes.

QR Codes powered by GS1 also enable numerous other benefits for consumers, businesses and regulators, including access to an unprecedented amount of information about products.

Phase 1 was an extraordinary success

At the launch of the project in May 2022, Zhejiang AMR hoped that 7,000 food production companies and 200 stores would take part in the first phase.

The actual numbers at the end of 2022 were significantly greater: 67,000 food companies joined the Zhejiang Food Traceability Chain; 5,200 retail stores upgraded their point-of-sale systems to be able to scan these next generation barcodes; and more than 111 million QR Codes powered by GS1 were scanned by Chinese consumers.

These remarkable achievements are of course very encouraging – and a sign of the many opportunities and benefits made possible to the food sector through next generation barcodes powered by GS1.

A range of benefits already seen

The Zhejiang Food Traceability Chain has already enabled participants to enjoy a variety of measurable benefits:

- **More accurate traceability**
  The ability to precisely locate food items in the case of a recall is often one of the main motivators behind traceability programmes, and the Zhejiang Food Traceability Chain was successfully able to do just that.

- **Modernised processes**
  By replacing traditional invoices with electronic invoices, the Zhejiang Food Traceability Chain has already allowed companies in the province to save more than 200 tons of paper and more than 2.6 million yuan in costs. The project also encouraged many enterprises to build better and more targeted marketing systems, which strengthens the entire industry.

- **Boosted consumer confidence**
  In 2022, Zhejiang consumers scanned QR Codes powered by GS1 to obtain product information, ingredient details and other brand-authorised information.

The system can also be used to report suspicious products, and in fact, over 14,000 complaints registered through the system in 2022 helped regulatory authorities investigate and resolve twice as many as the previous year.

Next steps

Building on such a successful first phase, Zhejiang AMR will now work to extend the use of QR Codes powered by GS1 to companies beyond the food sector, enabling another 150,000 manufacturers and retail companies to join the programme by 2025. By that same date, they intend to see 20,000 stores (including all large supermarkets) equipped with point-of-sale scanners and 800 million codes scanned by consumers.

67,000
food companies joined the Zhejiang Food Traceability Chain in 2022

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5,200
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More than 111 million
QR Codes powered by GS1 scanned by Chinese consumers in 2022

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200 tons
of paper saved by transitioning to electronic invoices

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2.6 million yuan
saved by transitioning to electronic invoices

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43 million
batches of products have a QR Code powered by GS1 printed on their packaging

Get started with next generation barcodes powered by GS1

GS1 is working with industry to support 2D barcodes implementations and create guidance for assisting in the design of proof-of-concept demonstration pilots.

At a high-level, consider the following elements:

- **Retailers:** create a vision for use cases enabled by 2D barcodes, assess your current technical capabilities (scanners and back-office systems) to understand your roadmap to enable scanning of all barcodes, and collaborate with other stakeholders to ensure alignment on goals and outcomes.

- **Brands, Manufacturers and Suppliers:** bring together your supply chain and marketing executives to collaborate on a combined barcode strategy that achieves both consumer engagement and supply chain goals.

- **Solution Providers:** consider the upgrades needed to your systems to enable multiple barcode scanning/printing and support your end-users achieve their top use cases enabled by 2D barcodes.

Questions about the 2D barcodes future?

Contact your local GS1 Member Organisation to see how GS1 can help you begin your journey toward next generation barcodes!

www.gs1.org/contact