

difficult to remove. Privacy and security issues include being able to read a tag's contents after an item has left the store, tags being read without the customer's knowledge, and tags with unique serial numbers being linked to credit card numbers.

## RFID Applications

RFID devices have been used by many organizations in the public and private sectors, including Walmart, the U.S. Department of Defense, Toyota, and the Gap. Table 11.1 lists some common applications of RFID, divided into five major categories.<sup>24</sup>

TABLE 11.1 RFID APPLICATIONS	
Category	Examples
Tracking and identification	Railway cars and shipping containers, livestock and pets, supply chain management (tracking merchandise from manufacturers to retailers to customers), inventory control, retail checkout and point-of-sale systems, recycling and waste disposal
Payment and stored-value systems	Electronic toll systems, contactless credit cards (require no swiping), subway and bus passes, casino tokens, concert tickets
Access control	Building access cards, ski lift passes, car ignition systems
Anticounterfeiting	Casino tokens, high-denomination currency notes, luxury goods, prescription drugs
Health care	Tracking medical tools and patients (particularly newborns and patients with Alzheimer's), process control, monitoring patient data

The “Coca-Cola Company Uses RFID-Based Dispensers for Generating Business Intelligence” box describes how Coca-Cola uses RFID.

**A QR (quick response) code** is a matrix barcode consisting of black modules arranged in a square pattern on a white background.

## Quick Response Codes

A **QR (quick response) code** is a matrix barcode consisting of black modules arranged in a square pattern on a white background. It offers a larger storage capacity compared to standard UPC barcodes (see Exhibit 11.5). Although they have been around for many years, QR codes have recently grown in popularity, particularly as a marketing tool.

Compared to conventional barcodes, QR codes have the following features:<sup>25</sup>

- High storage capacity
- Small printout size
- Dirt and dust resistance
- Readable from any direction
- Compatible with the Japanese character set

QR codes can be read by smartphones that are equipped with cameras. The scanner app must first be downloaded to the smartphone in order for the camera to be able to read the QR code. This eliminates the need for bulky handheld scanners, which is one of the reasons for the QR code's growing popularity over barcodes and RFID tags.

## Coca-Cola Company Uses RFID-Based Dispensers for Generating Business Intelligence

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Coca-Cola is implementing a system that will offer more than 100 varieties of soda, juice, tea, and flavored water. The system is being tested in California, Georgia, and Utah, and the company has plans to implement it nationwide. The “Freestyle” dispensers not only give customers many choices of soft drinks by allowing them to mix their own flavor combinations, they collect valuable business intelligence that Coca-Cola can use to improve the efficiency and effectiveness of its soft drink production and distribution. The dispensers contain cartridges that are tagged with RFID chips, and each dispenser contains an RFID reader. The system collects data on which drinks customers buy and how much they purchase. This information is then transmitted through a wireless network to a data warehouse system in Atlanta, Georgia. Coca-Cola analyzes the data and generates reports on how new drinks are performing in the marketplace.<sup>26</sup>

### Questions and Discussions

1. How do Coca-Cola Company RFID-based dispensers generate BI?
2. How might the Coca-Cola Company use this data to inform decision making?