
White Paper

SKU vs. Item-Level Data Visibility:

Why It Matters for End-to-End Traceability



SKU vs. Item-Level Data Visibility

People and profits are the essence of retail. As omnichannel operations dominate the industry, customer expectations continue to advance, demanding retailers to quickly adapt.

Retailers rely on two major product-level insights to ensure satisfactory results: inventory in motion (goods in transit) and inventory at rest (goods in storage).

To track both, there are currently two levels of data collection that supply chain managers can use:

- Stock keeping unit (SKU) data
- Item-level visibility data

SKUs remain industry standard. But as item-level visibility solutions enable retailers to meet more complex production, distribution, delivery and traceability demands, the lacking specificity of SKU level data is becoming obsolete.

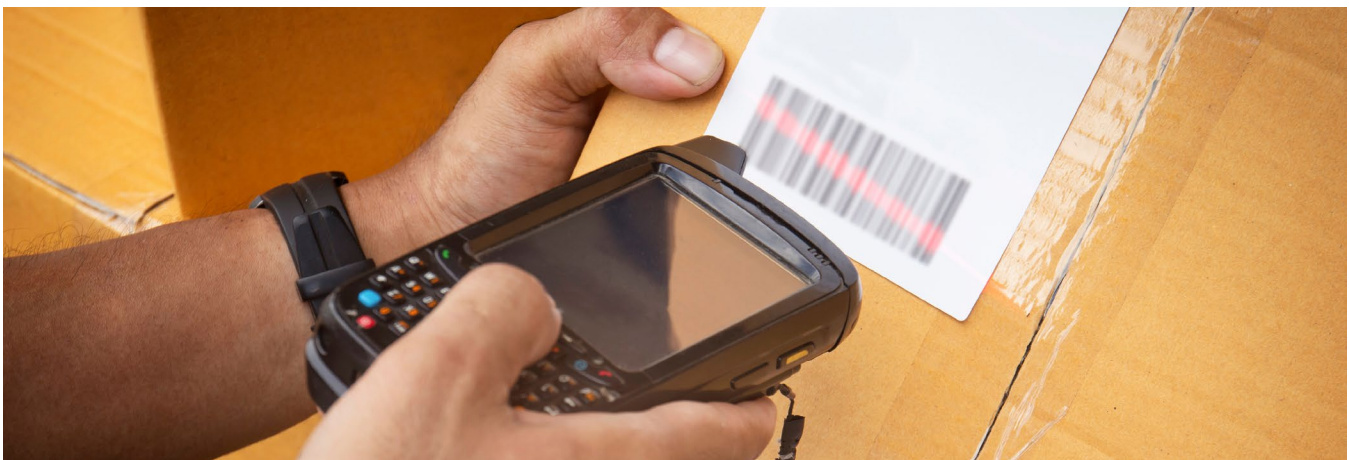
What is a Stock Keeping Unit?

A stock keeping unit (SKU) is an alphanumeric code that retailers use to track the inventory of a product—in the factory, in transit, and in retail stock.

In the 1970s, SKUs were a pivotal innovation for retail inventory management. They became ubiquitous for a majority of companies—from global corporations to small local businesses—as they streamlined inventory and optimized supply chain processes. SKUs and barcode scanners eliminated the need for manual product tracking.

Retailers and manufacturers use SKUs to track product identities, features, stock levels, prices, and transactions. Each product has a unique SKU, an 8- to 12-digit code typically represented on a price tag (barcode). If a specific product comes in multiple colors or sizes, each variety has a distinguished SKU.

For example, a cooking oil brand supplies four of its products to international grocery chains. Each of the four products has a unique SKU: one for olive oil, one for almond oil, one for sunflower oil, and one for bulk-sized olive oil.



A shopper purchases one almond oil and one olive oil at the grocery store. When the cashier scans the barcodes at checkout, the computer reads the SKU data of each product and automatically updates the store's inventory. However, if the cashier scans the same bottle twice—perhaps assuming the two similar bottles are the same product—the SKU data updates the inventory inaccurately.

SKU data leaves room for error, as it's confined to product-wide tracking. As of 2022, the average supply chain accuracy of a U.S. retail operation is only 63%.

([Zippia](#), 2022)

Technology, supply chains, and merchant operations are evolving. Today, the abundance of retail growth opportunities online and in-store require companies to adopt real-time inventory tracking solutions that provide item-level (instead of only product-level) data.

What is Item-Level Data?

Real-time, item-level visibility (RTILV) enables retailers to monitor every unique item through every stage of the supply chain. Tracking at the item level is more granular than tracking at the product level.

Rather than having a catalog of stock keeping units corresponding to product varieties, all individual items have an electronic product code (EPC) that acts as a universal identifier.

EPCs operate in conjunction with radiofrequency identification (RFID) technology, which uses radio waves to read and transmit hundreds of signals at once. Barcodes and scanners are unnecessary as RFID wirelessly tracks EPC data.

Itemized electronic product codes paired with RFID increase inventory transparency, [improving accuracy by at least 63%](#) (Auburn University RFID Lab, 2023). It ensures manufacturers, distribution centers, and retailers access real-time data for every physical item that passes through the supply chain, from source to destination.



“RFID increases inventory accuracy, from an average of 65 percent to more than 95 percent. And high inventory accuracy can lead to increased sales—but only if retailers use the data to improve their operations and processes.”

– Bill Hardgrave, Founder of Auburn University's RFID Lab



Key Differences Between SKU and Item-Level Data

SKU-level data is categorical. Item-level data is comprehensive.

SKU-Level

- Represents specific products
- Manages inventory at the product level—tracking categories, stock levels, and varieties
- Information includes product name, description, price, quantity, and sales movement

Because SKUs represent products, data can be mistakenly counted multiple times. For example, a retailer scans the same barcode of a single SKU twice, causing an error in the company's inventory.

Item-Level

- Represents individual units within a specific SKU
- Manages singular items throughout the value chain—tracking production, distribution, and sale
- Information reveals itemized characteristics such as size, color, batch, serial number, expiration date, location, and sales movement

Through item-level data, every item is a piece of merchandise with its own unique EPC (electronic product code), minimizing human error—the #1 supply chain issue among 46% of warehouse centers ([Software Path](#), 2020).

Item-Level Visibility in the Retail Landscape

According to projections from [Fortune Business Insights](#), the inventory management market is set “to grow from \$2.13 billion in 2023 to \$4.05 billion by 2030.” (Inventory Management Market Size, Share & COVID-19 Impact, 2023).

As retail companies work to resolve supply chain inefficiencies, RTILV is an emergent solution. To illustrate, the 2024 FSMA Rule holds food and restaurant retailers accountable for maintaining records of data involved in critical tracking events and then reporting instances to the FDA within 24 hours. This is a demand SKU-level information cannot achieve.

Benefits of Supply Chain RTILV

The global supply chain is increasingly regulated for companies and on-demand for customers. Retail companies must be aware of item movement at a micro level. **Real-time item-level visibility** (RTILV) captures granular data that are vital to optimizing inventory and improving operational efficiency.

Market Adaptability

Customer demands constantly change and markets evolve. Regardless of the existing climate, customers expect quick and accurate access to products. Real-time data monitors every step of the process and identifies setbacks, encouraging suppliers to make calculated adjustments to meet customer needs in every season.

Accurate Demand Forecasting

Itemized data insights help reduce stock shortages and inefficiencies that blunder customer trust. Companies can harness predictive analytics, using past and current data to make informed decisions that support their margin.

Reduced Operating Costs

Lower operating costs result from process optimization and data visibility. From carrier selection to fewer product errors, companies can reduce costs related to shipping, transportation, and recall prevention.

Optimal Inventory

Item-level stocktake enables stores to conduct more consistent and efficient inventory. RFID technology and detailed data visibility account for errors, giving managers insights to achieve greater inventory accuracy—both in motion and at rest.

About Mojix

Mojix is a leader in real-time, item-level visibility solutions and human capital management for nearshoring IT development services that provide end-to-end business intelligence for supply chains around the globe. Mojix harmonizes data to provide traceability, product authentication and automated inventory management solutions that are built on a high security, scalable SaaS platform. Mojix captures event-triggered actions and vital characteristics by tracking billions of unique identities, to follow item lifecycles from source to shelf. Companies can leverage the integrated data to increase their sales and operational efficiency, reduce risk and enhance their customer experience. [Learn more at mojix.com](https://mojix.com).

