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How RAIN RFID Is Shaping the Future of Retail Self-Checkout

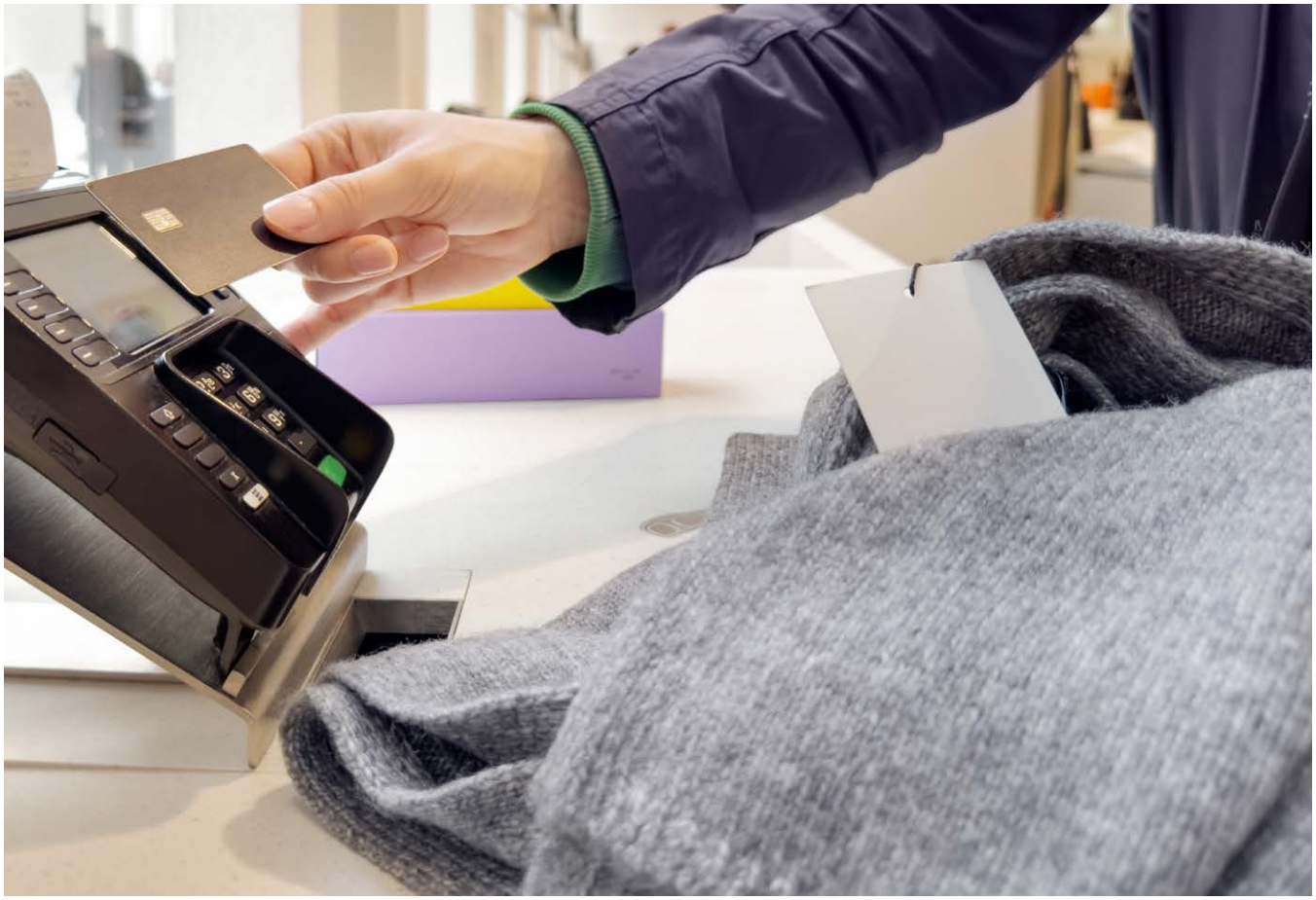
Fixing Self-Checkout: An Opportunity for Retailers and Consumers Alike

Over the past decade, there has been a drastic uptick in consumer preference for self-checkout at retail stores. Retailers started installing self-checkout kiosks to ease labor challenges and free up employees for other tasks, and consumer use has meanwhile taken off. By 2024, 96% of consumers had used self-checkout machines, with 73% preferring self-checkout over traditional staffed registers.[1]

But barcode-based self-checkout hasn't lived up to the hype. More than two-thirds of consumers reported using a dysfunctional kiosk, and 42% of shoppers avoid self-checkout because they feel it's slow.[1] That said, it appears people want to use self-checkout; they just want a better experience.

96%
of consumers have used self-checkout machines

There is an alternative to the clunky experience of fumbling around with packaging and searching for barcodes. RAIN RFID is a compelling technology for enabling touchless, automated self-checkout that avoids the challenges created by barcodes. More efficient and more powerful in terms of enabling inventory visibility and loss prevention, RAIN is the best choice for the next era of self-checkout.



1. https://capitaloneshopping.com/research/self-checkout-statistics

The trouble with barcodes: Inefficient and prone to theft

Barcode-based self-checkout introduces more problems than it solves. First, it's inefficient. We've all been in the big retailer self-checkout hubs, waiting in line while just one or two employees attempt to help the entire crowd with machine hiccups, ID checks, and other potential issues.

This can frustrate a huge segment of a customer base, as 66%[1] of consumers prefer self-checkout over human-run checkouts, and 71% feel employee-run checkouts take longer. What's more, making customers wait for an employee at what's supposed to be the more convenient kiosk defeats the purpose of using self-checkout.

66%
of consumers prefer self-checkout

Barcode-based self-checkout also introduces more opportunities for theft. Some studies show retailers with self-checkout technology experience loss rates more than twice the industry average.[2] LendingTree found that 69%[3] of shoppers felt stealing would be easier with self-checkout, and 15% admitted to actually doing so. Even among the 21% who accidentally took an item without scanning, only 39% returned it.

And, according to a report by loss-prevention platform Auror, 39%[4] of thefts within grocery stores happen at self-checkout kiosks. Some thieves, upon realizing the vulnerability of a self-checkout station, will revisit it over and over to steal more items.

These issues with barcode self-checkout have pushed retailers to look for a better automated self-checkout option.[5]

RAIN RFID: A solution to self-checkout challenges

RAIN RFID (radio-frequency identification) is an exciting upgrade to the old standby of barcode scanning. While barcodes must be scanned individually and require close proximity to a scanner, RAIN RFID can read up to 1,000 items per second without direct line-of-sight. This allows retailers to not only track the location of every product in real-time, but also dramatically speed up the checkout process while enhancing inventory management and loss prevention.

Several major retailers are using RAIN RFID self-checkout. One well-known example is Amazon's Just Walk Out[5] program, which was rolled out first at sports and entertainment venues to handle a huge volume of shoppers purchasing branded merchandise. At the Seattle Seahawks Pro Shop at the city's football stadium, for example, each item in the shop has an RFID tag, and RFID readers are installed at the exits. Fans can go to the shop, choose items, and simply tap their phone or credit card as they walk out — quickly getting back to their seats without waiting in long checkout lines. This technology creates a better shopping experience that results in both higher customer satisfaction and reduced loss for the retailer.

1. https://www.pymnts.com/unattended-retail/2024/66-percent-of-us-consumers-prefer-self-service-kiosks-over-staffed-checkouts/
2. https://www.modernretail.co/technology/why-retailers-like-target-and-dollar-general-are-limiting-self-checkout/
3. https://www.grocerydive.com/news/how-grocers-are-deterring-theft-at-self-checkout/690911/
4. https://www.rfidjournal.com/expert-views/out-with-the-old-in-with-the-new-retailers-re-approach-self-checkout-with-rain-rfid/221901/
5. https://www.impinj.com/library/blog/amazon-adds-rfid-to-extend-just-walk-out-checkout-to-soft-goods

How it works: Uniqlo case study

While RAIN RFID is a game-changer at checkout, it provides retailers and customers major benefits well before it's time to leave the store. A great example of how RAIN RFID works across an entire supply chain, all the way through automated checkout, is demonstrated by fashion retailer Uniqlo.

Uniqlo self-checkout kiosk.

Uniqlo has been RFID-tagging all of its products since 2017. These durable, low-cost tags can take the form of a hangtag, an adhesive label, or even fabric sewn into textiles. Each tag features a RAIN RFID tag chip — smaller than a grain of sand — and an antenna for receiving radio signals from a RAIN RFID reader.

Readers are used at distribution centers and in stores to keep track of tagged merchandise, providing Uniqlo's inventory system with item-level insight into the locations, numbers, and qualities of every tagged item.

At a store, the customer selects their items and places their basket on an RFID-enabled self-checkout kiosk. The kiosk automatically reads the tags in the basket and presents the customer with their total purchase.[1]

Thanks to near-instant ring-ups, checkout lines move faster and customers leave happier. Meanwhile, Uniqlo's system tracks it all, allowing the retailer to send new stock to stores getting low on inventory and ensure customers always find the products they're looking for.

Uniqlo's RAIN RFID solution tripled inventory storage efficiency, helped realize 90% savings in labor costs, increased productivity across personnel, and established near-100% accuracy in reading tagged inventory.

RAIN RFID enhances loss prevention and prevents theft

Theft is a major blind spot for barcode-based self-checkout kiosks. With only one or two employees monitoring customer activity while also troubleshooting and checking IDs, it's impossible to watch everything – and cameras don't deter everyone. Plus, when an item is stolen, the retailer may not know which product set off the alarm.

In contrast, RAIN-enabled self-checkout supports a seamless and far more effective loss-prevention strategy, with item-level visibility. With RAIN RFID, retailers can:

Do away with separate loss-prevention systems: The same tag used for inventory management also works for self-checkout, loss prevention, and seamless returns management.

Save time: Employees don't need to remove bulky Electronic Article Surveillance (EAS) tags from each item at checkout.

Analyze and correct theft patterns: Using item-level data from RAIN RFID, retailers gain insights into which items were stolen and in-store hot zones with higher theft rates. Using this information, retailers can enhance anti-theft measures for those products and in those areas.

Improve stock replenishment: If a customer does steal a product, item-level visibility can reveal exactly which product left the store without being paid for. No more wondering which product in a cartful set off the alarm.

While barcode self-checkout actually increases a retailer's loss rate, RAIN RFID provides an additional shield against theft.

1. https://www.impinj.com/library/blog/how-uniqlo-tracks-style-and-savings-with-rain-rfid

Retail benefits of RAIN RFID beyond self-checkout

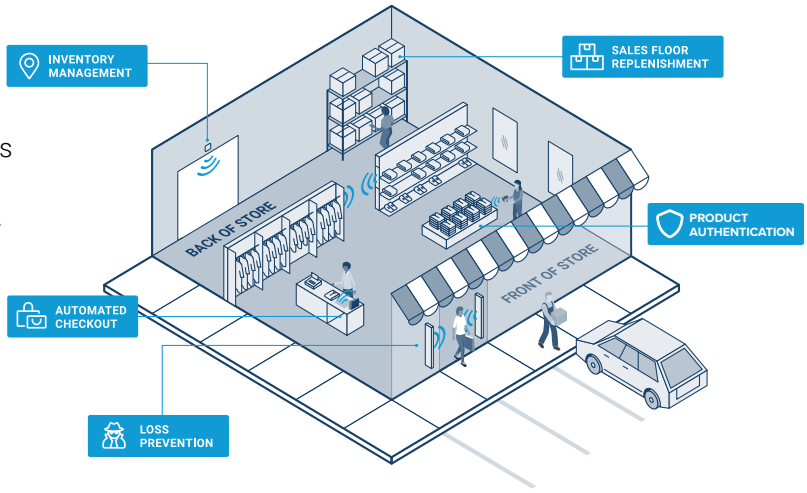
Even if all RAIN RFID could do was improve automated self-checkout, it would be an excellent investment for any retailer. But that's not all retailers get with a RAIN investment. The technology is also great for:

Inventory management: With item-level visibility and real-time inventory tracking, retailers can make faster, more agile business decisions.

Sales floor replenishment: RAIN enables retailers to see exactly how many of each item remain on shelves and avoid missed sales due to stockouts.

Retail supply chain automation: With real-time, item-level tracking, retailers can get a more complete and accurate view of their entire operation.

Product authentication and brand protection: RAIN tags and readers can confirm the authenticity of products in the supply chain, enhancing customer safety and satisfaction.



Loss prevention: RAIN's item-level tracking helps minimize the potential for theft and helps retailers spot theft trends so they can develop better loss-prevention strategies.

RAIN can also help retailers comply with upcoming Digital Product Passport requirements in Europe. Designed to give consumers more transparency into the environmental impacts of the products they buy, DPPs contain information about a product's origin, materials, and recyclability. While regulators have not set specific technology requirements, RAIN RFID is an excellent choice – especially since enterprises can also use it for automated self-checkout, inventory management, and supply chain automation.

Impinj and partners: A perfect pairing for retailers

The Impinj platform, built on RAIN RFID, offers retailers many advantages over barcode-based systems. And, with a broad partner ecosystem offering best-in-market products and capabilities, Impinj helps retailers connect every product, track it all the way through the supply chain, and gain insights for better inventory management.

These benefits, which extend far beyond automated self-checkout, make RAIN RFID the best choice for any retailer looking to improve their entire operation.

Ready to speak to an Impinj RFID expert? **Contact us: impinj.com**

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Impinj (NASDAQ: PI) helps businesses and people analyze, optimize, and innovate by wirelessly connecting billions of everyday things — such as apparel, automobile parts, luggage, and shipments — to the internet. The Impinj platform uses RAIN RFID to deliver timely data about these everyday things to business and consumer applications, enabling a boundless Internet of Things.