

BEYOND BARCODES: THE ROLE OF RFID TECHNOLOGY IN INVENTORY MANAGEMENT

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After barcodes were put into use more than 50 years ago, the technology revolutionized the grocery business. The technology also revolutionized nearly everything else in the supply chain and logistics, and distributors began using them to track inventory in the warehouse.

In the wake of barcodes came a whole platoon of ideas that fell under the umbrella of automatic identification (AutoID), including radio frequency identification (RFID).

Interest in RFID has waxed and waned over the years. Recently, it's been on a big upswing. Distributors have shown renewed interest in RFIDs, restarting projects shelved during the Covid-19 pandemic to take advantage of the price of this technology compared to rising labor costs.

RFID and other AutoID technologies are essential components of many warehouse

management systems and are important extensions of the ERP systems, which serve as the backbone of many businesses. From an inventory management perspective, the benefits of RFID can be immense.

In this article, I'll explore the benefits as well as some potential challenges facing RFID technology before diving into what it takes to succeed with implementation.

Benefits Of RFID Technology

With RFIDs, I've seen customers go from an annual inventory variance of \$170,000 to \$5,000 in one year and improve inventory accuracy by 300%. Perhaps more importantly, RFID systems, whether passive or active, integrate well with other advanced technologies, forming a solid foundation for continuous improvement.

Distributors and manufacturers in several industries rely on RFID technology to comply with customer mandates and regulations to leverage advanced

technologies that will become industry-standard in the coming years. Here are some of the benefits of RFID, and what businesses are trying to achieve with it:

- **RFID goes beyond inventory to enhance security and product authenticity.**

Consumers want to know where their food comes from. Regulators want to be able to track food and pharmaceuticals throughout the supply chain in the event of recalls. RFID enables end-to-end traceability in supply chains, especially when paired with other technologies like blockchain. It's even used to ensure the authenticity of pricy, counterfeit-prone items such as Kobe beef, olive oil and mislabeled fish.

- **RFID integrates with other technologies, like IoT systems, to unlock diverse applications and more robust analytics capabilities.**

With IoT devices and RFID technology—used from the



manufacturing point through the supply chain and distribution to, ultimately, retail—users can get important detailed information beyond inventory counts, such as storage conditions like humidity and temperature.

- **RFID reduces staff time and increases automation.**

Barcode scanners aren't dead, but RFID systems have distinct advantages. RFID receivers can identify tags that are not line of site, and they can be carried by workers, stationary readers and mobile readers. As an example, warehouses typically deploy them to count pallets and boxes throughout the warehouse as they enter and leave the facility and also inside shipping vehicles. Primarily, RFID scanners can scale capabilities and count many items at once.

- **RFID coupled with AI can provide facilitate improved data analysis.**

Data is the lifeblood of AI. AutoID and IoT devices create a lot of it. By capturing and delivering this digital gold, AI can deliver new insights to businesses.

Headwinds Faced By RFID Technology

Despite renewed interest in RFID technology, it does face some

headwinds.

For one, implementing an RFID tracking system requires some additional redundancies. With a hand scanner, a worker receives an audible beep for each count. RFID, on the other hand, doesn't have that sort of immediate confirmation of accuracy.

This can be overcome with backup systems. For example, a warehouse can place an RFID system at the entrance to the facility, coupled with an optical light break counter. This will ensure that if the system reads 19 boxes when 20 have arrived, someone will be notified. The missing one might be the result of interference. Businesses should also place RFID readers in multiple locations to ensure redundancy.

One other headwind is cost. The cost is coming down, and the technology has been commercialized for decades, but RFID systems still cost more to implement than barcodes. To mitigate costs, RFID is typically deployed to align with impact and risk. The cost may not make RFID suitable for inexpensive commodities like generic Ibuprofen, but it may be a regulatory necessity for controlled substances and high-value items

prone to diversion.

Keys To Implementation

Implementing a new RFID or AutoID system always starts with a lengthy planning process. Organizations need to map existing processes and factor in how the RFID technology will integrate into those processes, where it will send information and how the information will be stored.

Many organizations also start with a pilot program to evaluate the technology. By starting small and scaling quickly, they will be better able to identify what works and what doesn't.

Businesses should also pay attention to the underlying technological infrastructure that RFID will integrate with. Modern ERP systems and warehouse management systems (WMS) are the IT backbone of many businesses, helping them manage inventory, logistics and analytics. It's essential to have an ERP system that can integrate your RFID use cases and that can scale and adapt to your evolving business needs.

Conclusion

RFID technology continues to be at the forefront of innovation in inventory and supply chain



management, offering unparalleled accuracy, security and efficiency. Successful implementation, however, requires a thought-out process and an understanding of some critical challenges.

By conquering those hurdles

successfully, businesses can not only meet current regulatory demands but also prepare for future industry standards, ensuring they remain competitive and compliant. As we look ahead, the integration of RFID with emerging technologies like

AI and IoT promises to further revolutionize how we manage and track inventory, which can help businesses optimize their operations and enhance their decision-making processes.

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