

Mobility Plaza®

The state of smart stores

Retailers are embracing autonomous technologies to meet evolving consumer expectations for convenience and speed.



The development of smart shopping and autonomous stores globally has seen significant growth and innovation in recent years. The adoption of autonomous stores, which utilize technology for a checkout-free shopping experience, has been driven by advancements in computer vision, AI, and consumer demand for more efficient, frictionless shopping experiences.

By 2021, the adoption of autonomous stores began to surge, reflecting a broader trend towards digital transformation in retail. These stores, which carry a massive investment cost, offer benefits such as rich consumer insights through computer vision technology, which tracks product interactions and customer behaviours, allowing for optimized store layouts and stock management. Unmanned stores can also operate 24/7 without the need for staff presence, significantly reducing labour costs and enhancing operational efficiency.

The global artificial intelligence in the retail market, which underpins the autonomous store trend, is

forecasted to grow from \$7.14 billion in 2023 to \$55.53 billion by 2030, according to [Fortune Business Insights](#). By 2024, it's anticipated that there will be 10,000 stores with autonomous checkouts, up from 350 in 2018 and approximately 7,250 in 2023. This exponential growth highlights the scale at which retailers are embracing autonomous technologies to meet evolving consumer expectations for convenience and speed.

Amazon Go stores were a pioneer in this space. Now fuel and convenience retailers around the world have developed their concepts – 7-Eleven, Żabka, Carrefour, Kroger, Galp, Neste, ADNOC Distribution, Migrolino, Lekkerland, the list goes on. These players are testing the technology and exploring how to best serve a new customer journey.

“Applied AI is present throughout the entire customer relationship process, from the first contact to measuring satisfaction. Galp's service HUBs are on the way to becoming smart multi-service centres where customers will be able to access an integrated offer of energy and personalised mobility solutions,” says Portuguese retailer Galp about the development of smart stores. They were the first energy-integrated company in Europe to open a fully autonomous store.



A [new study published in the Journal of Retailing](#) found that consumers prefer staffed stores over autonomous ones due to concerns about check-in processes, limited access to staff support, and inability to verify purchases before payment. Community-based and rural locations are identified as more favourable for autonomous stores compared to high-traffic urban areas, due to differences in consumer acceptance and perceived safety.

Shoppers need to feel comfortable with the technology, understand how it works, and believe in its reliability and security. Some retailers provide an itemized basket and costs at the check-out; others

offer them via email, immediately after the shopping trip. Users reported getting their receipt hours after they visited an Amazon Go store, which negatively impacted safety perceptions.

“As technology evolves, entry barrier processes will become more seamless and user-friendly. When users understand that these measures enhance safety, protect privacy, or contribute to a more personalized and secure experience, they may be more willing to adopt and normalize such processes,” says Ana Pinto, CEO of Reckon.AI, a Portuguese provider of frictionless technology.

The initial cost of setting up smart store technology can be high, especially for small and medium-sized retailers. The investment in sensors, cameras, AI systems, and the required infrastructure can be substantial, making it a significant barrier to entry. Retailers can adopt different forms of smart shopping depending on their budget – self-checkout, scan & go, or fully autonomous.

An opportunity for EV charging hubs

Plenty of charging hubs around the world continue to lack a convenience offering. Unmanned stores can cater to those clients without the problem of underused labour. By providing additional amenities and services, such as restrooms, Wi-Fi, coffee, and food, charging station operators can entice customers to spend more time at their facilities, ultimately driving up revenue.



REWE Group recently launched a [REWE Ready 'smart shop'](#) at an EnBW Hypernetz EV Charging Hub in Germany. The store, which has around 200 products available including coffee, cool drinks, fresh snacks, and salads, was powered by Reckon.AI.

“The combination of computer vision cameras with sensor fusion enables us to offer end consumers a unique, reliable, and seamless way of shopping. The time to market and the ease of implementation:

smart fridges are plug-and-play devices. Going live is a matter of seconds,” said Mehmet Tötze, Director Smart Store Development at Lekkerland SE, in a LinkedIn post.

Tesla has been rolling out Tesla Supercharger lounges at some of its stations, providing Tesla owners with a comfortable environment to spend time while they charge their vehicles.

Another company trying to serve that need is JUXTA, a US-based corporate start-up formed in 2022 by Vontier. They want to bring micro-retail stores to EV charging hubs. “EV players have always known that they have to solve the retail challenge on their sites, but until now, there has been no immediate solution – JUXTA provides that solution,” says Om Shankar, JUXTA Co-founder.

With the potential to disrupt the retail industry, improve operational efficiency, and enhance the customer experience, autonomous stores represent an exciting frontier for innovation and investment in the retail sector. The risk of technological obsolescence, customer adoption, and the high initial investment remain the biggest challenges.