

Technology and Retail: Feature Valuations and Interest in Autonomous Stores in Portugal

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Abstract

This study examines how consumers' valuations of specific retail technologies translate into interest in autonomous stores (AS), and whether early behavioural signals from an operating AS align with these stated preferences. We analyse five waves of nationally representative online surveys from Portugal (N = 5,013; 2021–2024) and complement them with transactional data from a fully autonomous convenience store in Lisbon (July to August 2024; 3,526 transactions; 10,787 items). Drawing on the Technology Acceptance Model, Diffusion of Innovations, and Innovation Resistance Theory, we propose a feature–format mechanism under a format–fit logic: consumers who already value digitised stores, seamless online–offline journeys, checkout efficiency, and personalisation are more likely to be interested in AS, whereas a delivery-oriented convenience mindset may operate as a substitute for in-store autonomy. 2024 data suggests that valuations of digitised stores, checkout efficiency, online–offline integration, click-and-collect, and personalised promotions are positively associated with interest in AS, while preference for fast delivery is negatively. Baseline demographic patterns (greater interest among younger consumers and men) attenuate once feature valuations are included, suggesting that proximal technology preferences, rather than demographics alone, drive intentions. Descriptively, awareness exceeds experience (49.1% aware; 7.8% have visited), indicating an adoption gap consistent with functional and psychological barriers such as privacy, transparency, and perceived loss of control. Behavioural evidence from the Lisbon store shows predominantly small, time-sensitive baskets (most trips consist of one to two items), with demand concentrated in convenience categories such as beverages and packaged food. These patterns support the idea that AS are best matched to 'grab-and-go' missions where frictionless payment and shortened trip time are salient. Together, the findings integrate attitudinal and behavioural evidence in a Southern European context and highlight actionable implications for piloting locations, communication and trust-building, and measuring consumer readiness for in-store automation.

Keywords: autonomous stores, retail automation, consumer interest, retail technology, omnichannel integration, personalization

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