Electronic Shelf Labels Pose Myriad Risks For Retailers

By **Cynthia Cole, Michelle Heisner and Teisha Johnson** (April 23, 2025)

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Retailers are increasingly turning to electronic shelf labels, or ESLs, as a solution to streamline pricing updates and enhance operational efficiency. In June 2024, Walmart announced plans to install ESLs in 2,300 stores by 2026, while a number of retailers have already adopted the technology.[1]

These digital displays, which can be easily updated remotely, offer businesses a way to respond quickly to fluctuating costs, improve pricing accuracy and reduce labor-intensive tasks. As the technology becomes more widespread, it's changing the way consumers interact with prices and the way businesses use remote technologies to interact in real time with consumers.[2]

While ESLs promise to bring new conveniences to consumers and boost employee productivity, they have also raised fears in the midst of inflationary concerns. Critics of the technology have raised the specter of price-gouging and the potential to combine the technology with facial recognition to target pricing based on demographics and consumer behaviors.

There have also been incidents of retailers needing to close stores — even throughout an entire country — due to technical glitches causing ESLs to display incorrect prices.[3] As major grocery chains, big-box stores and other retailers introduce ESLs, lawmakers and regulators are taking note.

Accordingly, businesses considering deploying the new technology should first consider the legal risks.

A Primer on ESLs

The ubiquity of screens is one of the defining features of modern society. We carry connected digital displays in our pockets, on our wrists and in our cars, and they sit atop our nightstands and kitchen counters. It should come as little surprise, then, that electronic displays are now coming to a supermarket aisle near you.

ESLs are poised to replace old-fashioned printed or written price labels that have for decades been used to indicate the price of merchandise. ESLs are electronic screens, typically connected via Bluetooth or another wireless communication protocol to a store's information system, that can display product pricing and other information.

Updating price information using traditional labels can be both time- and labor-intensive.

For example, many stores expend significant resources readying post-holiday sales, and stores that can introduce sale pricing quickly can gain a significant competitive advantage over slower-moving rivals. Leveraging ESLs allows retailers to adjust prices with just a few keystrokes. This capability allows retailers to operationalize dynamic pricing, a core feature of e-commerce that consumers have come to expect, and which studies have shown to lead to lower, more competitive pricing strategies that benefit customers.

ESLs also carry other advantages. Retailers can use ESLs to discount near-expiry stock and display info like nutritional facts, allergens or ingredients to enable consumers to make informed purchasing decisions. Additionally, ESLs can display ads or promotions, help employees restock faster, and reduce the likelihood of price discrepancies with POS systems and internet shop fronts.

Legal Risks of ESLs

Despite these benefits that flow to retailers and their customers alike, the adoption of ESLs by retailers has attracted the attention of U.S. policymakers and consumer advocates. For example, in August 2024, Sens. Elizabeth Warren, D-Mass., and Bob Casey, D-Pa. penned a letter to the grocery chain The Kroger Co., which had announced plans to roll out ESLs in many of its stores. The letter stressed numerous concerns that ESLs might be misused to increase costs and take advantage of consumers.[4]

Businesses considering ESL deployment should therefore carefully assess potential legal and regulatory risks and issues at the outset of any ESL implementation plan.

One of the central legal concerns that has emerged around ESLs is the possibility that retailers may use dynamic pricing capabilities to engage in price-gouging or other unfair acts leading to price inflation. Critics point to travel companies and rideshare operators as examples of businesses that have used surge pricing and worry about the implications of applying this pricing model to staple goods like groceries. These critics warn that dynamic pricing must not be used to render essentials like eggs and toiletries effectively inaccessible during periods of increased demand or when supply issues arise.

Another legal concern surrounding ESLs relates to the combination of this technology with facial recognition, artificial intelligence and profiling capabilities. In particular, certain retailers have considered incorporating cameras equipped with facial recognition technology into their ESL setup. This technology could allow an ESL system to develop a profile of each individual consumer, including demographic attributes such as age and gender, and use these profiles to adjust pricing accordingly.

Pricing strategies that unfairly discriminate against certain consumer groups could face legal scrutiny by lawmakers. Former Federal Trade Commission Chair Lina Khan stated in August 2024, "The FTC has been laser focused on ensuring that no American faces inflated prices due to illegal business practices."[5] The potential collection of information about consumers has also led lawmakers to question whether ESL systems would have adequate data protections.

These practices may draw scrutiny from state and federal agencies, such as the FTC. The collection and processing of facial scans without obtaining required consents may also run afoul of state biometric privacy laws like Illinois' Biometric Information Privacy Act, which includes a private right of action and may result in significant financial damages.

In July 2024, the FTC, in a unanimous vote, initiated a surveillance pricing market study seeking to understand how consumers are affected when pricing is based on surveillance of an individual's personal characteristics and behavior.

In January, the FTC issued preliminary findings, noting that retailers frequently used people's personal information to set tailored prices for goods and services, from an individuals' precise location and demographics, down to their mouse movements on a webpage.**[6]** While initial findings have been released — despite a dissent from current FTC Chairman Andrew Ferguson and Commissioner Melissa Holyoak — the study remains ongoing.[7]

ESLs may also raise significant antitrust concerns, including the potential to facilitate collusion through algorithmic pricing. When ESL technology employs algorithms capable of monitoring competitor pricing and making real-time adjustments, it can lead to pricing patterns that mimic collusion — especially if multiple retailers use the same pricing algorithm.

Both the Antitrust Division of the U.S. Department of Justice and the FTC have submitted statements in support of class action plaintiffs in a lawsuit, Cornish-Adebiyi v. Caesars Entertainment Inc., challenging the use of software to assist in pricing decisions, underscoring the regulatory focus on this issue.[8]

This comes on the heels of the DOJ's update to its evaluation of corporate compliance programs in antitrust criminal investigations, which now includes the assessment of risks associated with the use of new technologies, including companies' use of artificial intelligence and algorithmic software.[9]

Additionally, the technology and infrastructure required to implement ESLs could create barriers to entry for smaller retailers. Large retailers may have the resources to adopt ESLs, but smaller retailers might find the technology too costly, potentially reducing competition and leading to a concentration of market power.

While the current administration's stance on ESLs is yet to be seen, in February, Ferguson affirmed "vigorous antitrust enforcement" stating "if we think that you have violated the law, which is what we're going to follow — the law, not my preferences, the law — then we're going to enforce it."[10]

Market concentration has consistently remained a key area of focus for antitrust enforcement. The FTC and DOJ have warned that market consolidation can result in higher prices, diminished competition and entrenched dominance by a few industry players that may be able to control pricing and market dynamics.

Key Compliance Steps

While ESL usage offers retailers exciting new ways to connect with customers, businesses should take steps to ensure that ESL deployment does not result in legal liability or reputational damage. We recommend adopting a set of internal guidelines around ESL usage tailored to both general and industry-specific exposures combined with messaging for consumers and regulators about the same.

First, ESL-related liability can stem from a variety of legal areas, including antitrust, data privacy, antidiscrimination, consumer protection and others. Before deploying ESL features, businesses should assess and mitigate these diverse risks, including by establishing an internal risk framework or impact assessment around the tool and the data collected.

Second, businesses should consider whether their use of ESL combined with dynamic pricing may lead to price-gouging, bias, or price collusion and price-fixing. Where these risks are identified, businesses should implement guardrails and organizational processes to ensure pricing practices are fair and comply with relevant laws.

Third, businesses should approach ESL implementations combined with AI and facial recognition technologies with special caution. These features should be assessed rigorously to ensure that they don't result in discrimination or bias.

It would not be surprising if regulations specifically targeting ESL usage were implemented at either a state or federal level. Per-unit pricing, for example, has long been mandated by many states. Extension of expanded retail pricing transparency rules to ESLs might be in the cards. In the meantime, however, retailers would do well to fully assess the existing body of law regulating ESLs.[11]

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[1] https://corporate.walmart.com/news/2024/06/06/new-tech-better-outcomes-digital-shelf-labels-are-a-win-for-customers-and-associates.

[2] https://retailwire.com/supermarket-shopping-set-for-electronic-shelf-labels/.

[3] https://economictimes.indiatimes.com/news/international/new-zealand/woolworths-temporarily-closes-all-stores-in-new-zealand-due-to-electronic-shelf-price-glitch/articleshow/120059635.cms?from=mdr#google_vignette.

[4] https://www.warren.senate.gov/imo/media/doc/warren_casey_letter_to_kroger_re_electronic_shelving_and_price_gouging.pdf.

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