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# The ROI of Shelf AI

How AI-powered shelf cameras are delivering measurable returns for grocery retailers.

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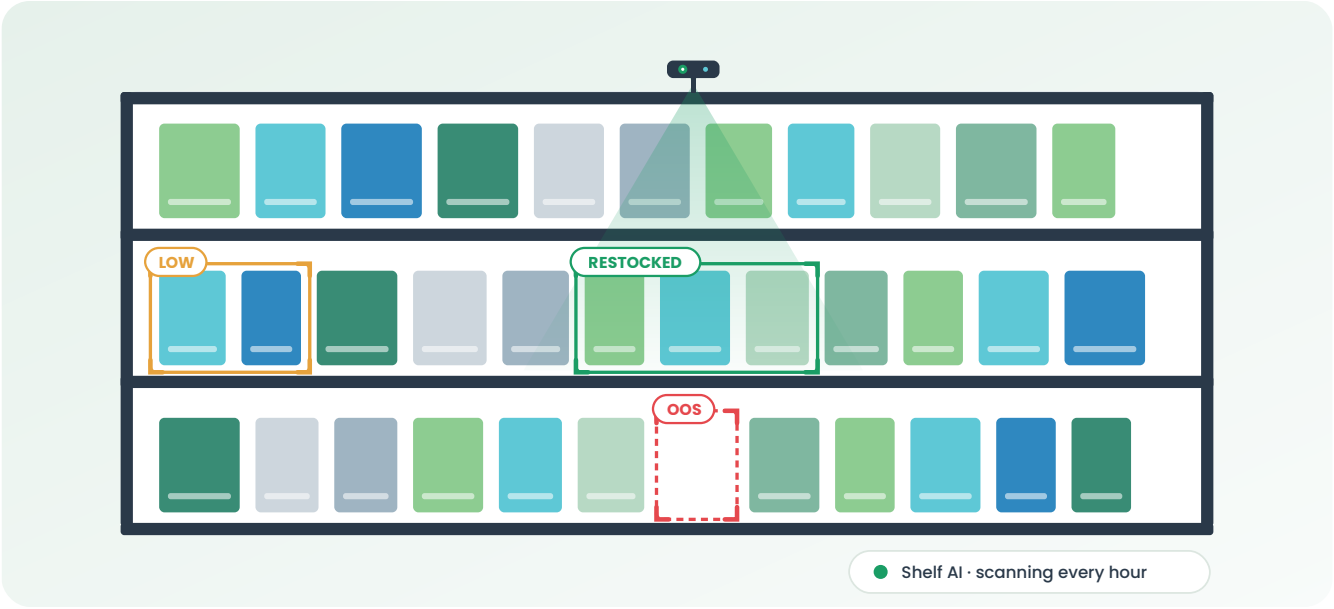
# Executive Summary

Grocery retailers operate on razor-thin margins, often just 1–3% net profit, yet they lose billions annually to a problem hiding in plain sight: empty shelves.

Industry research estimates that out-of-stocks cost retailers over $1 trillion globally, and more than 30% of shoppers who encounter an empty shelf leave to buy from a competitor. The challenge isn't awareness; it's visibility. Most retailers still rely on manual shelf scans performed once or twice per day, capturing only a partial snapshot of store conditions.

Shelf AI, the application of computer vision and deep learning to continuous, automated shelf monitoring, is changing the economics of on-shelf availability. By deploying AI-powered cameras that scan every product on every shelf every hour, retailers gain real-time intelligence that transforms replenishment, ordering, inventory accuracy, and labor productivity simultaneously.

This whitepaper examines the ROI of Shelf AI through the lens of real-world deployments at two major grocery retailers, Morrisons and Greenfield's ShopRite (an independent grocery chain in the northeastern US), and quantifies the value retailers can expect across five key areas: availability, productivity, inventory accuracy, ordering, and shrink reduction.




Shelf-mounted cameras scan every product on every shelf every hour — detecting gaps the moment they appear.

# 01 The Cost of Empty Shelves

The economics of out-of-stocks are well documented but consistently underestimated. Inventory distortion, the combined impact of out-of-stocks and overstocks, costs the global retail industry $1.7 trillion annually, roughly 5% of global retail revenue, with about two-thirds (67%) of that loss driven specifically by out-of-stocks (IHL Group, March 2026). Despite $172 billion in improvements over the past year, the problem persists, and IHL's data shows a widening performance gap: retailers deploying AI-driven inventory management are achieving 2.3x higher sales growth and 2.5x higher profit growth than competitors still using traditional approaches.

The shopper impact is equally significant. More than 30% of shoppers who hit an empty shelf leave for a competitor, and the cumulative toll is steep: Grocery Doppio's 2025 research estimates $7.4 billion in sales lost to out-of-stock churn, with 53% of shoppers willing to switch grocers after just three poor experiences.

The root cause is not supply chain failure in most cases; the product is physically present in the store's backroom but hasn't been moved to the shelf. Manual gap-scanning processes capture only a partial snapshot and consume hundreds of labor hours per store per month.

**$1.7T**
**Inventory Distortion**
5% of retail revenue globally

**67%**
**Driven by out-of-stocks**
Share of that loss

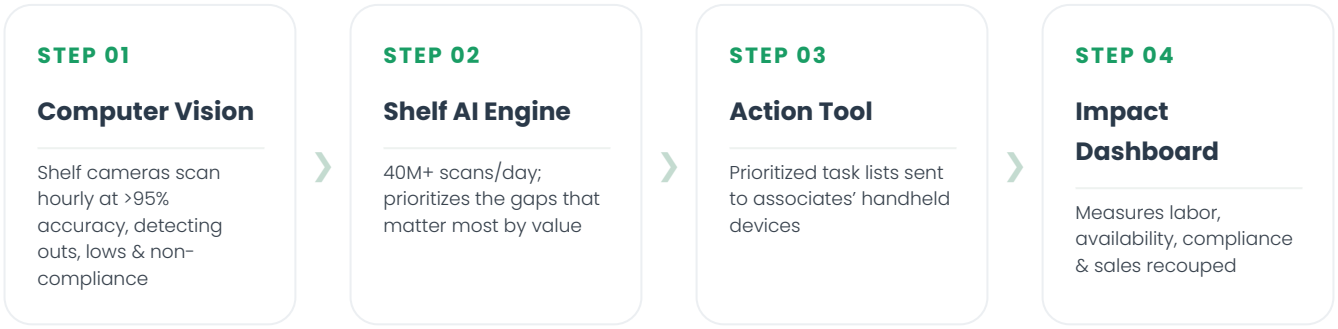
**30%+**
**Shoppers leave**
For a competitor

**$7.4B**
**Out-of-stock churn**
Grocery Doppio, 2025

# 02 How Shelf AI Works

Shelf AI uses AI-powered cameras mounted directly on store shelves to continuously monitor product availability, detect out-of-stocks, identify low stock levels, measure planogram compliance, and feed real-time data into replenishment and ordering systems. Unlike periodic manual scans or robot-based solutions, shelf-mounted cameras provide continuous visibility, scanning every product on every shelf every hour of every day.

Focal Systems' implementation of Shelf AI consists of four connected components:




**Computer Vision.** Proprietary, cost-effective cameras scan shelves hourly with greater than 95% accuracy. Focal's deep learning models detect ins, outs, lows, planogram non-compliance, restock events, and spoiled produce.

**Shelf AI Engine.** The intelligence layer processes over 40 million shelf scans per day across Focal's customer base, identifying nearly one million out-of-stock events daily, and prioritizes issues by fast movers, high-margin items, promotional products, and online orders. It includes Store Walk, which lets store leadership virtually walk the aisles of any store from anywhere.

**Action Tool.** A mobile application that delivers prioritized task lists to associates' handheld devices; associates confirm completion and Focal's cameras automatically verify restocking through a follow-up scan.

**Impact Dashboard.** A management dashboard measuring wasted labor, out-of-stock duration, sales recouped, tasks completed, compliance enforced, and presentability improved.

# 03 Case Story: Morrisons

> "This system is bringing down the in-day replenishment times significantly, which in turn is having a positive effect on availability, sales and customer satisfaction."
> **Rami Baitiéh, CEO, Morrisons**

Morrisons, one of the UK's largest supermarket chains operating approximately 500 stores, deployed Focal Systems' Shelf AI platform in a six-month rollout that represents one of the largest computer vision deployments in retail globally. With 400–600 cameras installed per store, the system scans shelves hourly, delivering real-time visibility into product availability across the entire estate.

Before Focal, Morrisons relied on manual gap-scanning processes that consumed significant labor hours yet delivered only periodic, partial visibility. Store associates walked aisles daily with handheld devices but could only capture a snapshot of shelf conditions once per day at most.

Morrisons simplified the process, and the CEO described it as a game changer — both from a productivity standpoint and in availability, with the retailer now among the top performers in the UK for on-shelf availability.

**Morrisons story:** ▶ A Simple Scalable Way to Streamline Operations ▶ Accurate Data Keeps Stock Aligned to Demand

## Results at Morrisons

The deployment delivered measurable improvements across multiple dimensions. Replenishment times dropped significantly, with associates receiving real-time prioritized task lists rather than discovering gaps manually. Stock accuracy in supply chain systems improved as Focal's cameras fed continuous, verified data into Morrisons' inventory and ordering platforms.

> "The implementation of Focal Systems has fundamentally changed how we operate our replenishment operation and how we manage our stock records."
> **Gordon Macpherson, Productivity Director, Morrisons**

The partnership was recognized externally with The Grocer Gold Award 2025 for Technology Initiative of the Year, validating both the scale and impact of the deployment. Morrisons trialed multiple providers, and the results showed that the best solution was with Focal.

> "The trials showed us that our best solution is with Focal. I went to two of these stores and asked them if they wanted to remove the cameras, and they said, 'please don't go back to the old systems — the cameras are very useful and helpful for us.'"
> **Rami Baitiéh, CEO, Morrisons**

**More from Morrisons:** ▶ Smart Cameras Keep Shelves Stocked

# 04 Case Story: Greenfield's ShopRite

> "We are in the customer happiness business; we want to eliminate all points of disappointment. With Focal, OSA is almost 99%."
> **Seth Greenfield, Owner, ShopRite**

**Hear from Greenfield's ShopRite:** ▶ Real Time Shelf Intelligence that Delivers

Greenfield's ShopRite, part of the largest retailer-owned cooperative in the United States with independently owned and operated stores primarily in the northeastern US, deployed Focal's Shelf AI to address a specific challenge: achieving near-perfect on-shelf availability.

The results speak for themselves: on-shelf availability of almost 99%. For context, industry averages for grocery on-shelf availability typically range from 92–95%, meaning a 4–7 percentage-point improvement represents a substantial competitive advantage.

Store owner Seth Greenfield frames the value in customer terms: every out-of-stock is a "point of disappointment" for shoppers, and eliminating those disappointments drives loyalty, repeat visits, and basket size.


## Extra Added ROI

Beyond availability, Focal's Theft Spotter delivers an extra layer of ROI. When a product disappears from the shelf with no corresponding sale recorded at the front end, the system pinpoints — down to the hour — when it was taken. the loss-prevention team at Greenfield's ShopRite can then pull video from that exact window and flag the individual in their facial-recognition system, so they're identified the next time they enter the store. Before Focal, the team had no way of knowing when an item went missing and faced hours of footage to review; now they know the precise hour, and combined with other means of identifying the person, they catch repeat offenders roughly 70% of the time.

> "Annual shrink is in the millions of dollars a year; on the theft-alerting side, it's thousands of dollars a week that we're catching."
> **Seth Greenfield, Owner, ShopRite**

**Hear from Greenfield's ShopRite:** ▶ Spot Theft When and Where it Happens

# 05 The Operational KPIs That Drive ROI

Every system in a retailer's technology stack makes decisions based on what it thinks is on the shelf, yet none of them can actually see the shelf. That's the missing link Shelf AI fills, and the impact compounds across every operational KPI that drives margin.

### Availability

Continuous shelf scans detect out-of-stocks in near real-time; prioritized replenishment restocks the highest-value items first.

**Measured impact:** 2–5% availability increase; out-of-stock duration reduced by 4–24 hours; almost 99% OSA achieved at Greenfield's ShopRite.

### Productivity

Eliminates hundreds of hours per store per month of manual scanning; associates receive automated, location-grouped task lists instead of walking aisles searching for gaps.

**Measured impact:** Zero manual scanning hours; associates redeployed to customer-facing tasks; tasks prioritized by lost-sales impact.

### Inventory Accuracy

Continuous scans update balance-on-hand records in real time, correcting phantom inventory and recapturing zero-balance items.

**Measured impact:** Inventory accuracy raised to greater than 95%; 100,000+ inventory adjustments made daily.

### Ordering & Planning

Accurate, real-time shelf data feeds computer-generated ordering (CGO), eliminating the faulty data behind chronic over- and under-ordering.

**Measured impact:** Excess inventory reduced by 30% or more while maintaining or improving availability.

### Shrink Reduction

Shrink comes mainly from theft and spoilage. Focal's Theft Spotter flags stock that vanishes without a matching sale — with the location, time, and product taken — while prioritized replenishment moves perishables onto the floor before they spoil.

**Measured impact:** 2x+ theft identification; hours of investigation time saved; less spoilage.

# 06 Getting Started

Deployment is simple, requiring only inventory data to determine whether an item is in stock for replenishment. Cameras are installed by Focal, begin scanning, and start delivering actionable insights from day one, without complicated IT integration, system downtime, or lengthy implementation projects.

Retailers can validate ROI in a live store environment with minimal IT involvement, typically starting with two to three pilot locations. Focal installs the battery-powered cameras and requires less than one maintenance visit per month. As the platform scales, deeper value unlocks: feeding real-time shelf data into CGO, connecting to e-commerce, integrating with ESL systems, and enabling RFID-based inventory scanning.

# 07 Conclusion

The ROI of Shelf AI is not theoretical. It is being measured daily across hundreds of stores operated by major grocery retailers. Morrisons achieved enterprise-scale transformation across 500 stores in six months. Greenfield's ShopRite achieved near-perfect on-shelf availability of almost 99%.

**The question is no longer whether Shelf AI works. The evidence is clear. It's how long retailers can afford to operate without it.**

With 300,000+ cameras deployed globally and 40 million shelf scans processed daily, the barriers to adoption have never been lower. **To see Shelf AI in action, visit focal.systems or book a demo.**

# Sources


**Focal Systems.** Customer quotes and deployment data (focal.systems, homepage and solution pages).

**The Grocer.** "How retailers zoom in on success with in-store AI cameras."

**Morrisons.** Public trading update / company announcement quoting CEO Rami Baitiéh on AI-powered availability cameras.

**IHL Group (2025–2026); Grocery Doppio (2025); Purdue University Consumer Food Insights; NRF (2025).** Third-party industry research cited above.

# About Focal

Headquartered in San Francisco, Focal Systems is an AI-powered retail automation platform revolutionizing how stores operate. Built to solve one of retail's most persistent challenges — keeping shelves stocked and customers satisfied — Focal combines computer vision, deep learning, and real-time data streaming to maximize product availability and store productivity while controlling inventory costs.

Focal conducts over 40 million shelf scans per day to empower the world's leading retailers to reduce waste, improve margins, and elevate the shopping experience — at scale.

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## Get in Touch

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**Book a demo**
focal.systems — see Shelf AI live in a store environment.

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