



A RETAILERS GUIDE TO

# CONQUERING COST PER UNIT

WITH SMART AUTOMATION

## Understanding today's dynamic market

In the vibrant realm of retail, competitive pricing and swift deliveries have captivated over **150 million** online shoppers in the US, representing nearly half of the country's population. Yet, the challenge lies in harmonizing diverse customer demands across multiple channels while ensuring operational efficiency and profitability.

Retailers are embracing innovative automation to strike the perfect balance between customer satisfaction and profitability. This journey of adaptability is redefining the retail narrative, promising a future where every shopper's experience is efficient, personalized and delightful.



Online retail sales are projected to grow at a **10%** compound annual growth rate (CAGR) over the next five years to account for **30%** of the market by 2027.<sup>2</sup>

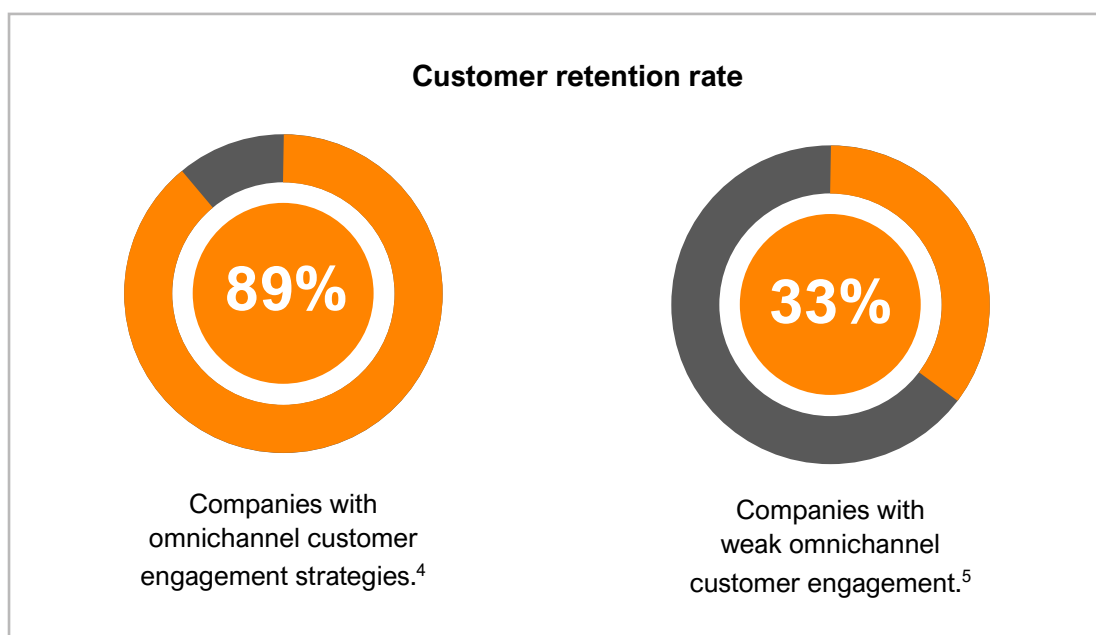
### Projected total U.S. retail sales by 2027





## Adapt or lose

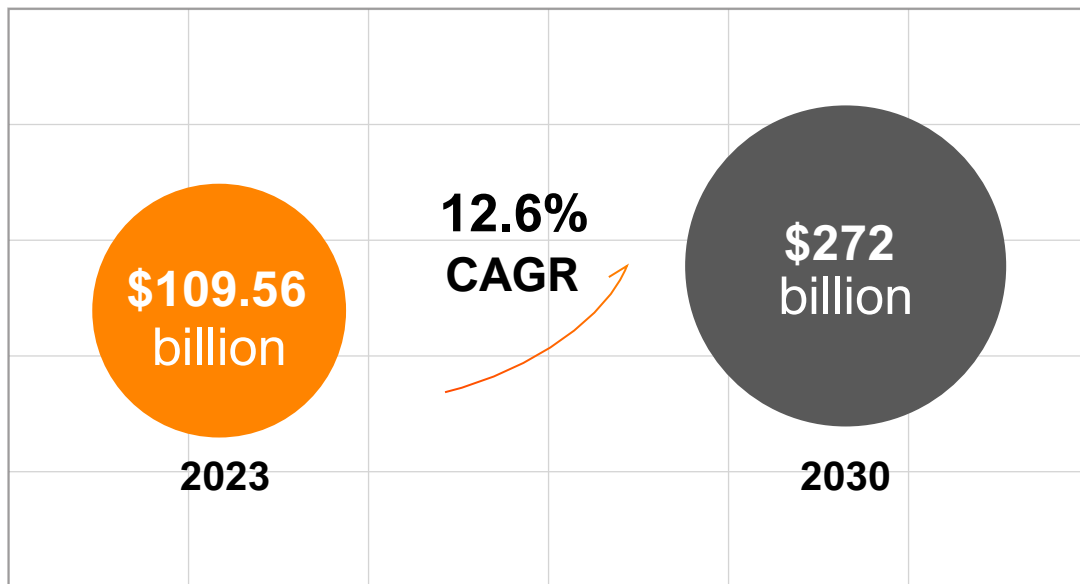
Significant fluctuations in demand are compelling retailers to reconsider outdated systems and embrace more flexible operations. Staying attuned to rapidly changing consumer preferences demands enhanced automation, analytics and tools for cultivating customer loyalty. This ongoing adaptation isn't just about survival; it's the key to long-term profit growth.



## The superstore balancing act: costs & profits

e-Commerce fulfillment trends are fueling the need for retailers to strike a delicate balance between maximizing operational efficiency and minimizing costs while promising a faster, more efficient and superior customer experience.

The e-Commerce fulfillment service has a market value of **\$109.56** billion, up **12.6%** year-over-year (YoY). Projections indicate that global revenue for e-commerce fulfillment will exceed **\$272** billion by **2030**.<sup>6</sup>



e-Commerce fulfillment global market YoY growth



*I think grocers have realized that in an online environment, you can't really choose how your customer is going to shop. No matter what grocer you speak to, omnichannel is key."*

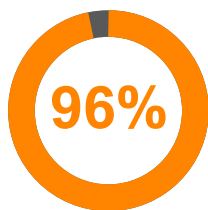


## The top 3 e-Commerce fulfillment trends to watch out for

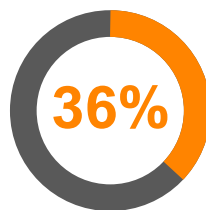
### 1. Same-day and next-day deliveries

Consumers are seeking faster and more convenient ways to receive their purchases without having to wait for traditional delivery timeframes. Consumers expect same-day delivery, which adds costs.

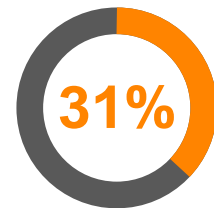
Offering expedited delivery translates to increased expenses associated with maintaining larger inventories, expanding infrastructure, investing in advanced systems, frequent restocking and employing a dedicated workforce for order processing, packing and delivery. Additionally, retailers need to consider how to offset the costs associated with recruiting, training and compensating said workforce.



of consumers surveyed consider “fast delivery” to mean same-day delivery.<sup>7</sup>



e-Commerce Same-day Delivery Statistics: **36%** customers expect same-day grocery delivery.<sup>8</sup>

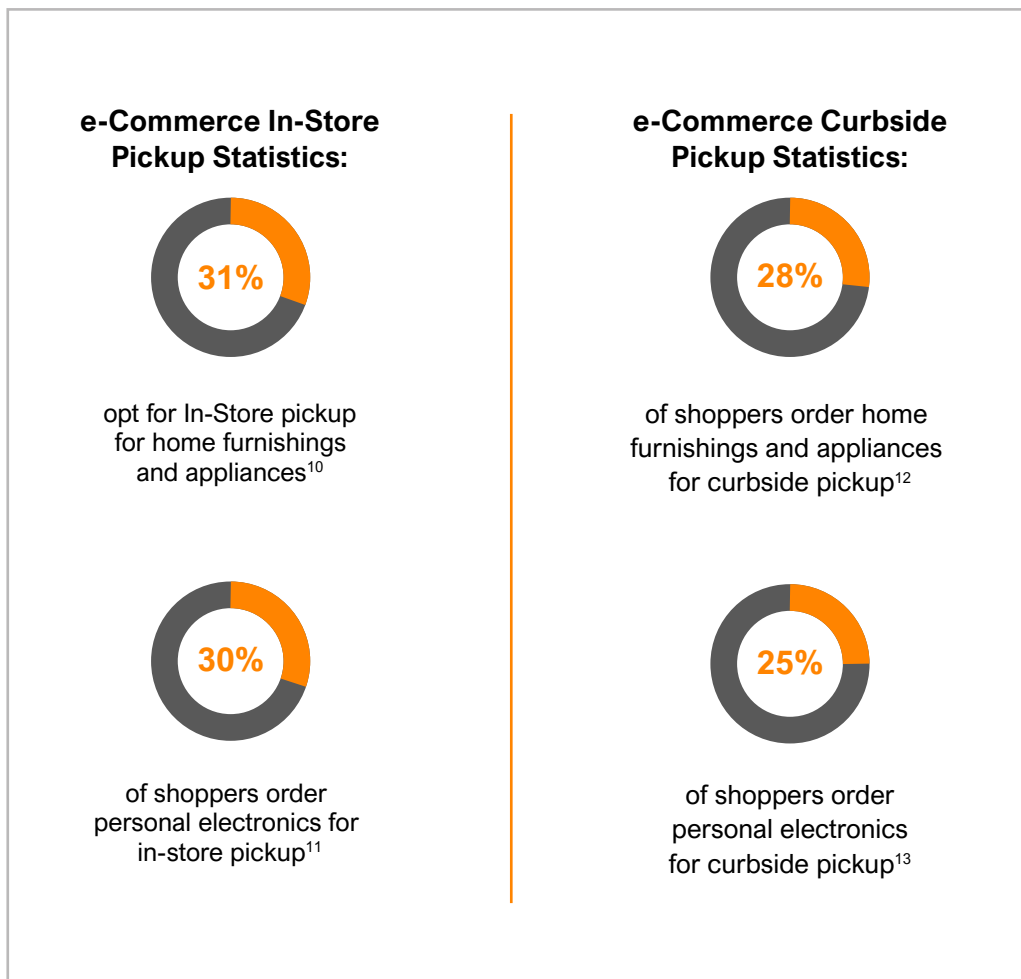


of online shoppers order home furnishings and appliances for same-day delivery.<sup>9</sup>

2. **Buyers continue to expect a seamless omnichannel shopping experience (BOPIS & curbside pickup)**

In the U.S., 30% of online shoppers chose in-store pickup for their recent personal electronics purchases. This surge highlights a growing preference for immediate access to items, emphasizing the role of in-store pickup in enhancing the customer experience and urging retailers to optimize their strategies.

With consumers increasingly opting for the convenience of e-Commerce buying, curbside-only retails with no public-facing stores have been emerging to meet this demand effectively.

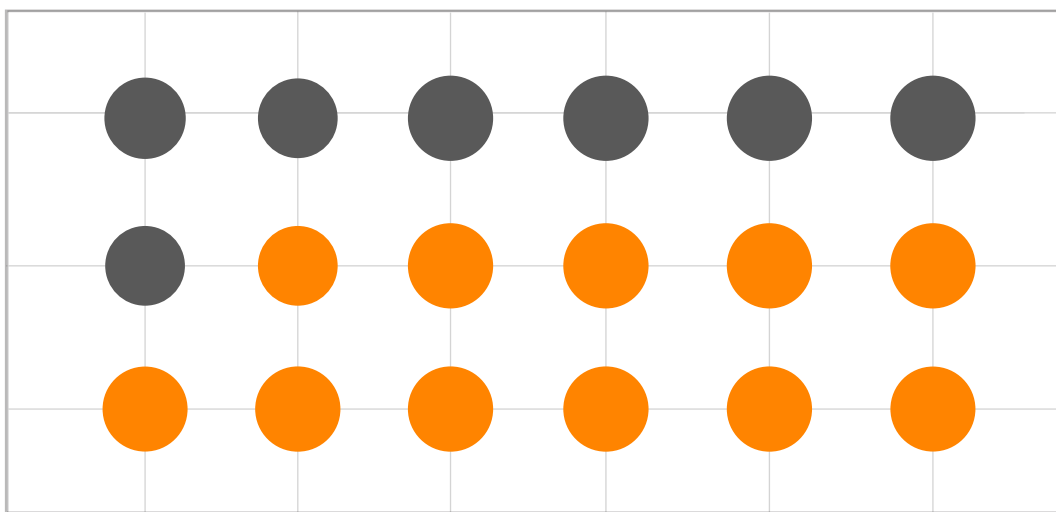


The problem for retailers is that maintaining stellar omnichannel experiences for customers escalates costs and impacts profit margins. The complexities of order processing, packaging and efficient pick-up management, coupled with the need for added storage, shelving and equipment, significantly increases operational expenses.

### 3. Large inventory assortments

Another ongoing trend in the retail industry is the focus on providing a diverse and extensive inventory to meet customer preferences and boost sales.

Managing stocks across categories and channels requires the consideration of factors like expiration dates, delivery frequencies, turnover rates, seasonality and shrinkage. Effectively planning and managing inventory means striking a balance between excess supply and availability to minimize waste, optimize finances, reduce stock-outs and maximize profitability.



Citi research highlights a notable shift in the U.S. retail landscape: **11** out of **18** retailers experienced a **10%** increase in inventories compared to sales, marking the widest gap observed since March 2022. This trend underscores a significant change in market dynamics.<sup>14</sup>

### Understanding total Cost Per Unit (CPU): the game changer in profitability

Amidst the array of cost factors influencing profitability, which include fixed expenses such as infrastructure, space and machinery, the Total Cost Per Unit (CPU) stands out as a pivotal metric. It covers the cost incurred for each unit produced or service rendered. Understanding its significance is paramount for effective cost management and reduction.

Diving into the realm of Total CPU optimization empowers businesses to unlock untapped potential, streamline operations and drive sustainable growth.

## The key components of variable costs

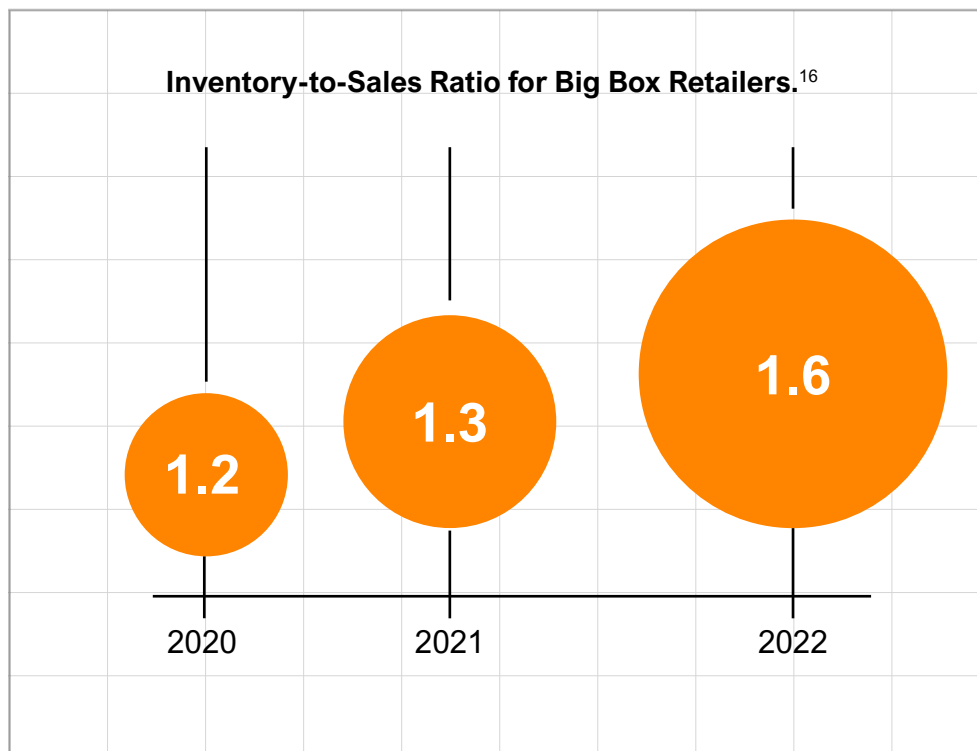
- **Direct labor (fulfillment cost)**

Labor hiring challenges, increasing wages, rising order volumes and changing order mixes due to ecommerce are straining operations to not only utilize existing resources to the maximum but also reduce the onboarding time needed to make them efficient from day one.

**65%** of warehouse fulfillment costs are attributed to labor expenses.<sup>15</sup>

- **Inventory carrying costs**

Retailers are keeping higher inventory to ensure its availability across channels. However, this comes with a huge cost investment and inventory holding costs impact overall profitability and CPU. It further increases the dependency on labor to process these orders, equipment to support the operations and the space to accommodate the required inventory.





- **Facility costs**

While facilities present a fixed cost, leveraging vertical space by occupying the maximum available height in them can help optimize variable costs.

Location is crucial for e-commerce companies aiming for quicker deliveries. Unoccupied distribution centers in North America are dwindling, leading to a scarcity of inventory storage space in various areas. Retailers are exploring options for taller warehouses and smaller spaces, like vacated storefronts, to accommodate their goods.

Additionally, maintenance and breakdown costs need to be considered when managing the facilities.



Adding to the space crunch, companies aren't just amassing goods for future sales, they are also stockpiling warehouse space when they can, even if they aren't yet able to fill it."

**Greg Sanguinetti**

President of Pro Group Logistics in Sparks, Nev.<sup>17</sup>

---



Empty stores and shopping centers are being repurposed for distribution – with footfall on the decline, physical shops can serve as warehouses and fulfillment centers as online shopping continues to skyrocket."

**Why retailers are turning their stores into fulfillment centers - TechHQ<sup>18</sup>**

---

- **Delivery & shipping costs**

Retailers need to maintain a competitive edge while still providing affordable and efficient shipping options to their customers, which is challenging.

As big box retailers face limitations in charging fees or higher prices to drive gross margin increments, controlling fulfillment costs becomes crucial. Online orders largely impact unit economics with two additional cost drivers: picking labor and last-mile delivery costs. The economics worsen when customers demand same-day fulfillment.



Last-mile delivery accounts for 53% of the total cost of shipping, and ongoing inflation is making it even more expensive."

**Trending Now: Last-Mile Delivery Expectations For 2023 - Forbes<sup>19</sup>**

---

## Optimizing CPU: Going beyond automation

---

There's no denying that automation lowers costs and improves warehouse efficiency and accuracy, whether it's in the form of traditional fixed automation, modern robotics, artificial intelligence (AI), IoT devices or other technologies. But, as technology continues to evolve, it has become clear that automation alone can no longer provide a competitive edge.

Orchestration is the next frontier in warehouse evolution. Warehouse orchestration seamlessly integrates various automation technologies with people and processes to drive real-time actions in a way that is intelligent, optimized, efficient and cost-effective.

## Fulfillment orchestration for better outcomes

**Here's how fulfillment orchestration manages robots and systems, ensuring ongoing optimization of fulfillment processes and minimizing total CPU for retailers:**

### Scale

Given space and labor constraints, the cost of storing inventory and hiring resources is rising daily. Fulfillment orchestration platforms can manage the high volume of operations with limited space and keep costs under control.

GreyOrange's fulfillment orchestration platform, GreyMatter™, has executed unparalleled automation at scale in the industry, achieving 20-25% higher efficiency than other WCS/WES solutions for e-commerce fulfillment. Its ability to support increased order volume by adding 1000+ robots as businesses scale without changing infrastructure reduces the cost as they grow. GreyMatter's™ robust microservices architecture can solve the largest operational issues on the planet seamlessly.

## Efficiency

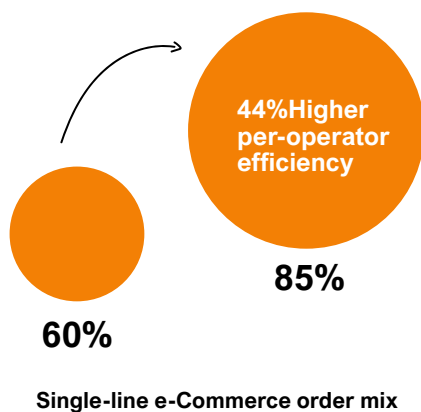
Significant cost savings can be achieved for big box retailers running large-scale operations by implementing optimized processes, workflows and streamlined operations.

The fulfillment orchestration platform can provide **20-25%** higher efficiency (than WCS/WES) by harnessing machine learning capabilities. The AI-based platform further enhances efficiency with improved processes, removal of redundancies and agile adaptation of new technologies and robotic systems.



## Case in point

---



An e-Commerce company in Korea improved the per-operator efficiency by **44%** despite the change in single-line e-commerce order mix from **60%** to **85%**.

## Complexity

From dock-to-stock, deep storage and replenishment to order consolidation and more, GreyMatter™ streamlines complex operations seamlessly. Users can gain operational efficiency by managing multiple Autonomous Mobile Robots (AMRs), both in-house and 3<sup>rd</sup> party, under one roof.



GreyOrange's solution unlocks possibilities like omnichannel operations, same-day delivery, micro fulfillment center deployment and faster returns. GreyMatter™ simplifies processes, eliminating the need for packing stations with innovations like pick-directly-to-boxes.

## Future-proof

The robot-agnostic platform gives retailers the ability to future-proof themselves. Retail companies do not need to tie themselves to a particular vendor or a specific technology and can change to the solution that best fits their business as their needs evolve.

### Case in point

---

The retailer has the flexibility to choose a cobot-picking solution in a brownfield warehouse, a higher throughput-based goods-to-person solution or a more complex multi-agent solution depending on requirements and where they are in their automation adoption journey. The platform evolves with technology adoption, negating additional costs.

## Reliability

**99%** up-time in a robust and modern fulfilment scenario delivers the highest reliability metrics that can stand the test of any unforeseen circumstances. The cloud-based deployment allows companies to operate on an active-active cluster, ensuring the solution has unparalleled up-time and allowing for extreme disaster recovery.

### Case in point

---

Cost factor on up-time	<b>1 month</b> hours of ops	<b>10000 units</b> process (10% impact)
------------------------	--------------------------------	--

## Ease of integration

Smooth and quick integration provides instant cost advantages of manpower time and technology investment savings.

The platform integrates with multiple legacy and modern WMS; it supports multiple protocols like Rest API, SOAP, FTP and TCP/IP as well as Camunda and message queues like Kafka. Multiple file formats are supported, including XML, JSON, Flat File and CSV.

### Case in point

---

Cost of integration **6 months** vs **1-2 month** with same manpower is **- 60%**  
terms

Cost can range between **\$1,500 - \$5000** per month for an enterprise retainer.

## Customer success: How a big box retailer improved CPU by ~60%

### The challenge

An American multinational retail corporation that operates a chain of hypermarkets, discount department stores and grocery stores in the United States was looking for a flexible, robust solution to optimize its operating CPU and fulfill these SLAs:



**E-commerce fulfillment to meet unprecedented surging and fluctuating demands**



**Same-day and next-day delivery**



**The storage capacity to support a large, ever-increasing assortment of SKUs**



**High throughput capability of handling over 100K units/day**

### The need for a flexible automation solution

The customer needed a partner to seamlessly manage and track **150,000+** SKUs and **3.5 million** units at the seller level while preserving the uniqueness of each seller and their products.

Fulfilling the surge in demand and an increase in the vast array of offered products required optimizing CPU to gain operational efficiencies. The existing mechanized system was no longer sufficient to handle the rising throughput, prompting the search for a flexible automation solution.

The store also needed a streamlined order processing system, adhering to the First Expire First Out (FEFO) principle, to optimize the packing flow for different order types and enhance downstream operations while preventing bottlenecks in the packing process.



## The solution: GreyMatter™ and autonomous mobile robots (AMRs)

GreyOrange deployed **500** goods-to-person autonomous mobile robots to harness **15,000** Mobile Storage Units (MSUs). With the **22-hour** daily operation spanning a colossal **600,000** square feet, the system enabled the picking of around **150,00** units per day.

To tackle different order types and volumes and reduce bottlenecks, GreyOrange employed two distinct packing flows to help optimize packing operations and increase efficiency:

- 1. A centralized packing station to handle multiline orders.**
- 2. Directing single-line orders to auto baggers.**

By utilizing all of the customer's available vertical space, optimizing layout designs and reducing aisle requirements, GreyOrange's orchestration and automation solutions maximized warehouse efficiency and minimized wasted space.

## The results

### A profitable e-Commerce fulfillment operation with innovative AMR technology

GreyOrange's technology, integrated with the existing systems, eliminated bottlenecks and inefficiencies, providing **60%** optimization of the customer's total CPU. The fulfillment orchestration platform unlocked the true potential of automation with streamlined operations from inbound processing to the picking, packing and shipping of orders. The store experienced unprecedented levels of productivity and efficiency, leading to higher customer satisfaction and setting a new standard for operational efficiency.

The evolution of online shopping and ever-changing consumer behavior has resulted in unpredictable demand shifts between e-commerce and retail. By partnering with AMR solution providers with fulfillment orchestration platforms, retailers can create a streamlined supply chain system that reduces delivery times and enhances customer satisfaction. Recognizing the importance of flexible technology solutions to optimize costs, GreyOrange offers forward-thinking, intelligent, innovative solutions and efficient processes for fulfillment centers.

### Staying ahead with GreyOrange and GreyMatter™

By embracing innovative solutions like GreyOrange's GreyMatter™ platform and Autonomous Mobile Robots, retailers can optimize their operations, reduce costs and enhance customer satisfaction. GreyOrange's AMR solution delivers remarkable **2-5X** efficiency gains, which reduces labor needs, streamlines training efforts and cuts the need for certified equipment drivers by up to **80%**.

Leveraging intelligent data analytics, GreyMatter™ provides valuable recommendations and transparent visibility into the performance of every resource, including software, hardware and employees.

With GreyOrange, big box retailers can leverage hardware-agnostic automation to unlock unprecedented levels of operational excellence, driving total CPU down and propelling their businesses forward.

Ready to empower your retail business with orchestration and automation capabilities?

[TALK TO US](#)



## Sources:

<sup>1</sup> <https://www.grocerydive.com/news/8-trends-grocery-industry-2023/639547/>

<sup>2</sup> <https://www.forrester.com/blogs/by-2027-us-online-retail-spending-will-reach-1-6-trillion/>

<sup>3</sup> <https://www2.deloitte.com/us/en/pages/consumer-business/articles/retail-distribution-industry-outlook.html>

<sup>4,5</sup> <https://www.digizuite.com/blog/omnichannel-statistics>

<sup>6</sup> <https://www.invespcro.com/blog/same-day-delivery/#:~:text=80%25%20of%20shoppers%20surveyed%20want,hours%20of%20placing%20an%20order.>

<sup>7</sup> <https://www.grandviewresearch.com/industry-analysis/ecommerce-fulfillment-service-market#>

<sup>8,9,10,11,12,13</sup> <https://capitaloneshopping.com/research/ecommerce-fulfillment-statistics/#:~:text=The%20eCommerce%20fulfillment%20service%20has,billion%2C%20up%2012.6%25%20YoY.>

<sup>14</sup> <https://www.reuters.com/markets/us/us-retailers-ballooning-inventories-set-stage-deep-discounts-2022-05-27/>

<sup>15</sup> <https://www.fcbco.com/blog/bid/289904/managing-your-warehouse-labor-to-reduce-overall-expenses>

<sup>16</sup> <https://www.wsj.com/articles/large-retailers-are-getting-hit-hardest-by-overstocking-11657312677>

<sup>17</sup> <https://www.nytimes.com/2022/02/01/business/warehouses-supply-chain.html>

<sup>18</sup> <https://techhq.com/2020/07/why-retailers-are-turning-their-stores-into-fulfillment-centers/>

<sup>19</sup> <https://www.forbes.com/sites/forbestechcouncil/2023/02/24/trending-now-last-mile-delivery-expectations-for-2023/?sh=612bd5905e8d>