



**Debugging Sustainability:**

**How Testing Makes Retail Greener!**



Sivaprasad Kunjanpillai

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# Why Sustainability Matters in Retail

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Retail Industry - ~25%  
contributor to carbon  
emissions

Clothing Retail industry  
= ~10% of global CO<sub>2</sub>  
emissions

Untapped potential for  
sustainability  
improvements

Focus on operational,  
fulfillment & Customer  
touchpoints

Digital innovations to  
reduce paper,  
emissions, and waste

# The global environmental impact

## Paper Receipts & Shelf labels

- **3 trillion** paper receipts globally/year = **~50 million** trees, **~10 billion** gal water
- **U.S** generates **1.5 billion lbs** of receipt waste
- **UK** - around **11.2 billion** receipts
- Receipt production is responsible for: **334 million** lbs of waste

## Delivery & Shipment

- **~19** million tonnes **CO<sub>2</sub>** in the world's top **100** cities
- CO<sub>2</sub> emission equal to burning **4.5 billion** lbs of coal or **~2.05 million** cars per year
- Post-pandemic emissions - boosted by **25%**, contributing **~100 million** tonnes CO<sub>2</sub>

## Split Shipments & Multiple-Box

- Faster delivery and smaller parcels = Emissions comparable to **7 million cars**
- Parcel volume rose from **315 billion** in 2022 to projected **800 billion** parcels by 2030

# Key Areas Driving Green Retail

1

Digital Receipts

2

Electronic Shelf Labels

3

Smart Fulfillment / Returns (BOPIS, BORIS, Ship From Store)

4

Reduced Returns via Recommended Sizing







5

Consolidated Shipments & Delivery Optimization

# Deep Dive into Sustainability Initiatives

## Digital

### Products/Integrations

 POS,  CRM,  Digital Receipt Platforms,  
 Communication Channels (Email/SMS/App),  
 BI, &  Consent Management

### Testing Focus






 Data Accuracy  
 Rendering & Alignment  
 User Experience (Clarity, accessibility, usability)  
 Regulatory Compliance  
 Consent Management  
 Marketing Preferences  
 Personalisation

### Success Story

Apple, Under Armour, Lululemon

## Electronic Shelf

### Products/Integrations

 Pricing Systems,  Inventory Management  
 POS,  Communication Gateways  
 Content Management

### Testing Focus

 Product Details & Variances  
 Pricing Alignment  
 Promotions  
 User Experience  
 Regulatory Compliance  
 Content Management  
 Marketing Initiatives











### Success Story

Carrefour








# Deep Dive into Sustainability Initiatives

## BOPIS, BORIS, Ship From

### Products/Integrations

 eComm / App,  POS,  Payment Platforms  
 OMS,  WMS,  CRM,  Inventory  
 Comms (Email/SMS/App),  
 BI &  Consent Management

### Testing Focus













 Order Processing  
 Cross-channel Payment  
 Tax Calculations  
 Order Management & Fulfilment  
 Cross-channel Data Accuracy  
 Return / Refund Workflow  
 Customer Communications

### Success Story







Target, Under Armour, John Lewis

## Shipments & Delivery

### Products/Integrations

 eComm / App,  POS,  Payment Platforms  
 OMS,  WMS,  Logistic Management,  
 Shipping Carrier Integration  CRM,  Inventory,  
 Comms (Email/SMS/App),  BI &  RFID Tracking

### Testing Focus

 Order Lifecycle Validation  
 Inventory Accuracy & Sync  
 Warehouse & Fulfilment Flow  
 Carrier Integration & API Communication  
 Route & Transportation Optimization Logic  
 Return / Refund Process  
 Customer Notifications & Triggers

### Success Story

Amazon

# Why Testing is Non-Negotiable in Retail Sustainability

Sustainability without precision can backfire: poor adoption, wasted resources, greenwashing risks.

Every initiative must be tested for:



Audience alignment



Data accuracy



Data integrity



Operational quality



Regulatory Compliance



Environmental impact



Data-driven insights & Reporting accuracy

# About Me



European Testing Awards - Testing  
Champion of the year Finalist

Quality Engineering Enthusiast,  
Mentor,

## Key Highlights

- **Founder of The QE Hub:** Driving Innovation, Excellence, and Collaboration in Quality Engineering in Retail
- **Versatile and High-Energy Technocrat with 18+ years of experience**
- **Proven Track Record in Large-Scale Transformations**

## Geo-Domain Experience

- **14 Years in the UK Market:** With organisations Experian, Under Armour, Walgreens Boots Alliance, Harrods, NBrown Group, UST, G10X.
- **13 Years in Retail and eCommerce**
- **5+ Years in Financial Services with Experian UK**

## Certifications

- ISTQB Advanced Level Test Manager
- ISTQB Advanced Level Test Analyst
- ISTQB Foundation Level
- CSTE Certified Test Professional
- PRINCE2 Practitioner
- AWS Cloud Practitioner
- Salesforce AI Associate



# Thank You!



[sivaprasad.pillai@theqehub.com](mailto:sivaprasad.pillai@theqehub.com)