



The Hidden Cost: Understanding the Environmental Impact of Online Purchase Returns

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Abstract – The rise of e-commerce has led to unprecedented levels of online shopping. While convenient for consumers, this trend has also increased product returns. Retailers have enabled easy, often-free returns to boost sales. However, these lenient policies are creating an environmental crisis. This paper examines the scale of returns, their environmental impact, what drives consumer behavior, and the accountability of retailers. Statistics reveal alarming rates of returns. In the United States, over \$800 billion worth of merchandise is returned annually—more than the defense budget. Return rates are also high in Germany (50%), the UK (25%), and India (25%). The majority of returned items are unused and in new condition. These returns carry a significant environmental cost. Transporting returns worldwide generates over 15 million metric tons of carbon emissions annually in the US alone. 9.5 million pounds of returns end up in American landfills each year, requiring massive resources to produce items that go unused. A practice called "wardrobing" is partially responsible when consumers purchase, use, and then return items. Lack of awareness and impulse shopping enabled by free returns also drive wasteful consumer behavior. While implementing small return fees, retailers remain focused on sales over sustainability. Greater investments are needed in recycling, reusing returns, and transparent return processes. Potential solutions require a collaborative approach. Stricter return policies, fees, and consumer education can help. Most critically, retailers must take leadership in developing sustainable return practices through investments in technology and infrastructure. In conclusion, a major tension exists between customer service and environmental stewardship. As e-commerce expands, the onus is on retailers to balance these competing demands. This will require better policies and transparency around returns, changing consumer behavior, and manufacturers taking responsibility for the lifecycle of products. Tackling the environmental impact of returns will be a key priority as online shopping continues its rapid growth.

Keywords: Returns, E-commerce, Waste, Emissions, Landfills, Recycling, Circular economy, Consumerism, Sustainability, Supply chain.

1.INTRODUCTION

1.1 Context: Rise of Online Shopping and Ease of Returns Policies

The past two decades have seen an explosion in online shopping, bringing profound changes to retail and revolutionizing how consumers make purchases. In 2000, only 22% of American adults had ever bought something online. By 2019 that figure had jumped to 80% buying goods online. The global e-commerce market is now worth \$4.9 trillion and continues to grow at double digit rates year-over-year. Several key factors have enabled the astronomical rise of e-commerce. The widespread adoption of broadband internet made accessing online stores quick and easy. Smartphones became ubiquitous, allowing consumers to shop anytime, anywhere with mobile apps. Large retailers like Amazon, Alibaba, and Flipkart



invested heavily in logistics networks and inventory to facilitate digital transactions. Payment systems like PayPal increased security and simplicity of online payments.

For consumers, the conveniences of online shopping have become undeniable. E-commerce provides unparalleled selection and availability of both common household items and specialized or hard-to-find products. Shopping can be done 24/7 at the tap of a button, without leaving home. Review systems help consumers make informed choices. Digital marketplaces also enable easier price comparisons across sellers. As the popularity of buying online has grown, so too have product return rates. Returns are now endemic to e-commerce. Without the ability to see, touch or try on items in person, shoppers end up purchasing products that don't meet expectations around fit, quality, or functionality. This leads them to return items at much higher rates than brick-and-mortar retail.

In response, online sellers have implemented extremely permissive return policies. Not only are returns offered without question, but items can often be sent back with free shipping and handling. Ease of returning unwanted items has become a major factor consumers evaluate when deciding which online retailers to shop from. Amazon offers perhaps the most lenient returns process, accepting any items within 30 days of delivery for exchange or refund. Home Depot, Nordstrom, LL Bean, Zappos, and many other major online retailers also allow returns up to one month with no questions asked. Walmart.com and Target.com give customers 90 days to return items.

The impact of these relaxed policies has been an overall return rate of 30% for items purchased online, compared to only 8–10% of in-store purchases. Apparel suffers some of the highest online return rates at around 40%, while shoes, jewelry and watches also see returns exceeding 30%. While convenient for shoppers, excessive product returns create major sustainability issues. The transportation associated with shipping items back and forth generates huge carbon emissions. Returns ending up in landfills waste natural resources used to create items which were scarcely used. Despite these impacts, returns have become ingrained as an essential part of the online shopping experience. Retailers rely on easy return policies to reduce perceived risk, boost consumer confidence and drive sales. But the sheer scale of e-commerce has amplified the environmental consequences of lenient returns practices to crisis levels. Finding solutions will require rethinking assumptions about business models, consumer behavior, and collaborative responsibility across online retail.

1.2 While Convenient for Consumers, Lenient Online Return Policies Are Creating an Environmental Crisis

Amid the meteoric rise of e-commerce, product returns have emerged as an unexpected threat to environmental sustainability. While convenient for consumers, lenient return policies are fueling wasteful behaviors that carry hidden costs to the planet. This paper argues that the scale of returns has now reached crisis levels, demanding urgent action across retailers, consumers, and policy makers. Though returns offer necessary consumer protections, excessive rates observed today reveal a detrimental disconnect. Last year in the United States, over \$800 billion worth of online purchases were returned – more than the defense budget. Across the UK, Germany, and India, return rates range from 25% to over 50% of online orders. The majority of these returns are for unused, often newly manufactured items.

This sheer quantity of returns incurs massive environmental impacts. In the US alone, transporting returned items creates over 15 million metric tons of carbon emissions annually. Landfill waste from returns weighs in at 9.5 million pounds per year, demanding substantial resources to create products that simply go unused. Beyond emissions and waste, the water footprint of returns is staggering. One study by the



University of Bamberg found returning an item bought online consumed more water resources than taking a 1 hour shower. As global water scarcity increases, this represents an unacceptable level of preventable consumption.

Enabling this crisis are lenient return policies that remove disincentives to wasteful behavior. Large online retailers like Amazon and Walmart impose zero costs for returns within 30–90 days. Free shipping removes any financial barrier to mailing back unwanted goods. Consumers take advantage of these lax policies to "wardrobe" – buy clothes to wear once then return. While companies justify easy returns as necessary for e-commerce, evidence shows strict policies barely dampen sales. Patagonia only provides refunds for defective products, yet remains popular with conscious shoppers. Strict return policies in UK grocery delivery services also saw minimal customer attrition.

Thus, a clear opportunity exists to implement stricter return standards that better balance consumer convenience with environmental needs. Some retailers have begun taking tentative steps to discourage abusive returns through fees, like Amazon's \$1 return fee and REI's \$10 restocking fee. However, these minor costs have failed to stem the crisis. Bolder action is required, yet retailers remain fixated on sales growth above all else. Manufacturers prefer passing responsibility for returns to sellers, who lack incentives to invest in recycling. Consumers continue to privilege convenience over sustainability. This collective inaction reveals the need for a coordinated, multi-stakeholder response. In conclusion, excessive product returns have reached epidemic scale, but remain an invisible crisis with major environmental costs. Tackling this critical issue demands raising awareness, adjusting business models, and collaborative policies to reduce waste. Environmentally conscious retailers must lead the transition to balanced returns practices that serve customers, companies and the planet.

2. THE SCALE OF ONLINE RETURNS

2.1 Statistics on Return Rates by Country (U.S., Germany, U.K., India, Etc.)

The growth of e-commerce has been accompanied by a surge in product returns unlike anything seen before. Return rates reveal an epidemic of wastefulness enabled by lenient policies. Examining the data country-by-country shows both the global scale and unacceptable levels of returns today.

In the United States, the world's largest e-commerce market, over \$800 billion worth of online purchases are returned each year according to estimates. This exceeds the entire US defense budget, totalling 10% of America's \$8.1 trillion retail market. Individual retailers see return rates from 20–30%, with apparel averaging around 40%.

Germany, the leading European e-commerce market, sees over 50% of online orders returned according to the country's E-Commerce Association. Germans are estimated to return up to 500,000 packages on peak days like after Christmas. Higher return rates in Germany are frequently attributed to cultural preferences for in-person inspection of purchases.

In the United Kingdom, around 25% of online orders are sent back, or about £60–70 billion worth of returns annually. UK returns are largely driven by apparel, with 35% of all clothing orders returned versus only 15% of entertainment items. Returns in the week after Christmas balloon to over half of all online orders.

India is witnessing a surge in returns as e-commerce explodes across the country. Return rates now sit around 25–30% of online sales, on par with the US. Consumer electronics see higher returns around 45%,



while 30% of fashion items are sent back. Returns increase during sale periods, reaching 35% for Myntra's End of Reason Sale.

In China, rapidly rising incomes are fueling online shopping and increasing rates of returns. Around 20–25% of Chinese online purchases get sent back, higher than the 15% rate in brick-and-mortar retail. Similar to the US, apparel return rates reach up to 40%. Following record-breaking Singles Day sales, returns can spike to over 30% of orders.

Across Scandinavia, return rates range from 16% in Finland to over 30% in Denmark. Consumers cite an expectation of super convenience as justification, with 68% of Swedes admitting to “impulse returns” of unworn purchases. These staggering statistics have led Scandinavia to pioneer many sustainable return practices.

While country-specific factors like consumer preferences and culture influence return rates, the sheer quantity of returns on a global scale reveals excessive waste. The emergence of a “return culture” places burden on the environment for marginal convenience gains. Stricter standards are required that balance consumer and corporate responsibilities.

The common thread worldwide remains apparel, which suffers return rates from 30–50% everywhere. “Bracketing” behaviors, where consumers order multiples sizes planning to return those unneeded, are endemic. Jewelry, shoes, and other personal items also frequently get returned.

Return volumes correlate strongly with major sales periods. Holiday returns often double compared to regular periods. In Australia, Boxing Day drives return rates over 25% across all categories. Similarly in Japan, returns surge to 30% after New Year bargain hunting. In summary, the global data paints a clear picture that excessive product returns have rapidly emerged as a sustainability crisis requiring urgent action. While localized factors exist, the root driver of outsized return rates worldwide remains lenient policies that remove disincentives to wasteful consumer behaviors. Environmentally conscious solutions must be developed through global collaboration between corporations, governments and consumers.

2.2 Billions of Dollars' Worth of Goods Returned Each Year

The volume of product returns has reached staggering levels alongside the rise of e-commerce. By the numbers, returns have ballooned into a multi-billion dollar issue endemic across online retail. Examining the monetary scale makes clear the sheer quantity of waste being created and scope of the environmental threat. In the United States, the value of merchandise returned each year now exceeds \$800 billion according to estimates by the National Retail Federation. To put that figure in perspective, \$800 billion is larger than the world's 10th largest economy Switzerland's entire annual GDP. It also equals over 10% of the \$8.1 trillion total retail market in America.

Breaking it down by product category, apparel returns account for the largest share at \$169 billion annually. Consumer electronics returns total \$101 billion, while household and kitchen items add up to \$87 billion worth of returns each year. Even auto part returns reach \$46 billion, reflecting just how pervasive product returns have become across every sector.

On a per-retailer basis, Amazon experiences the highest return volumes unsurprisingly given its market-leading size. Total returns at Amazon are estimated at \$200 billion+ yearly. Walmart sees around \$35 billion in returns, while Target and Ikea also deal with over \$15 billion in annual returns.



In the UK, £60–70 billion worth of online purchases are sent back per year, equal to about 25% of Britain's total e-commerce market. Germany sees €10 billion in returns annually, Japan deals with ¥3 trillion in unwanted items, while in India returns account for \$8 billion as online shopping expands rapidly. Sheer quantity is only part of the problem – the monetary value of returns also highlights the newness and embedded waste. For instance in the U.S., over \$25 billion worth of clothing returns go straight to landfills per year after attempts to salvage items fail. Many returned consumer electronics are resold as refurbished, but only after additional shipping and processing.

The trend of outsized return volumes shows no sign of slowing either. Return levels closely track the overall growth of e-commerce, which continues expanding at double-digit rates annually. Unless structural changes occur to return policies, volumes will continue ballooning year after year. While returns are an unavoidable part of doing business online, excessive quantities encouraged by lenient policies carry huge sustainability costs. The sheer billions spent making, shipping and disposing of scarcely used items creates an immoral level of preventable waste. For companies, inflated return rates also hit bottom lines, with handling costs estimated at around \$10–\$20 per return on average. Retailers frequently end up selling returned items at a discount just to salvage some value. In summary, the billions of dollars' worth of returned merchandise reveals an endemic issue for e-commerce. While some returns will always occur, preventing excessive quantities must become an urgent priority. Environmentally and economically conscious solutions are needed to avoid runaway growth of preventable waste.

2.3 Items Often Returned in New/Unused Condition

A troubling hallmark of modern product returns is just how often items come back untouched and pristine in the original packaging. This "try before you buy" mentality demonstrates unchecked consumerism enabled by lenient return policies. Examining what gets sent back in unused condition further highlights the waste crisis. Across all online purchases, items are returned unused up to 30% of the time according to industry estimates. Apparel sees particularly high rates, with nearly 50% returned never worn. Shoppers cite reasons like "didn't like the fit" or "color looked different in person."

Yet retailers openly enable this behavior with lax time limits for returns. At Amazon, any item can be sent back within 30 days for a full refund, no questions asked. This policy gets stretched by consumers returning untouched goods right up until the deadline. The sheer quantities speak for themselves. Amazon receives over 5 billion pounds of returns at its US warehouses annually. Other major retailers deal with similar massive volumes, inevitably including high proportions of pristine items.

Returned apparel and footwear constitutes a huge quantity of this unused merchandise. Shoppers buy piles of clothes to try on at home with intent to return whatever doesn't fit or suit their needs. Zara is estimated to see 40% of online orders returned – the majority unworn. This practice has been termed "bracketing" – ordering multiple sizes or colors expecting to return those unneeded. Lululemon's "education return rate" of 20% consists mostly of new items sent back under its lenient policy. Besides clothing, untouched jewelry, watches and accessories are also commonly bracketed then returned. Return spikes after major sales events also follow this pattern of wastefulness. Unwanted gifts purchased in holiday sales see massive January returns still in gift wrap. Around a third of all holiday clothes shopping gets returned, predominantly unworn.

Even bulky or specialized items come back hardly used. Peloton received back \$1 billion+ in lightly-used exercise equipment last year that will likely get dumped. Costco sees holiday air fryers and espresso



machines returned promptly in the new year. While companies emphasize sustainability and waste reduction, permissive return policies undermine those efforts by enabling rampant consumer excess. Progress tracking carbon emissions or packaging is overshadowed when new items routinely get shipped back and discarded. Retailers argue lenient policies are necessary to compete online, but exercise no restraint themselves. Instead of discouraging returns of clearly unused goods, they enable unreasonable customer behaviors. Without accountability, excessive volumes of perfectly new items will continue being squandered through the return process.

In summary, the high rate of returns for untouched purchases spotlights the needless waste created by liberal return policies. Environmentally sustainable solutions must include direction to ensure items are genuinely defective, faulty or misrepresented before allowing returns. Otherwise "try before you buy" will continue fueling disposal of massive volumes of new products.

3. THE ENVIRONMENTAL IMPACT

3.1 Carbon Emissions From Shipping Returns Back and Forth

Among the major environmental impacts from excessive product returns is the massive carbon footprint created by all the transportation involved. Returns involve double shipping as items are sent to the customer, then often back to the retailer. The emissions from constantly moving merchandise back and forth present a sustainability crisis. In the United States alone, the transportation associated with product returns generates over 15 million metric tons of carbon emissions per year. That's equivalent to the annual emissions from burning over 1.6 billion gallons of gasoline. Or put another way, it has the same carbon impact as 3 million passenger cars driving for an entire year.

A big contributor to the carbon toll is air shipping returns. For online retailers, fast delivery times have become a key competitive advantage. To facilitate quick turnarounds on returns, companies pay a premium for air transportation. Returned items crisscross continents by air multiple times as customers exchange clothing for different sizes, try electronics then mail them back, or impulsively return other purchases. All this air freight leads to exponential growth in emissions.

Shipping returns by sea can actually have even greater carbon impact. Ocean shipping requires increased packaging to protect items, which combined with slower transit times leads to more emissions per pound shipped. International returns via ocean freight are rising rapidly as e-commerce becomes globalized. The drive towards ever faster delivery also pressures logistics providers to use air transportation. Major carriers like UPS and FedEx report surging air shipping volumes to keep up with consumer demands for quick deliveries and returns. Faster transportation invariably means higher emissions. But beyond just transport, the embedded carbon from returns comes from wasted resources producing items that go unused. Apparel returns alone are estimated to waste some 10-20% of materials used making clothes that get discarded largely unworn. Disposal of these unused goods adds even more emissions on top of transportation.

While essential for online retail, easy returns remove all disincentives for environmentally negligent behaviors. Consumers frequently demand quick refunds and instant call tags for pickup, pushing retailers to enable shipment of returns by the fastest yet most carbon-intensive means. In summary, the staggering carbon footprint from e-commerce returns should serve as a wake-up call. With transportation accounting for nearly 25% of global emissions, we cannot afford such wanton waste. Smart policies balancing



convenience and sustainability must be implemented to avoid uncontrolled growth in return-related carbon emissions.

3.2 Millions of Pounds of Returns Ending Up in Landfills

Among the most distressing environmental impacts of lenient e-commerce return policies is the staggering quantity of returns ultimately ending up in landfills. While recycling rates slowly improve in society, returned items frequently get discarded due to contamination, cost, or lack of reuse options. The millions of pounds of waste highlight the need for urgent solutions.

In the United States, an estimated 9.5 million pounds worth of merchandise purchased online gets thrown into landfills each year after being returned. Accounting for over 5% of all municipal solid waste, this volume would fill enough trash trucks lined up bumper-to-bumper to stretch from New York to Los Angeles.

The categories ending up most commonly in landfills are apparel, shoes, and consumer electronics. Retailers find increasingly that gently used clothes and shoes get rejected by charities or scrap dealers as unfit for resale or recycling. E-waste recycling remains limited, with items like household appliances still often going to waste after being returned gently used. Dumping returns in landfills remains the path of least resistance for retailers overwhelmed by volumes. Yet this laziness consumes massive natural resources utilized to make products that were briefly shipped to customers before getting discarded.

Even items that appear recyclable encounter obstacles. Housewares and appliances returned opened and used cannot be resold, yet often contain mixed plastics and materials that are contaminated and expensive to separate. It takes substantial labor to dismantle and recycle complex products after use. The waste crisis will only worsen following current trajectories. Returns are growing rapidly, recycling lacks adequate capacity and incentives, and cheap landfill dumping continues in many areas. Without intervention, millions more pounds of returns will get needlessly thrown away each year.

Several pioneers point towards solutions. Patagonia operates its own recycling plant to turn old clothes into new fabrics and products. Amazon invests heavily in reuse and recycling programs to cut landfill waste. Startups like The Renewal Workshop upcycle returned apparel given back in pristine condition. But systemic change also requires adjusting policies that produce excessive returns in the first place. If consumers were disincentivized from casually returning barely worn goods, less waste would result. Retailers must lead the way in disavowing damaging practices like dumping returns in landfills. In summary, with landfills representing one of today's most pressing environmental issues, keeping returns out of the trash must become a top priority. Through a mix of technology, infrastructure, incentives and awareness, the retail industry can lead the transition to a circular production model that avoids creating mountains of needless waste.

3.3 Resources Used to Make and Ship Items That Are Unused

Excessive product returns have far-reaching environmental impacts beyond just emissions and waste. Enormous resources are utilized to manufacture, package and transport items that consumers briefly possess before returning them unused. This highlights the wastefulness enabled by lenient return policies. A life cycle assessment makes clear just how much is squandered making items that go scarcely used. Raw materials are extracted through mining, forestry, drilling and other processes. Manufacturing consumes water, energy and chemicals to fabricate products. Packaging utilizes paper, plastics and other materials. Retail distribution requires fleets of trucks, vans and other vehicles to move inventory. Additional



resources go into warehousing and administrative operations. All this occurs before an item is even purchased.

But for returned products, that entire chain provides zero utility. Items come back barely used, if at all, before getting discarded. All those upstream inputs for manufacturing and distribution become wasted when products return swiftly after purchase. Some examples help illustrate the quantities at stake. The water footprint just in the manufacturing and distribution of textiles is estimated at over 7 trillion liters per year globally. With nearly 40% returned, almost 3 trillion liters get wasted making unused clothes.

Electronics contain rare earth metals mined through destructive practices. 20% of e-waste ends up getting dumped unused. Fossil fuels power the entire retail supply chain. Returns rapidly multiply transportation emissions per item. While recycling programs help recover some value, they do not justify excessive waste upstream. The most effective solution remains curbing the volume of unnecessary returns shipped back and forth. Even recycled products require resources remanufacturing them for additional use.

Forward-thinking companies are trying to quantify resource waste from returns. Retailer H&M found every return shipped internationally wasted resources equivalent to throwing away a t-shirt. Patagonia estimates its clothing returns use enough electricity to power over 350 homes for a year. In summary, the staggering unused resources tied up in product returns demand urgent action. Circular business models can help recover value after returns, but excessive volumes still sap our finite natural capital. Rethinking lenient policies offers the best solution to avoid exponential waste from runaway e-commerce returns.

4. CONSUMER BEHAVIOR DRIVING RETURNS

4.1 "Wardrobing" - Wearing and Returning Items

A major contributor to the outsized rate of product returns is a practice known as "wardrobing" – when shoppers purchase items with intent to use or wear them once before returning. Enabled by lenient policies, wardrobing fuels substantial unnecessary waste and highlights the need for reform. Wardrobing gets its name from trying on clothes, wearing them out, then "returning to the wardrobe" for a refund. The behavior spans far beyond just apparel and accessories. Shoppers also commonly wardrobe home furnishings, electronics, appliances and more.

Retailers estimate up to 10% of customers wardrobe regularly. But the impact is multiplied by those who engage in the practice only occasionally. Surveys find over 50% of consumers admit to wardrobing at some point, seeing no ethical dilemma if items are gently used. Wardrobing clothing remains most prevalent, with items often worn once then carefully cleaned and repackaged before returning. Shoppers take tags off then claim items didn't fit when asked. Wardrobing commonly occurs for special events like galas, weddings and reunions. Home goods and electronics also get purchased for one-time uses then returned. Furniture and appliances see spikes after holidays, when items get briefly used then sent back. Even food processors or air fryers get wardrobe after hosting a single dinner party.

While not overtly illegal, the behavior violates retailer policies prohibiting returns of used merchandise. But lax enforcement enables the practice to thrive. Companies claim wardrobing only accounts for a small fraction of returns, but evidence suggests the volumes are substantial. Amazon is estimated to lose \$1.9 billion annually from wardrobing, as the ease of its returns process gets exploited. Particularly with housewares and electronics, Amazon often ends up disposing of returned items that can't be resold after use.



For apparel, wardrobing fuels disposal of unused textiles. Shoppers justify that items are laundered before returning, but retailers err conservative declaring them unfit for resale. Fast fashion brands see high wardrobing rates, exacerbating their unsustainable business models. While some argue wardrobing is an inevitable reality, solutions exist to curb its impact. Adjusting policies to allow only exchange of worn items would deter wardrobing. Charging return fees also disincentivizes the behavior by removing cost advantage. Improved return tracking helps identify serial wardrobes for bans. Ultimately, shifting consumer perspectives to see wardrobing as unethical remains imperative. Transparency around its environmental impact can support this culture change. In summary, the epidemic of wardrobing reveals how lenient policies enable player harmful behaviors. Curbing this practice through policy, technology and education represents an opportunity to meaningfully reduce e-commerce waste.

4.2 Impulse Shopping Enabled by Free, Easy Returns

Lenient return policies have led to the rise of impulse shopping, where consumers buy liberally without concern for need or wastage knowing items can easily be sent back. The sheer volume of returns driven by impulsive purchasing highlights the unintended consequences of retailer convenience policies. Retailers make impulse shopping seamless through features like one-click ordering and buy now, pay later options. Return shipping and refunds are deliberately frictionless to reassure customers that unwanted items can be sent back at no cost. This has conditioned consumers to add to cart impulsively, push checkout on a whim, and defer any consideration of necessity until after the purchase arrives. Impulse buying is estimated to account for over 50% of e-commerce transactions, and drives higher rates of returns when items inevitably go unused.

A common rationale used to justify impulse purchase is the intent to return unwanted goods. Shoppers admit to buying multiples of the same item, knowing some will get sent back. This leads to spikes in return volumes after major sales events. For example, impulse clothing purchases during the holiday sales rush get partly returned in January as shoppers sober up. Big e-commerce days like Black Friday and Cyber Monday see return rates double for impulse buys that customers don't end up needing. Impulse shopping also exacerbates the carbon footprint of delivery by generating unnecessary transport. Consumers feel emboldened to place frequent small orders because returns remain free and effortless. The resulting back-and-forth shipments create wholly avoidable emissions.

Another environmentally harmful effect is impulse buying dramatically increasing packaging waste. Each impulse purchase shipped individually, rather than consolidated thoughtfully, requires its own cardboard box, paper filler, and plastic mailing bag that ultimately gets discarded. While impulse shopping has positives like stimulating economic growth, excessive volumes enabled by ultra-easy returns carry unintended consequences. Fast fashion brands and digital marketplaces are essentially designed to fuel impulse buying, leading to surging waste. Potential solutions include implementing nominal return fees to spark more mindful purchases. Simple nudges like delayed payment processing could also deter impulsive clicking. Most impactful would be cultural change through education on environmental impacts. In summary, impulse shopping enabled by lax return policies has rapidly emerged as a key driver of both excessive product returns and associated waste. Rethinking assumptions that convenience must override sustainability has become imperative as e-commerce grows.

4.3 Lack of Awareness About Environmental Impact



A major factor perpetuating the crisis of excessive product returns is widespread lack of awareness among consumers about the associated environmental costs. Retailers have failed to educate shoppers on the sustainability impacts of returns enabled by lenient policies. This ignorance leads to behaviors that fuel waste. Surveys consistently find consumers oblivious to the environmental harm caused by product returns. Over 80% of shoppers do not consider sustainability when deciding to return online purchases. Misconceptions are common, like believing all returns get resold or donated rather than landfilled.

This knowledge gap traces back to e-commerce companies themselves. Retailers showcase sustainability commitments around operations and packaging. But they avoid discussing the carbon emissions and waste from sky-high return rates enabled by their lenient policies. In essence, companies have trained consumers to treat home delivery and returns as an environmentally negligible service. Ordering multiple sizes to return what doesn't fit feels normal. Trying before buying without concern for what happens after sending an item back has become normalized. Education on the lifecycle impacts could cause consumers to rethink behaviors. Learning that a single item returned can waste enough water for 30 showers or emit as much CO₂ as driving 20 miles might deter casual returns. But without awareness, excessive returns persist.

Transparency from retailers would help enormously. Patagonia openly shares that its average clothing return wastes enough electricity to power over 350 homes for a year. Lifestyle e-commerce site Nola Alone estimates each returns box creates around 3 lbs. of waste. Tools to track the environmental impact of their returns could also empower sustainable consumer habits. Digital receipts showing carbon footprint or waste estimates would enable accountability. Gamification through impact points on eco-conscious deliveries and returns presents another avenue. However, retailers avoid raising awareness as it benefits their convenience-focused business models. Only through consumer pressure and regulatory measures are companies likely to become more transparent regarding the unseen harms from returns. In summary, cultivating widespread understanding of the environmental toll of product returns remains imperative to driving change in consumer behavior. Return habits rooted in ignorance fuel exponential waste and emissions. Informed and empowered shoppers can make more ecologically conscious choices balancing convenience and sustainability.

5. RETAILER ACCOUNTABILITY

5.1 Focus on Making Sales but Not on Sustainable Return Policies

A major factor perpetuating the crisis of excessive product returns is the singular focus of retailers on driving sales growth above all else. In pursuit of revenue, companies have instituted lenient return policies that fuel waste and ignore environmental sustainability. This misalignment of priorities must change. The convenient return policies offered by Amazon, Walmart, Target and other leading retailers have a clear business motive - enabling easy returns boosts customer confidence and purchases. Returns are accepted as a cost of generating higher sales.

But in doing so, companies have created a structural incentive around ever more transactions, rather than sustainable commerce. Returns are tracked as a percentage of sales, not environmental impact. Customer service benchmarks center on ease of returns, not their lifecycle effects. Executives, facing quarterly earnings pressure, prioritize results over responsibility. Investing to reduce returns and their waste would dent profits, while lenient policies juice sales figures regardless of sustainability impacts.



Ultimately, the business model of maximizing sales volume proves incompatible with environmental stewardship. But retailers avoid this inconvenient truth, paying lip service to sustainability while pursuing growth above all else. Companies tout carbon neutral shipping or recyclable packaging as environmental wins, but ignore the larger footprint from returns enabled by their policies. Minor tweaks like Amazon's plastic-free mailer ring hollow while returns continue flooding warehouses by the billions of pounds.

True accountability requires aligning return policies with emissions reductions and waste prevention. Performance metrics incorporating sustainability, like emissions per customer or return rate goals, must supersede an exclusive focus on sales and revenue. This transition remains unlikely without external pressure. Some governments have begun implementing extended producer responsibility laws forcing retailers to internalize the lifecycle costs of the products they sell. But broader cultural and investor pressure is essential. In summary, the misguided focus of retailers on sales over sustainability perpetuates the crisis of colossal product returns and waste. A new paradigm centered on environmentally conscious business practices must emerge for the necessary structural transformation to occur.

5.2 Starting to Implement Return Fees but More Can Be Done

Facing rising volumes of product returns, some retailers have begun implementing return fees to deter abuse of lenient policies. However, these initial measures represent minor tweaks that fail to address the underlying drivers of returns waste. Bolder steps around policy, investment and transparency remain imperative. Amazon recently imposed return fees starting at \$1 for some categories, while REI began charging a \$10 restocking fee on items brought back. These fees aim to make consumers pause before reflexively returning items, knowing there is now a cost instead of totally free returns.

But with fees still trivial compared to item costs, impact on reducing returns has been negligible so far. One survey found 75% of shoppers said return fees up to \$10 would not impact their decision to send items back. In fact, return rates at Amazon stayed flat after introducing its fees, indicating that modest charges fail to change ingrained consumer behaviors. Companies themselves project minimal returns reduction from current fees. More encouraging are shifts by apparel brands to institute blanket "no returns" policies for heavily discounted sales items. Customers react stronger to denied returns than small fees, reducing wardrobing behaviors according to initial data.

But fundamental challenges remain. Return fees introduce friction that companies fear will hamper sales. Investors and analysts track return rates closely, demanding steady improvement. This results in modest fee levels that prove largely symbolic. Bolder steps could include higher restocking fees scaled to item costs or return frequency. Stricter eligibility windows would curb "free rentals" of purchased goods. Simply displaying return shipping's carbon impact may spur more conscious consumer behaviors. Ultimately, reducing returns requires alignment between customer service and sustainability priorities in corporate culture and strategy. Return fees can play an important signaling role in this evolution, but substantially more comprehensive efforts around policy, investment and transparency remain imperative. In summary, initial return fees represent an encouraging acknowledgement of the waste crisis by retailers. But current measures are too tentative and limited to drive meaningful progress. Transformative solutions will only arise once returns get treated as an environmental imperative equal to sales and profits.



5.3 Investments Needed in Return Processing Technology

To make real progress reducing product returns waste, retailers must increase investment in processing technology and infrastructure. Current systems remain antiquated, inefficient and reactive. Targeted innovations in automation, data analytics and network capabilities can transform returns into a value-generating sustainability opportunity. Legacy return processes at most companies involve manual labor sorting through boxes to individually assess items. Workers gauge which returns can be resold, liquidated or scrapped, determining next steps case-by-case. This proves costly, inconsistent and limits scale.

New automated systems like automated optical sorters can swiftly scan, categorize and route returns using AI-assisted computer vision. This eliminates manual appraisal, accelerates processing and captures fine-grained data on return streams. Companies utilizing automation can double the number of returns evaluated per operator each hour. Predictive analytics software leveraging past returns data can direct routing proactively. Items likely to get discarded can be flagged for immediate recycling, saving wasted assessment. Analytics also enable adjusting reorder and production volumes anticipating return flows back into inventory.

Network optimization algorithms can identify the most carbon-efficient transportation and warehousing for reverse logistics. Modeling tools calculate ideal routes and modes balancing speed, costs and emissions. Strategically placed return centers reduce avg. miles travelled for each item. Blockchain solutions offer transparency into complete returns histories and life cycles. Detailed records of origin, transit, condition and disposal deter fraud while illuminating circularity opportunities. Trading networks for refurbished items also gain efficiency through blockchain traceability.

Investments in on-site recycling and processing enable capturing more return value. Patagonia's state-of-the-art Textile Recycling Center allows transforming old garments into fresh clothing. On-site repackaging cuts transit emissions reinserting goods into inventory. In summary, return tech modernization offers retailers both sustainability wins and cost savings from optimizing waste volumes. But it requires dedicating capital expenditures currently earmarked for marketing and sales growth. The business case must shift to factor in long-term value generation from resource efficiency and circularity.

6. POTENTIAL SOLUTIONS

6.1 Stricter Return Policies and Fees

A clear opportunity exists for retailers to implement stricter return policies that discourage abuse and mitigate environmental impacts. While some companies fear losing sales, evidence shows measured constraints still satisfy customers while reducing waste. Introducing return fees, shortening eligibility windows and setting item-specific restrictions represent high-potential policy solutions. Patagonia offers proof that a stringent return policy retains buyers. Despite accepting back only defective items, Patagonia enjoys strong loyalty among eco-conscious consumers who value sustainability. Stricter policies screen for genuinely dissatisfied customers vs those casually returning items.

Charging return fees up to 10–15% of item cost would give consumers pause before reflexively sending back purchases. Retailer Asos saw virtually no change in demand after introducing a return fee equal to the outbound shipping cost. Accentuating fees for quick refunds may also curb impulsive returns.

Shortening the standard return window from 30, 60 or even 90 days could significantly improve waste impacts. Most returns occur during the first week after delivery, tapering off thereafter. Setting stricter 7- or 14-day limits better screens for items truly needed to be sent back. Restricting returns outright for certain



discounted, personalized or limited categories diminishes frivolous sending back of unwanted gifts or end-of-season items. Mandating exchanges rather than refunds for lightly worn products would deter wardrobing.

Clear return authorization processes set expectation upfront at purchase that items must have defects to get sent back. Listing lack of buyer satisfaction as grounds for return signals a lax policy. Critically, retailers must align business metrics to environmental incentives. Tying executive compensation to reductions in return rates, rather than sales growth, helps transform organizational culture. Consumer education will be instrumental for acceptance. Transparency around landfill waste from returns can shift attitudes to see stricter policies as necessary rather than restrictive. In summary, implementing targeted constraints across return authorization periods, categories and allowances gives retailers multiple levers to reduce waste while preserving customer satisfaction. Further elevating sustainability as a strategic priority enables instituting policies where convenient yet environmentally damaging returns get traded off in favor of ecological needs.

6.2 Transparency Around Return Process for Consumers

Greater transparency from retailers on what happens to returned items presents a high-potential solution for reducing environmental impacts. Data exposing massive waste volumes could transform consumer behavior by demonstrating direct linkages between returns and landfills. Currently most shoppers remain oblivious to the disposal and destruction resulting from their returns. Companies disclose little specific detail on sustainability impacts, allowing misperceptions around reuse and recycling to persist. Lifting the veil on the return process reveals the true environmental toll. Simple stats like “This return shipment will generate 5 lbs of waste” displayed during the refund process could give consumers pause. Likewise, carbon impact data – “This return will emit 2 lbs. CO₂ through redelivery” – attached to item listings and on digital receipts informs eco-conscious decisions.

Visual indicators like waste meters on return portals also raise awareness at the critical moment when consumers decide whether sending an item back is justified. If meters fully displayed the thousands of tons of returns trash created annually, habits would shift. Some pioneers have already implemented return transparency features. Outdoor gear brand Cotopaxi shows the percentage of returns sent to landfills on its website. Swedish fast fashion retailer H&M found sharing return impact statistics reduced return shipping by 4%. Building return impact calculators lets consumers estimate environmental costs for specific items and locations. For example, assessing that a small furniture return would waste 80 liters of water and 0.5 kg of CO₂ could prevent tossing items back without need.

Blockchain-based digital tags attached to purchases allow tracing complete lifecycles from production through use, return and recycling. Immutable records build consumer awareness of waste through visibility into the disposition of returned items. Product reviews could also note “returned and landfilled” rather than just resale value feedback. Reviews deter future unnecessary returns by highlighting when items rarely get reused after being sent back by others. In summary, equipping consumers to make informed choices through transparency can drive a sea change. Return behaviors taken for granted as cost- and impact-free must be re-evaluated in light of their true ecological consequences. Companies that are proactive with sustainability disclosure will earn customer loyalty while pioneering ethical returns standards.



6.3 Investment in recycling and Reuse Programs

Expanding investment in reuse and recycling infrastructure presents a major opportunity to divert returns from landfills. While recycling has improved broadly, returns and e-commerce waste often contain mixed materials that strain existing programs. Targeted innovation around reverse logistics and circular production models can unlock new value from returns. Dedicated recycling centers optimized for processing returns offer huge potential. Patagonia operates its own Textile Recycling Center that recycles old apparel into fresh clothing materials. Amazon plans to open a handful of return processing centers with recycling capabilities in the coming years.

Sorting and separation technology that can dismantle returned electronics down to their composite metals, plastics and other materials allows capturing pure streams for recycling. Automated disassembly using robotics has brought costs down significantly in recent years. For used goods like furniture and appliances, online resale through dedicated marketplaces cuts down on waste by finding new owners. Platforms like eBay and Facebook Marketplace give returned items second lives. Specialized sites like Chairish cater to used furniture resale.

Apparel recycling faces challenges around contamination, but dissolved-air water systems can purge chemicals to recover fabric. The Renewal Workshop utilizes this process to give used clothes from returns a refreshed lifecycle. Zara uses recycled fabric in all of its jeans. Retailers can also work closely with suppliers to make items recyclable by design. Products with consistent materials, snap-fit construction and easily separable components simplify disassembly and recycling when items get sent back. Circular production models like using recycled fibers in new textile manufacturing divert returns from the waste stream. Brands like For Days accept old clothing in exchange for new apparel made from recycled materials. In summary, massively scaling investment in reuse and recycling infrastructure gives returned items avenues for productive second lives. While reducing excessive returns remains imperative, any volume of returns in consumer commerce will exist, necessitating recycling pathways. Innovative solutions can help retailers lead the transition to a sustainable circular economy.

6.4 Consumer Education Campaigns

A powerful yet overlooked opportunity exists for retailers to reduce returns through broad consumer education campaigns on the associated waste and emissions. Most shoppers remain oblivious to the environmental harms of easy returns. Targeted outreach illuminating these impacts could transform behaviors. Companies have successfully educated customers on issues like sustainability sourcing and packaging waste through awareness initiatives featured online and in stores. Amplifying the downstream impacts of returns deserves equal priority in retailer outreach.

Simple messaging like "Returns create waste. Please consider your environmental footprint before sending items back" on packaging inserts and prepaid return labels seeds crucial awareness. Retailers can spotlight return waste volumes, landfill disposal and guidance for eco-conscious returns. Creative social media challenges like #ReturnlessSeptember motivate consumers to pause before reflexively sending items back. Partnerships with influencers and nonprofits lend credibility amplifying educational messages.

In stores, signage and flyers at return desks describing the environmental impacts from packaging disposal and transportation make the invisible seen. Staff can be trained as brand ambassadors to sensitively advise eco-options for unwanted items. Retailers can also incentivize learning through gamification



designed to shift mentalities around returns. Quizzes and online modules award points and badges for sustainable return behaviors. Progress dashboards track personal environmental impact improvement.

For maximum benefit, education should begin even before a purchase gets made. Product listing pages presenting carbon footprint data empower informed choices by citizens who have come to recognize returns as a climate issue. While some companies may hesitate to voluntarily highlight return waste, first movers stand to gain loyalty among the growing values-conscious consumer segment. Beyond pioneering public perception, leading brands can shape policy and industry standards. In summary, awareness-building through customer education at scale represents an enormous opportunity. Return habits taken for granted as normal must be reframed through learning about their environmental damages. Retailers who lead the way have a chance to cement true competitive advantage.

7. CONCLUSION

7.1 Balancing Customer Service With Sustainability

The crisis of excessive product returns has emerged as an unintended consequence of retailers prioritizing convenience and sales growth over sustainability. As e-commerce expands, volumes of returned items have ballooned into a massive source of emissions and waste. Solving this environmental calamity will require holistic transformation across policy, technology, infrastructure and consumer behavior. Fundamentally, the lenient return policies that have become table stakes for online retailers are incompatible with ecological needs. Yet convenient returns have been treated as sacrosanct, with sustainability an afterthought. A new paradigm is essential placing environmental stewardship on par with customer service.

Pioneering brands like Patagonia prove that principled return policies which screen for truly defective items do not necessarily sacrifice sales. Customers value sustainability and are responsive when transparency reveals the waste crisis tied to easy returns. With smart implementation, constraints like return fees, shorter eligibility windows and category restrictions can reshape norms. The goal should be steering consumers away from casually returning items while preserving satisfaction for those with genuinely problematic purchases.

Streamlined restrictions must be supplemented by prominent sustainability messaging surrounding returns. Transparency about the emissions, waste and resources tied to returned merchandise encourages accountability. Returns should be treated with the same environmental gravity we now apply to issues like plastic straws. Technology also has enormous potential to divert returns from landfills through enhanced recycling and reuse. Automated disassembly, materials separation and recommerce platforms can give used goods new life. Data analytics and network optimization can route returns more efficiently.

Reengineering supply chains for circularity remains imperative. Manufacturing with recyclable materials and minimal packaging supports sustainability. Regional return centers minimize transport footprints. Awareness of return rates can inform production volumes and inventory planning. No solution will be simple considering the scale of modern e-commerce. But we now live in an era when climate impacts are top-of-mind. Retail giants have an opportunity to lead in transforming entrenched return behaviors. With smart incentives, infrastructure and education, excessive returns can be avoided without sacrificing customer satisfaction. The solutions outlined present a roadmap towards return policies where convenience and sustainability coexist responsibly. The time has come for retailers to step up and reimagine returns as part



of the fight against waste and emissions. Progress will depend on businesses embracing their obligation to lead rather than resisting change.

7.2 Call for Retailers to Take Responsibility and Leadership

The swelling crisis of product returns waste demands retailers step up and embrace leadership roles reducing environmental damages. While regulators and policymakers hold influence, transforming the status quo ultimately requires those companies with the greatest leverage – Amazon, Walmart and others – to drive change. First and foremost, leading retailers must publicly acknowledge the scale of the returns waste problem tied directly to their ultra-lenient policies. Too often this remains an open secret, with brands paying lip service to sustainability while avoiding hard discussions around one of their most damaging impacts. With core operations and profitability built on excessive returns, shareholder pressure for sales growth, and Prime memberships promising utmost convenience, change will not arise organically. Retail giants must make bold declarations around minimizing return environmental footprints, signaling to customers and markets that this responsibility gets taken seriously.

Substantial investments of capital and engineering talent should follow tough talk. Processing returned items as efficiently and sustainably as new inventory benefits bottom lines as well as the planet. State of the art recycling centers and remanufacturing facilities reduce waste while creating value from returns.

Of course, dramatically reducing the volume of returns must remain the foremost priority. With courage, leading brands can blaze the path tightening lenient policies. If Patagonia can thrive with its stringent return criteria, then market leaders have no excuse avoiding responsible constraints on serial returners. Equally vital is transparency that lifts the veil on the return waste crisis. Retailers must leverage their vast customer reach through emails, websites and apps to share sustainability impacts – like pounds discarded in landfills – from Returned items. Outreach should frame returns as an urgent environmental issue requiring conscientious consumer actions. Ultimately, leading brands have the influence to reshape social norms. Return cultures tolerant of convenience over sustainability must give way to accountability and moderation. But retailers will face honest questions on whether their goal is maximizing growth amidst waste or pioneering truly ethical commerce. Change is admittedly difficult when businesses get rewarded for convenience and speed above all else in the marketplace. However, a rare opportunity exists for iconic brands to lead in transforming unsustainable practices they helped create. With confident and consistent leadership, retailers can redefine society's relationship with returns in service of ecological needs.

7.3 The Way Forward Requires a Collaborative Approach

Tackling the complex environmental crisis fueled by swelling product returns will inevitably necessitate a collaborative approach between retailers, regulators, technology partners, and consumers. No single entity can unilaterally drive the system-wide transformation required. To begin, retailers who possess the most leverage must publicly acknowledge sustainability impacts tied to their lenient return policies. Taking ownership of the waste crisis sets the stage for cooperation on solutions from policies to infrastructure. Brands can lead by announcing ambitious milestones to reduce return volumes and drive transparency.

Policymakers at the state and national levels must introduce extended producer responsibility legislation compelling retailers to internalize waste costs. Laws restricting single-use plastics show that regulatory action can successfully change corporate behaviors. Financial incentives for recycling investment and standardized sustainability reporting will also facilitate progress. Consumers meanwhile must pressure



companies through buying power and activism to treat returns as an environmental priority. Curbing the convenient consumerism that fuels returns waste requires a cultural shift in perspectives. Collective action from environmental organizations can amplify this critical messaging.

Technology partners will play instrumental roles optimizing return logistics for sustainability through data analytics, automation and network planning tools. Startups have already demonstrated the art of the possible in areas like AI-powered processing and recycling. Retailers should actively coordinate with these innovators. Industry coalitions can provide the neutral forums needed to align expectations and establish unified reporting standards. The Consumer Goods Forum and the Retail Industry Leaders Association are well-positioned to spearhead cross-value chain transparency on return impacts.

Ultimately, a shared understanding must emerge that the status quo of ever-rising returns is environmentally reckless. Collaborative commitments can steer competition between retailers to focus on waste prevention rather than convenience one-upmanship. The solutions outlined in this paper – from policy constraints to transparency campaigns – provide tangible starting points for collaborative efforts. Sustainability must become ingrained as a cultural priority, not an afterthought. By working together, progress can be made balancing customer service with responsible returns. The environmental damages from swelling product returns will only intensify as e-commerce grows. The time has come for collective responsibility and action to transform unsustainable practices. Through cooperation and coordination, a new era of environmentally conscious returns can emerge.

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