THE GREEN BOTTOM LINE: WHY ECO-FRIENDLY E-COMMERCE MAKES BUSINESS SENSE

Infosys®
Navigate your next

The Environmental Cost of Convenience

Green isn't just a color trend—it's a movement reshaping industries worldwide. Every sector, from fashion to technology, must embrace eco-friendly initiatives as sustainable practices gain momentum. While offering unparalleled convenience, the e-commerce boom has also triggered alarm bells for environmentalists.

Picture this: In 2020 alone, e-commerce deliveries contributed a staggering 37 percent to global greenhouse gas emissions[1]. But this is just the tip of the iceberg. The impact ripples across every stage of the product lifecycle, from resource extraction to disposal.

In response, major players are switching to greener methods like carbon-neutral logistics and renewable energy, setting new standards for environmental responsibility in the digital era. They are gradually adopting "green supply chain practices" such as transport optimization and minimalistic packaging, ensuring eco-friendly products meet consumer demands.

However, larger problems loom for eCommerce players.

From Clicks to Carbon

While digital transformation has fueled the explosive growth of e-commerce, it's come with a significant environmental cost. The increasing use of energy-intensive computing, driven by GPU-intensive technologies like GenAI across customer journeys and operations, has led to a surge in greenhouse gas emissions, leaving a heavy carbon footprint.

The development of GPT-3 alone required a staggering 1,287 megawatt-hours of electricity, resulting in 502 tons of CO_2 emissions[2]. To put it into perspective, that's equivalent to the annual emissions from over 100 gasoline cars—before consumers even started using it. Research also indicates that the world's data centers, crucial for powering e-commerce operations, significantly contribute to global greenhouse gas emissions. In fact, data centers account for 2.5 to 3.7 percent of global emissions, surpassing even the carbon output of the aviation industry. Finally, their energy demand could rise to 1.86% by 2030 from about 1.3% in 2021, with a projected surge in data center power consumption to approximately 4,250 megawatts by 2028, marking a 212X increase from 2023[3].

As we continue to embrace digital innovations in e-commerce, it's imperative that we also prioritize sustainability and seek greener alternatives to mitigate our environmental impact. How can e-commerce innovation find a way to go green?

[1] *Greener logistics for a booming e-commerce industry | DHL Logistics of Things*

[2] *2104.10350.pdf (arxiv.org)*

[3] *Generative AI Breaks The Data Center: Data Center Infrastructure And Operating Costs Projected To Increase To Over $76 Billion By 2028 (forbes.com)*

Finding the Balance

To ensure a sustainable solution, we advocate for a two-pronged approach that addresses your existing infrastructure while planning for future growth.

Clean up what's on hand first: The e-commerce sector is turning towards green data centers, the new standard in mitigating environmental costs associated with e-commerce. First, it involves making data centers more energy efficient. This includes using renewable energy sources instead of fossil fuels, improving cooling systems and exploring alternative energy solutions to power computing processes.

Green data centers significantly lower the environmental impact of a company's digital operations. Major cloud providers are leading the charge, with many already powering their data centers with 100% clean energy sources like solar or wind power.

Yet, energy consumption in large data centers extends beyond computing alone. This shift towards renewables is crucial to achieve net-zero operational carbon emissions by 2030 and move away from fossil fuels. Green data centers enhance energy efficiency by adopting advanced cooling technologies like liquid immersion, direct-to-chip cooling, plant-based cooling, and zero-water cooling. Optimizing server configurations is also pivotal in reducing energy consumption and heat output. Furthermore, innovative solutions such as underwater data centers and free-chiller-based cooling technologies are ushering in even greater efficiency. Iceland's data centers are emerging as a preferred choice, harnessing a blend of geothermal and hydroelectric energy sources for their operations.

Small but mighty SMLs: Large Language Models (LLMs) have become a game-changer for e-commerce players because they do the heavy lifting on resource-intensive tasks such as product descriptions, video scripting, and image editing. However, recent research underscores a significant environmental concern—emissions from LLMs could equal those of five billion U.S. cross-country flights in one year[4]. Yet their usefulness cannot be denied.

But there's a greener solution on the horizon. E-commerce players must look into small learning models (SLMs) trained on specific tasks and data sets relevant to e-commerce use cases.Moreover, SLMs are undergoing refinement to cater to particular industries, referred to as vertical AI models. Unlike LLMs, which require significant computing power, SLMs excel at focused tasks like powering chatbots, suggesting text completions, personalizing content, summarizing text, generating basic content, and

[4]*Power-hungry AI: Researchers evaluate energy consumption across models (umich.edu)*

[5]*Orca 2: Teaching Small Language Models How to Reason - Microsoft Research*

analyzing sentiments with a significantly smaller footprint. This translates to lesser energy consumption and heat emanation dissipation from an environmental perspective. Furthermore, advancements in SLM technology facilitate easier deployment on local systems, enhancing accessibility and reducing the reliance on extensive infrastructure support.

Microsoft Research introduced Orca 2, a state-of-the-art SLM engineered to rival the capabilities of LLMs. Orca 2 comes in two parameter sizes, 7 billion and 13 billion, significantly less than GPT-3's reported 175 billion. This streamlined design allows Orca 2 to deliver powerful performance, requiring less computational resources[5].

Going Green is Good for Business

Sustainability is no longer a peripheral concern; it's a strategic advantage. Discerning consumers today actively seek brands that share their environmental values. This shift demands more from e-commerce companies than ever before. With actions like green data centers and the adoption of SLMs, the e-commerce industry sends a strong signal emphasizing the importance of corporate responsibility for a greener planet.

Embracing eco-friendly practices is no longer optional—it's essential for future-proofing e-commerce businesses, strengthening their brand image, and deepening customer loyalty, solidifying their place as leaders in a sustainable future. Ultimately, prioritizing sustainability is a win-win, ensuring long-term success for both the environment and the business. The time to act is now.

About the Author:

Partha Ghosh
Head of Consulting, Digital Experience, Europe, Infosys

Partha Ghosh heads consulting across Europe for Digital Experience at Infosys and is based out of London. He has nearly three decades of experience across Online and Omni-channel Commerce, Retail, Banking domains and BPM and Enterprise Application Integration; delivering mission-critical business outcomes.

Partha is passionate about business and technology innovations and building high performance organizations and teams, having worked extensively in core product development and global consulting organizations. He has been a Business and Solution Advisor to multiple global System Integrators and retailers in the omni-channel commerce space.

Infosys®
Navigate your next

For more information, contact askus@infosys.com

Infosys.com | NYSE: INFY

Stay Connected