

# A Study on Global Trends in E-Business Sustainability and Customer Attitude and Preferences

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**Abstract** – Customers are increasingly aware of the rising volume of online purchases and expect sustainable, environmentally friendly business practices. Despite growing interest in the topic, there is limited research on the state, development, and structure of consumer behavior and sustainability within e-commerce scholarship. This study addresses that gap by examining the intellectual, conceptual, and social structure of research on consumer behavior and sustainability in e-commerce. A bibliometric analysis was conducted on data drawn from 104 articles indexed in Scopus. The findings show the topic is closely tied to city logistics, big data analytics, customer engagement, the circular economy, online services, and omnichannel retail, and that it spans multiple research approaches and cross-cutting themes. By identifying trends and proposing future research directions, this study contributes to the broader field of sustainability research.

**Keywords** - consumer behavior; sustainability; e-commerce; bibliometric analysis

## I. INTRODUCTION

E-commerce has established a strong foothold in international commerce. This is unsurprising, given its many positive effects on global trade: it makes it easier for businesses to enter new markets, builds a faster international presence, helps firms find product-market fit, and shortens business-to-business (B2B) sales cycles. The worldwide e-commerce market was estimated to reach USD 5.55 trillion in 2022. By 2025, e-commerce was expected to represent 24.5% of total retail sales — a 37.6% increase in just five years, up from 17.8% in 2020 (Figure 1).

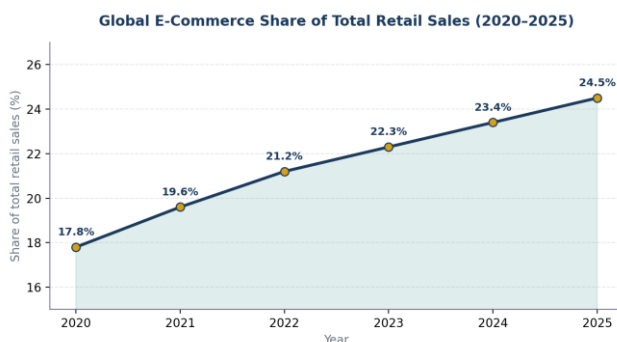


Figure 1. Global e-commerce share of total retail sales, 2020–2025.

Studies on consumer behavior in e-commerce have received considerable attention from researchers. Sustainability issues in e-commerce have likewise been a focal point for many authors — whether examining packaging and its associated waste, cross-border e-commerce sustainability, e-commerce cybersecurity and sustainability, or addressing all three dimensions of sustainability (environmental, social, and economic) in e-commerce.

## Consumer Behavior and Sustainability in E-Commerce: Related Research

Over the past decade, shareholders, governments, and society at large have placed increasing pressure on the e-commerce industry to improve its sustainability performance. Customers have come to value the convenience, utility, and habit-forming ease that e-commerce offers, while also growing more conscious of traffic, weather-related, and broader environmental issues. As a result of this pressure, e-commerce processes now increasingly incorporate environmental, social, and economic considerations, and the topic of sustainability has gained prominence in relation to e-commerce and consumer behavior.

Sustainability rests on three pillars: the economy, society, and the environment. City logistics is another emerging area connected to consumer behavior and sustainability in e-commerce. E-commerce encompasses commercial exchanges conducted electronically over the Internet, including business-to-consumer, business-to-business, and consumer-to-consumer models. Efficient city logistics can reduce transaction costs, support economic development and efficiency, and benefit the environment.

Estrada and Roca-Riu developed a related study examining a method for offering delivery services that use metro stations to collect packages via parcel lockers, suggesting that this approach could reduce noise, air pollution, and greenhouse gas emissions. Similarly, Ignat and Chankov investigated whether e-commerce customers changed their last-mile delivery preferences when given more information about the social and environmental impact of those choices.

Their findings suggest that e-commerce customers are more likely to choose a more environmentally and socially responsible option when environmental and social impact data about last-mile deliveries is made visible to them. In

addition, Gatta et al. conducted a study aimed at understanding the impact of e-grocery by examining consumers' shopping journeys and freight movements from distribution centers to consumers, concluding that more efficient home deliveries would benefit the environment.

Numerous studies on the relationship between e-commerce sustainability and consumer behavior have been conducted using a variety of methodological approaches. The objective of this bibliometric study is to offer fresh perspectives on consumer behavior and sustainability in e-commerce, and to systematize and synthesize the relevant literature.

## II. METHODOLOGY

A search query was used in the Scopus database to locate published research addressing consumer behavior and sustainability in e-commerce. Scopus was chosen because it applies rigorous quality standards and offers strong journal coverage; it is also widely recognized as one of the most useful subject-specific indexed research databases for the social sciences. Terms related to consumer behavior, sustainability, and e-commerce were used to construct the search string, consistent with terminology used in prior research.

The search string was applied without restriction in the initial stage, returning 20,003 documents. The main selection criterion restricted the search to the title/keyword field, yielding 191 documents, following the strategy used in previous bibliometric studies. The search was then restricted to journal articles as a further selection criterion, which returned 109 articles; after final screening, 104 articles were retained for analysis (Figure 2).

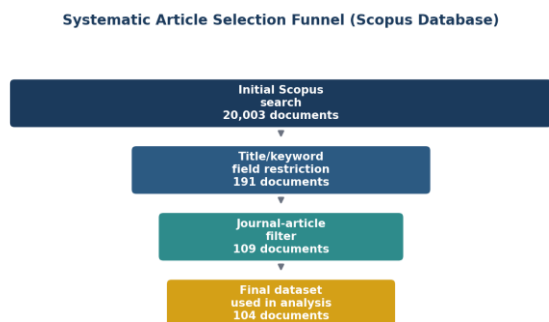


Figure 2. Systematic article selection funnel applied to the Scopus database search.

## III. EXAMINATION AND RESULTS

The 104 articles published over a 21-year period on consumer behavior and sustainability in e-commerce were cited 1,433 times in total, an average of 13.78 citations per article. Journal articles were chosen for their academic recognition as among the most rigorous and authoritative knowledge sources in the marketing field. Malaga's review,

which compared the costs of participating in e-commerce to those of traditional retail outlets, was the first publication on the subject; the field has produced citable publications continuously for the 21 years since.

### Authors' Performance Analysis

Identifying the most prolific contributing authors is important, as they play a foundational role in a field's development and meaningfully shape the direction of future research. A total of 342 distinct authors contributed to the dataset. Based on the number of published articles and citation counts, the leading contributors are ranked below (Figure 3).

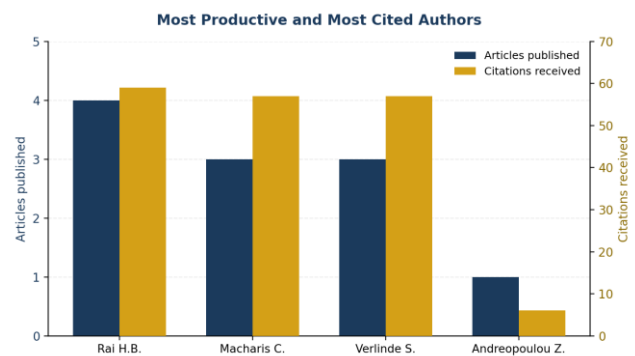


Figure 3. Most productive and most cited authors in the dataset.

Rai H.B. was the author with the highest output, with four articles, followed by Macharis C. and Verlinde S. with three articles each. Citation counts followed a similar ranking: Rai H.B. was cited most, with 59 citations, followed by Macharis C. and Verlinde S., who each received 57 citations. This pattern is related to the fact that three of the papers were co-published by these authors together. However, Rai H.B. also recorded the highest fractionalized frequency (1.83) — a measure that credits each author in proportion to the number of co-authors on a paper, giving a single-author article one full point and splitting credit evenly among co-authors on multi-author papers. This metric offers a clearer picture of individual co-creation contributions. Andreopoulou Z. ranked lowest on the list by this measure. A Pearson correlation between article count and fractionalized frequency can help clarify how raw and adjusted contributions relate to one another.

### Thematic Clusters

Beyond individual contributions, the bibliometric analysis surfaced several recurring thematic clusters connected to the core topic of consumer behavior and sustainability in e-commerce (Figure 4). These clusters — spanning city logistics, big data analytics, customer engagement, the circular economy, omnichannel retail, and cybersecurity — illustrate how the field draws on multiple disciplines and cross-cutting research approaches rather than developing along a single track.

Key Thematic Clusters Identified in the Bibliometric Analysis



Figure 4. Key thematic clusters identified in the bibliometric analysis.

## IV. FUTURE RESEARCH DIRECTIONS

The so-called "last-mile problem" of sustainable business-to-consumer e-commerce distribution, along with the effects of e-commerce's growth on green logistics, represents a significant and ongoing challenge involving both sustainability and reverse logistics in electronic markets. E-commerce is closely tied to the last-mile problem because the final leg of a supply chain — from warehouse to customer — is typically the most expensive and time-consuming part of the delivery process, sometimes accounting for up to 53% of total transportation cost, even as customers continue to expect free and fast delivery.

Examining e-commerce supply chains, their environmental sustainability, and their competitiveness is another important area for future inquiry. Given the rapid worldwide expansion of e-commerce and its environmental consequences — including packaging waste and associated trade-offs — packaging sustainability in e-commerce is becoming an increasingly significant research area. For e-commerce to be genuinely sustainable, social, environmental, and economic factors need to be considered together rather than in isolation, and trade-offs must be carefully weighed so that positive outcomes outweigh negative ones.

For example, if e-commerce businesses invest more heavily in refining their digital marketing strategies — including better customer targeting with appropriate product recommendations — the likelihood of returns decreases, easing pressure on reverse logistics and reducing environmental impact. E-commerce's social responsibility and sustainability are also significant areas meriting additional research. Improving the economics of sustainable e-commerce business models by leveraging existing advances in artificial intelligence is a highly relevant direction for advancing sustainable development goals within e-commerce.

Sustainable business models deserve further study, as they have the potential to benefit e-commerce businesses in multiple ways. Firms can implement environmentally friendly practices across their supply networks — for instance, by lowering fossil fuel usage through choosing suppliers located closer to their warehouses — thereby reducing operational expenses while also benefiting the environment. Since e-commerce success is closely tied to customer satisfaction, it is important to focus on sustainable e-commerce by integrating social media, mobile marketing, and localized marketing strategies. Finally, sustainability in e-commerce should be examined from a more comprehensive, holistic perspective — one that accounts for ethics, legal considerations, and cybersecurity. Ethical and legal e-commerce practices should ensure fair wages, prompt payment terms, and decent working conditions.

## V. CONCLUSION

E-commerce has recently accelerated its expansion, particularly in the context of the pandemic, and this growth is expected to continue in the years ahead. E-commerce should also prioritize cybersecurity sustainability — investing time, effort, and resources in ways that reduce risk, lower costs, and increase effectiveness, both immediately and over the long term. Notably, an increase in online sales has been associated with a smaller environmental footprint compared to traditional retail, and customers are increasingly aware of this, leading them to expect businesses to adopt environmentally sustainable practices even as those businesses work to balance sustainability goals with the core objective of generating economically sustainable profits and revenue.

This bibliometric investigation has several limitations worth noting. First, the data collection was limited to articles indexed in the Scopus database, excluding articles published in other databases; every database has its own constraints, so future research might incorporate additional databases. Second, although the search string's terms were designed to be comprehensive, they may not have captured every relevant publication — though most studies addressing this study's subject were likely captured by the search. Third, despite the authors' efforts to apply an objective bibliometric methodology during the manual article-selection stage, the process inherently carries some subjectivity. Fourth, because researchers may cite a given work for a variety of reasons — including journal or author prestige, editorial policies, or methodological choices — using citation counts as a criterion for certain analyses may not be entirely reliable.

This study aims to provide researchers with fresh perspectives on consumer behavior and e-commerce sustainability to inform the design of future research projects. In addition, it serves as a contribution to the Sustainability journal's Special Issue on Consumer Behavior and Sustainability in Electronic Commerce.



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