

Sustainable Ground Transportation and the E-Commerce Revolution: Innovations and Challenges at the Intersection

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This review paper offers a comprehensive exploration of the symbiotic relationship between sustainable ground transportation and the dynamic realm of e-commerce. It delves into the critical intersection of environmental sustainability, technological innovation, and the evolving landscape of online commerce. This review synthesises cutting-edge technologies and strategies aimed at reducing energy requirements and environmental impacts in ground transportation. It explores advancements in lightweight materials, aerodynamics, and alternative fuels, emphasising their potential to mitigate the environmental footprint of vehicles. Additionally, the transition towards zero-emission vehicles, including battery-operated and fuel-cell vehicles, is analysed, taking into account both short-term and long-term outlooks. Simultaneously, the paper delves into the evolving landscape of e-commerce, which has become an integral part of modern consumer behaviour. It investigates the influence of e-commerce on ground transportation practices, emphasising the importance of efficient logistics, last-mile delivery, and sustainability in meeting the demands of the digital commerce era. By providing a holistic view of the challenges and opportunities at the nexus of sustainable ground transportation and e-commerce, this review paper offers valuable insights for researchers, policymakers, and industry stakeholders striving to shape a more sustainable and responsive future for ground transportation in the digital age.

e-commerce law

online transaction rights

sustainability

ground transportation

consumer protection

In today's digital age, the symbiotic relationship between sustainable ground transportation and the dynamic realm of e-commerce has taken centre stage. This review paper explores the critical intersection of environmental sustainability, technological innovation, and the evolving landscape of online commerce. The convergence of these forces presents challenges and opportunities that warrant a comprehensive examination ^[1], especially in the last mile, due to external costs increasing because smaller (and therefore less efficient) vehicles are used that cover longer and more difficult routes. On the other hand, customer traffic using individual motorisation is limited. The world of e-commerce has undergone a profound transformation, influencing consumer behaviour and business strategies. Consumer perceptions and attitudes towards online transactions are shaped by a complex interplay of factors, including e-commerce laws and regulations ^[2]. The United Kingdom, for instance, has a set of e-commerce laws that impact online business strategies, and these laws have direct implications for companies engaged in dropshipping ^[3]. As internet access proliferates, the market for online transactions continues to expand, creating new possibilities for businesses and consumers alike.

In the wake of the COVID-19 pandemic, the importance of online transactions has surged globally [4]. Lockdowns and social distancing measures prompted a fundamental shift in consumer habits, driving people to rely on online modes of sending and receiving money. The convenience and safety offered by online transactions became especially crucial during times when physical interactions were restricted. This shift accelerated the adoption of online transactions in the United Kingdom, reflecting a broader trend towards the digitalisation of commerce [5].

Apart from the development of e-commerce, sustainable ground transportation has popularly attracted the attention of scholars over the last decade. The drive towards sustainable ground transportation is primarily fueled by environmental concerns, particularly the need to mitigate climate change and reduce pollution. This aspect is closely linked with technological advancements. Innovations in electric vehicles, battery technology, and renewable energy sources are crucial to making sustainable transportation viable and more efficient. This synergy between environmental goals and technological progress is central to the research and development in this field [6].

Governments worldwide are increasingly recognising the economic benefits of sustainable transportation, such as long-term cost savings and job creation in the green economy. This recognition has led to the implementation of policies and incentives to promote sustainable options, like investments in electric vehicle infrastructure and subsidies for electric vehicle purchases. Scholars are interested in how these economic and policy measures can accelerate the adoption of sustainable transportation solutions and their impact on the broader economy [7].

Rapid urbanisation has escalated the need for efficient sustainable public transit systems. Researchers are focusing on how to integrate sustainable transportation methods into the urban fabric, making them more accessible and appealing to the public. This aspect also involves studying societal behaviour and preferences to understand and influence how people choose transportation, aiming to shift the public towards more sustainable options [8].

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