

UNDERSTANDING THE CONCEPT OF SUSTAINABLE LOGISTICS AND TRANSPORTATION: IMPLICATION FOR GLOBAL BUSINESS AND ECONOMIC GROWTH

By: Professor O. K. Oyesiku



Sustainable logistics innovation refers to the implementation of significantly improved service processes or organizational strategies in logistics activities that contribute to environmentally and socially sustainable development. This process encompasses five critical phases: analyzing consumer needs, evaluating suggestions, developing business concepts, conducting small-scale testing, and implementing solutions while embedding sustainability practices at each stage.

The importance of customer involvement cannot be overstated, as it directly influences the success of logistics innovation. Sustainable logistics practices such as optimized transportation modal strategies, efficient packaging, and warehouse management have been proven to enhance overall system performance. These practices are essential for achieving competitive advantages while reducing environmental impact.

Policy Measures for Sustainable Transportation

Transportation systems play a critical role in economic and social development. At the international level, three of the United Nations'

17 Sustainable Development Goals (SDGs) emphasize the importance of transportation and logistics in promoting sustained and inclusive economic growth (Goal 8), fostering innovation and resilient infrastructure (Goal 9), and creating inclusive, safe, and sustainable cities (Goal 11). Achieving these goals necessitates sustainable transportation systems that balance economic, social, and environmental considerations.



The dimensions of sustainable transportation include access, affordability, safety, security, and environmental quality. These dimensions directly affect road safety, air quality, fuel consumption, and the adoption of innovative technologies. Sustainable transportation policies must address these dimensions through strategic approaches

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such as road pricing, user charges, and multimodal transport solutions. Despite challenges in implementation, especially in developing countries, these policies remain critical for minimizing carbon emissions, reducing congestion, and promoting public transit systems.

Non-Motorized Transport and Rail Systems: Key Innovation Strategies

Encouraging non-motorized transport, particularly bicycles, presents a promising solution to urban mobility challenges. However, cultural, social, and infrastructural constraints often limit its adoption.

The perception that bicycles are associated with lower socio-economic status and the lack of dedicated cycling infrastructure hinder their use in urban settings. Addressing these challenges requires bold policy measures, such as constructing dedicated bicycle lanes and promoting a cultural shift toward embracing non-motorized transport. Revitalizing rail systems is another critical strategy for sustainable urban transportation.

Light rail systems, which require relatively lower investment compared to metro rail systems, are particularly suitable for developing countries. These systems provide mass transit solutions that reduce greenhouse gas emissions and alleviate urban congestion.

Although their implementation may involve short-term disruptions, the long-term benefits of enhanced mobility and reduced environmental impact make them indispensable for sustainable urban development.



Technological Innovations and Future Directions
Emerging technologies play a pivotal role in reducing the environmental footprint of transportation. Vehicle technology improvements, such as enhancing fuel efficiency and integrating biofuels, compressed natural gas (CNG), and hydrogen fuel cells, hold immense potential for lowering carbon emissions. Additionally, promoting multimodal transport systems that integrate road, rail, and water transport can optimize resource utilization and improve overall efficiency.

Cutting travel demand growth is another critical approach, achievable through comprehensive land use planning and incentives for efficient transport provisions. Sustainable urban transport policies must prioritize environmental resilience, economic efficiency, and social inclusivity, focusing on clean energy solutions and advanced technologies.

Professor O. K. Oyesiku
Faculty of the Social Sciences, Olabisi Onabanjo University, Ago-Iwoye

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