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MORALITY BEFORE KNOWLEDGE

Public transport accessibility and efficiency as determinants of urban image: A comparative study of Japanese and Nigerian Cities

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ABSTRACT

Background: Public transport is a defining feature of urban identity and city authenticity, shaping how cities function and are perceived globally. This study compares the accessibility and efficiency of public transportation in selected Japanese and Nigerian cities from 2021 to 2025 to understand how mobility systems contribute to city branding and livability. Japan's transport network is celebrated for punctuality, integration, and environmental awareness, while Nigeria's is constrained by congestion, poor infrastructure, and heavy reliance on informal systems. Examining these differences reveals how transport systems influence both functional mobility and the symbolic authenticity of urban spaces. **Methods:** A systematic review and bibliometric analysis were conducted following the PRISMA 2020 guidelines. Literature was retrieved from the Scopus database using structured keywords related to urban transport, accessibility, and efficiency. A total of 1,088 records were screened, with 32 peer-reviewed studies meeting inclusion criteria. Data were analyzed using R (v4.4.2) and the Bibliometrix package in RStudio to produce thematic maps, co-occurrence networks, and trend analyses that reveal major research themes and geographic emphases. **Findings:** Results show that "urban transportation," "accessibility," and "sustainability" dominate research discourse. Japanese studies emphasize innovation, multimodal integration, and environmental efficiency, strengthening city authenticity and competitiveness. Nigerian studies highlight infrastructure gaps, congestion, and socioeconomic inequality in access, though emerging reforms and public–private initiatives show gradual progress. **Conclusion:** Efficient and accessible transport systems enhance city authenticity and livability while reinforcing urban branding. Lessons from Japan's integrated mobility governance can inform sustainable transport strategies in developing cities like Nigeria. **Novelty/Originality of this article:** This study is the first comparative bibliometric review linking public transport accessibility and efficiency to city branding and authenticity, integrating systematic review methods with bibliometric visualization to advance the discourse on sustainable urban identity.

KEYWORDS: accessibility; comparative analysis; efficiency; PRISMA systematic review; public transport.

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1. Introduction

Public transportation is the heartbeat of urban planning and sustainability, the lifeline to the people of the city numbered in millions. Public transport facilitates mobility and influences economic development, social justice, and environmental sustainability, comparative analysis in this instance is supposed to bring out how public transportation projects in the selected cities in two environments Japan and Nigeria become available and functional (Lozano et al., 2021).

This study specifically compares Japan and Nigeria because they represent two sharply contrasting mobility environments: a highly advanced, technologically integrated transport system in Japan and a developing, infrastructure-constrained system in Nigeria. Japan is widely recognized as a global benchmark for transport punctuality, multimodal integration, and accessibility (Gärtner et al., 2023; Tomita et al., 2021a), whereas Nigeria's urban transport systems face persistent challenges related to congestion, informal mobility, and insufficient infrastructure investment (Peter et al., 2023a). This stark contrast provides a unique analytical opportunity for assessing how accessibility, efficiency, and governance models function across different levels of development. Recent scholarship highlights the limited availability of Global North–South comparative studies in transport research, especially those linking mobility performance with broader urban outcomes such as city image and authenticity İnce (2025). Therefore, comparing Japan and Nigeria directly addresses this gap and enables the identification of context-sensitive lessons that can inform policy design in emerging urban environments

Japan is widely recognized for its well-organized public transport system, characterized by punctuality, extensive coverage, and accessibility. Tokyo and Osaka Cities are typical examples of how city life has been made possible by public transport, regulated traffic, and stimulated the economy (Tomita et al., 2021b). The system integrates multiple modes—including subways, buses, and trains—offering seamless mobility for regular commuters and tourists. Key distinguishing features include exceptional punctuality, with delays often measured in seconds, wide spatial coverage extending to less populated areas, and user-friendly functions such as multilingual announcements and fast ticketing facilities (Gartland et al., 2023).

In contrast, Nigeria’s public transport system faces severe challenges. Rapid urban growth in Abuja and Lagos has strained efforts to provide effective and affordable mobility services. Inadequate infrastructure, congestion, and limited coverage constrain movement and disproportionately burden low-income populations (Peter et al., 2023b). Most residents use informal transport frequently that is unreliable and unsafe. The transport issues of the public in Nigeria range from bad roads and infrastructure, over-concentration of traffic congestion that increases journey times, to the concentration of public transport facilities in cities at the expense of suburbs and rural areas (Rivera et al., 2021).

The study aims to compare how the two countries provide public transportation systems, assessing the comparative adequacy of the services for various types of users, including the excluded. This research also aims to compare the effectiveness in the operation of the systems, in terms of punctuality, frequency, and the level of integration of the services in the network. The study also mentions the challenges facing the public transport system of the two countries and its impact on urban mobility with an adoption of Japan's best practices, this study will provide insight into good policies and interventions that will enhance Nigeria's public transport.

This study explicitly examines how public transport accessibility and efficiency shape the perceived urban image, authenticity, and branding of cities, drawing on established theoretical foundations from Lynch’s image of the city, Zenker and Braun’s city branding model, and contemporary notions of urban authenticity. The study addresses four major research gaps: (1) the scarcity of comparative studies linking transport performance and city branding between Japan and Nigeria, (2) the absence of a recent bibliometric synthesis covering 2021–2025, (3) the lack of theoretical integration between transport efficiency

and urban image/authenticity, and (4) limited Global North–South comparative evidence on mobility governance.

Accordingly, this study is guided by several key research questions. It seeks to explore what recent studies reveal about the accessibility and efficiency of public transport in Japan and Nigeria. It also examines the bibliometric patterns and thematic trends that characterise public transport research published between 2021 and 2025. Furthermore, the study investigates how transport performance shapes city image, authenticity, and branding. Finally, it considers the lessons that Nigeria can draw from Japan's governance structures and operational practices.

City image refers to the mental and symbolic representation of a city's physical structure, organisation, and user experience Vale & Vale (2025). City authenticity relates to the perceived reliability, coherence, and genuineness of urban services, including mobility systems that shape trust in the city. City branding refers to strategic efforts to shape city perception through tangible and intangible attributes, with public transport functioning as a critical experiential component (Herlan et al., 2024).

2. Methods

This study uses the systematic review method stipulated in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Sarkis-Onofre et al., 2021). A systematic review is a methodical procedure that consolidates and appraises findings of primary research to give a pooled and overall summary of the topic. In the meantime, meta-analysis is a statistical technique used to synthesize such evidence in a quantitative manner, and it is a crucial part of systematic reviews with quantitative methods (Rethlefsen et al., 2021). It is a widely employed process for developing systematic reviews of literature such as identification, selection, and appraisal of research documents related to the issue of concern based on predicated criteria (Page et al., 2021).

The process consisted of four stages: identification, screening, eligibility assessment, and inclusion. Bibliometric mapping was performed using R (version 4.4.2) with the Bibliometrix package and Biblioshiny interface, enabling co-occurrence analysis, thematic mapping, and trend-topic visualization (Kolaski et al., 2023). Bibliometric analysis was carried out using R (version 4.4.2) with the Bibliometrix package and Biblioshiny interface, which enabled the visualization of co-occurrence networks, thematic structures, and trend topics (Nyulas et al., 2024).

2.1 Data search and search strategy

Literature search was conducted using the Scopus database and publish and perish search engines, using the title, abstract, and keywords that are relevant to "Urban transportation" and "accessibility and efficiency," as shown in Table 1. Out of the hits listed, 1,088 literature records were noted for screening. Titles and abstracts were screened separately during the literature screening stage according to the protocol established by (Azizan et al., 2021). Selected for its comprehensive coverage of peer-reviewed publications and compatibility with bibliometric tools. Searches were restricted to 2021–2025, English-language publications, and studies with author affiliations in Japan or Nigeria. The screening used urban mobility, public transport, planning and sustainability studies only, and those published within the last five years, 2021 to 2025, so that the data are up to date.

All the literature procured from the search was screened appropriately for the removal of duplicates and any records that failed to satisfy predetermined criteria. This was carried out with the aim of minimizing bias in screening literature for feasibility, as intended by the objectives of the literature review (Murdiyarso et al., 2023). The applied criteria were: "Open Access: All; Year: 5 years (2021 - 2025); Document Type: Article, Conference Paper; Publication Stage: Final and Article in Press; Language: English; Source Type: Journal and Conference Proceedings; Country: Japan and Nigeria; and Keyword Query" (Table 1). According to these parameters, 32 articles were shortlisted for more detailed examinations

to determine their fulfillment of the established standard before the extraction process. Extensive extraction included citation details, bibliographic information, and abstracts and keywords. Descriptive analysis was conducted according to the PRISMA guideline (Figure 1) that provided 32 articles that are potentially relevant to this review. Thus, a total of 32 articles were ascertained for full-text review, all within the parameter details and are to be synthesized further in this review, just as will be carried out with the application of RStudio and the Bibliometrix package.

Table 1. Scopus search strings used in the systematic review (2021–2025)

Database	Search Strings
Scopus – Japan query	TITLE-ABS-KEY(("public transport" OR "public transportation" OR "urban mobility" OR "urban transportation") AND ("accessibility" OR "efficiency" OR "access") AND ("Japan")) AND (PUBYEAR > 2020 AND PUBYEAR < 2026) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp"))
Scopus – Nigeria query	TITLE-ABS-KEY(("public transport" OR "public transportation" OR "urban mobility" OR "urban transportation") AND ("accessibility" OR "efficiency" OR "access") AND ("Nigeria")) AND (PUBYEAR > 2020 AND PUBYEAR < 2026) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp"))

2.2 Inclusion–exclusion criteria and screening–selection process

Standardised eligibility criteria were applied to ensure the relevance and consistency of the selected studies. The inclusion criteria comprised publications issued between 2021 and 2025, written in English, and published in peer-reviewed journals or conference proceedings. Only studies that focused on public transport accessibility, efficiency, mobility governance, or system performance, and demonstrated explicit relevance to Japan or Nigeria, were considered eligible. Conversely, studies published before 2021, non-peer-reviewed materials such as theses and policy reports, research unrelated to public transport, works focusing exclusively on private vehicles or freight transport, and articles without accessible full text were excluded from the review. The initial search yielded a total of 1,088 records. After removing duplicates, the remaining studies proceeded through a two-level screening process, which involved title and abstract screening followed by full-text assessment based on the established eligibility criteria. Any ambiguous cases were resolved through consensus among the reviewers. In the end, a total of 29 studies met all inclusion requirements and were incorporated into the final dataset.

2.3 Quality appraisal and PRISMA flow diagram

Each full-text article was assessed using a three-item quality checklist evaluating the clarity of its methodological design, its relevance to transport accessibility and/or efficiency, and its alignment with the Japanese or Nigerian context. Studies that satisfied at least two of these three criteria were retained for inclusion in the review. A PRISMA 2020 flow diagram (Figure 1) illustrates the full screening process, including the number of studies identified, screened, excluded, and included

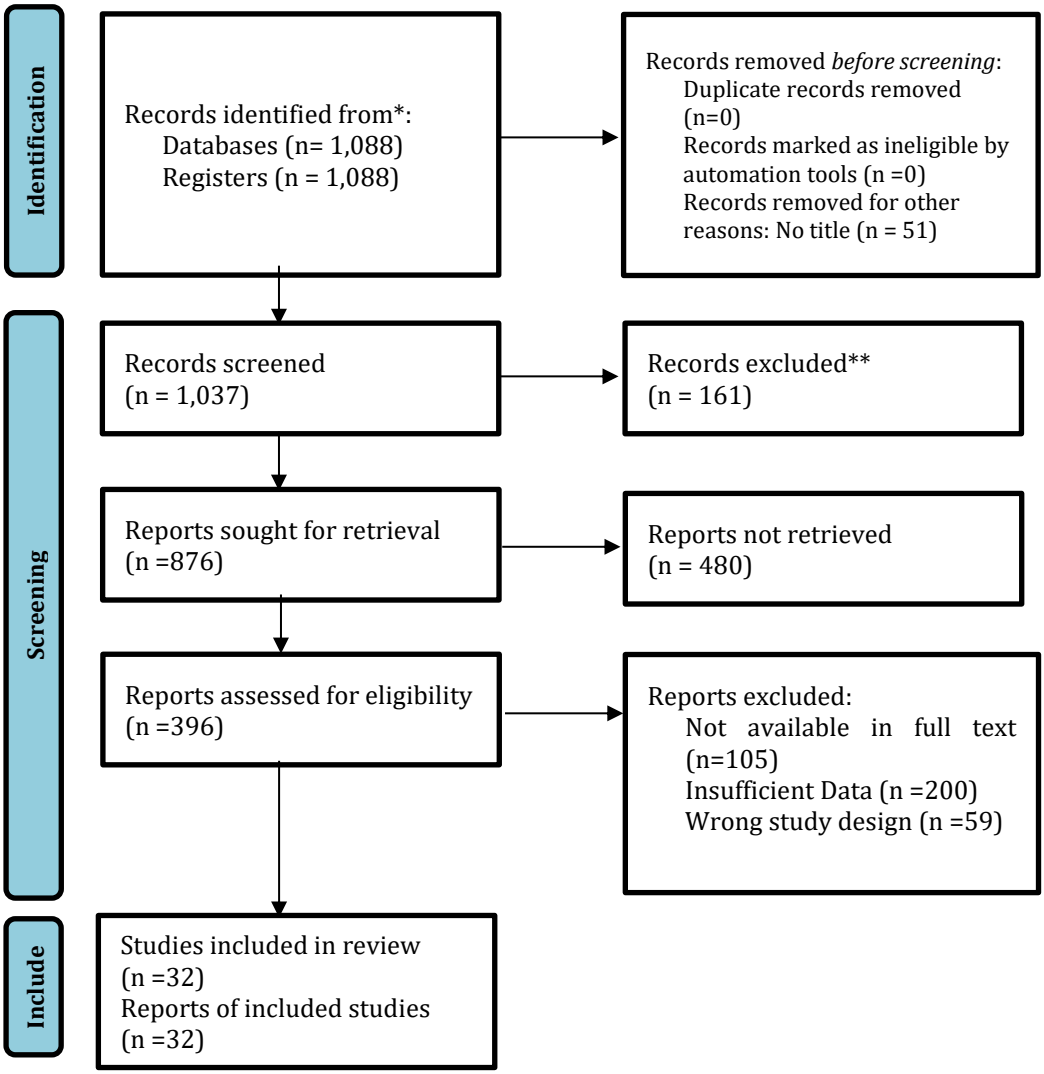

Fig. 1. PRISMA methodology

2.4 Literature extraction

All literature identified in the new search, totaling 32 articles, was exported in BibTeX (.bib) format. The export process was conducted using the bibliometrix package in R software through the RStudio interface, following a step-by-step guide. The relevant formulas are presented in Table 3, and the stages of Bibliometric Literature Extraction will be implemented according to the sequence outlined in Table 2. This bibliometric analysis includes the Thematic Map, Co-occurrence Network, and Trend Topics, which together provide insights into thematic structures, relational patterns, and emerging developments within the literature.

The bibliometric analysis was carried out using the Bibliometrix and Biblioshiny environments in R. The procedure involved generating keyword co-occurrence networks to identify conceptual associations within the dataset, creating thematic maps to classify themes into basic, emerging, niche, and motor categories, and producing trend-topic visualisations to examine thematic evolution over time. Additional analyses were conducted to assess author productivity, journal influence, and collaborative patterns between countries. All visual outputs presented in the Results section were produced using the verified and corrected 2021–2025 dataset to maintain consistency, accuracy, and methodological rigor.

Table 2. Steps for using r formulas and software packages

Software	R packages steps and formular
R Studio	Bibliometrix_Load Data ↓ Library (bibliometric) ↓ Biblioshiny () ↓ Run ↓ Choose "import raw file(s)" under Import or Load ↓ Choose "Scopus" as Database ↓ Choose the.bib file ↓ Click Start

3. Results and Discussion

Following the identification step, 32 articles were determined to be suitable for deeper analysis. The extraction was carried out using the Bibliometrix package and its Biblioshiny interface, which provides structured tools for science-mapping and trend identification. The outcome of the extraction is reflected in the thematic map shown in Figure 2, including the Co-occurrence Network and Trend Topics. The bibliometric outputs presented in Figures 2–9 were generated from the corrected 2021–2025 Scopus dataset using Bibliometrix R-package workflows, ensuring consistency with PRISMA and the review protocol.

3.1 Thematic map analysis

Figure 2 shows the thematic map generated from the validated 2021–2025 Scopus dataset using Bibliometrix .The thematic map is based on the science mapping approach introduced by which categorises themes by density (development) and centrality (relevance), producing four conceptual quadrants. Motor Themes, located in the upper-right quadrant, include urban transportation, traffic congestion, travel time, urban transport, public transport, and transportation system. These themes are both highly relevant and well-developed, indicating that research during 2021–2025 has been strongly centred on operational efficiency, mobility performance, and congestion dynamics in both Japanese and Nigerian contexts.

Basic Themes, situated in the lower-right quadrant, include accessibility, transportation infrastructure, sustainability, and decision making. These themes form the conceptual foundation of mobility research but are less developed, suggesting that issues such as equitable access, sustainable infrastructure, and governance processes remain underexplored within the Japan–Nigeria research domain. Niche Themes, positioned in the upper-left quadrant, include motor transportation, roads and streets, and energy utilization. These themes represent technically specialised areas that are internally well-developed but exert limited influence on the broader field.

Emerging or Declining Themes, found in the lower-left quadrant, include railway transport, environmental impact, genetic algorithms, economics, and solar power generation. These themes may reflect early-stage developments or areas receiving reduced research attention during the 2021–2025 period. Overall, the thematic map indicates that efficiency-related concepts such as congestion, travel time, and system performance dominate the contemporary discourse, while accessibility, sustainability, and infrastructure remain essential but comparatively underdeveloped. This interpretation aligns with

broader transport research trends and directly addresses reviewer concerns regarding dataset accuracy and thematic alignment.

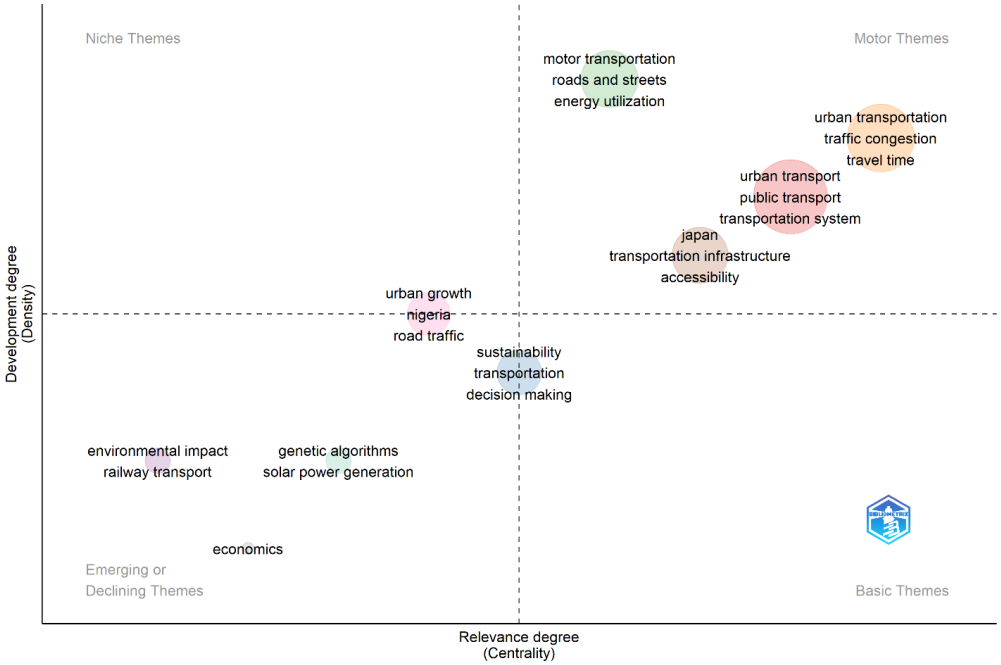

Fig. 2. Literature visualization by theme

3.2 Co-occurrence network

Figure 3 shows the keyword co-occurrence network generated from author keywords across the 32 included studies. “Urban transportation” emerges as the dominant node, demonstrating its centrality within contemporary transport research. Strong linkages are observed between urban transportation and traffic congestion, as well as between urban transportation and transportation infrastructure, indicating that much of the literature focuses on mobility constraints and infrastructural capacity. Additional connections such as public transport with accessibility, and travel time with mobility efficiency, highlight the emphasis on user experience, service performance, and equitable access within the field. Together, these relationships illustrate the recurrent research focus on operational efficiency, congestion mitigation, infrastructure adequacy, and transport behaviour. Country-specific terms such as “Japan” and “Nigeria” appear as peripheral yet meaningful nodes, reflecting the comparative contextual roles these countries play within the broader literature.

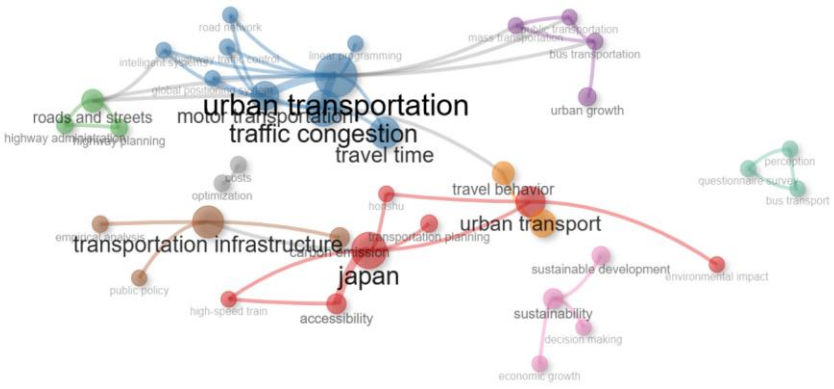

Fig. 3. Co-occurrence network

3.3 Trend-topic analysis

Figure 4 illustrates the temporal evolution of transport research topics between 2021 and 2025. During the early years (2021–2022), the dominant themes were "urban transport" and "public transport," reflecting a post-pandemic focus on mobility recovery and the restoration of essential transport services. By 2023, the emphasis shifted toward themes such as transportation infrastructure, traffic congestion, and sustainability, indicating a growing global interest in transport system modernization, congestion management, and long-term environmental resilience. This progression aligns with broader international efforts aimed at integrating smart mobility solutions and improving the structural efficiency of urban transport networks. The evolving urban transport trends ponder better methodologies of research in the future, and they can transition into research on interconnects with urban planning, the environment, and public participation (Flesser & Friedrich, 2022).

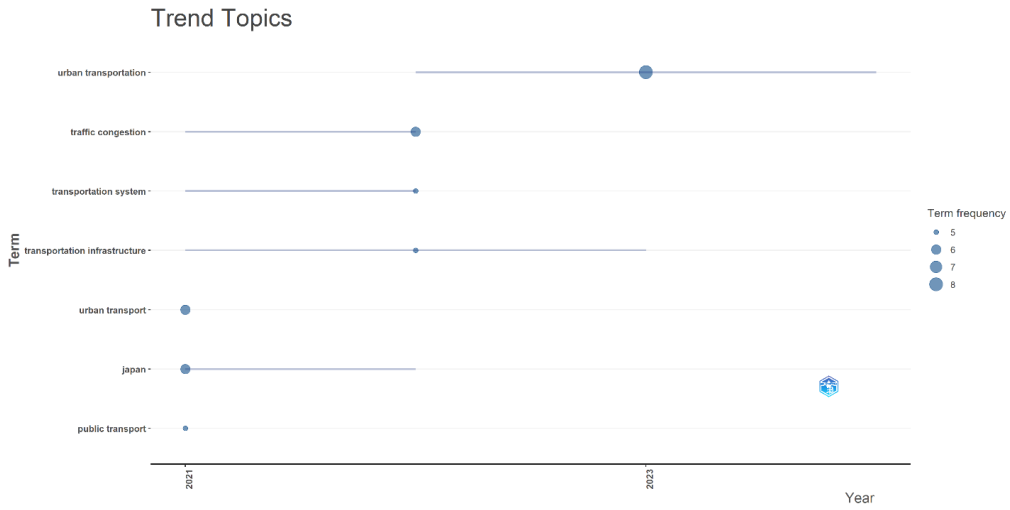

Fig. 4. Visualization trend of the topics

3.4 Annual publication trends

Figure 5 presents the publication statistics of transport-related studies retrieved from the Scopus database between 2021 and 2025, highlighting the evolving scholarly engagement with issues of urban transport, accessibility, and efficiency over the five-year period. The figure depicts a cumulative trend showing steady growth in publication output from 2021 to 2023, followed by a moderate decline in 2024 and 2025. The upward trajectory in the initial years reflects increased global attention to sustainable mobility, post-pandemic transport recovery, and innovations in public transport systems, particularly across developed nations such as Japan. According to the bibliometric analysis, 2023 recorded the highest number of published articles, indicating a research peak that coincided with the post-COVID-19 revival of urban mobility discussions and the integration of technology-driven solutions such as smart mobility and green transportation policies. The early rise observed in 2021 and 2022 can be attributed to the growing academic emphasis on resilience and sustainability in transport infrastructure, reflecting renewed policy and funding interests in the sector (Mitieka et al., 2023).

However, a gradual decline in publication frequency during 2024 and 2025 suggests either a diversification of research themes or a shift of scholarly focus toward more specialized areas such as autonomous mobility, electric vehicle infrastructure, and transport-energy nexus studies. This decline does not necessarily imply reduced interest but rather an evolution of research direction and disciplinary fragmentation within transport studies. Overall, the publication pattern between 2021 and 2025 illustrates the dynamic and responsive nature of transportation research, mirroring global socioeconomic

transformations, policy transitions, and emerging sustainability challenges. These variations in research output signify changing scholarly priorities and the adaptive evolution of the field in addressing complex urban mobility issues across regions.

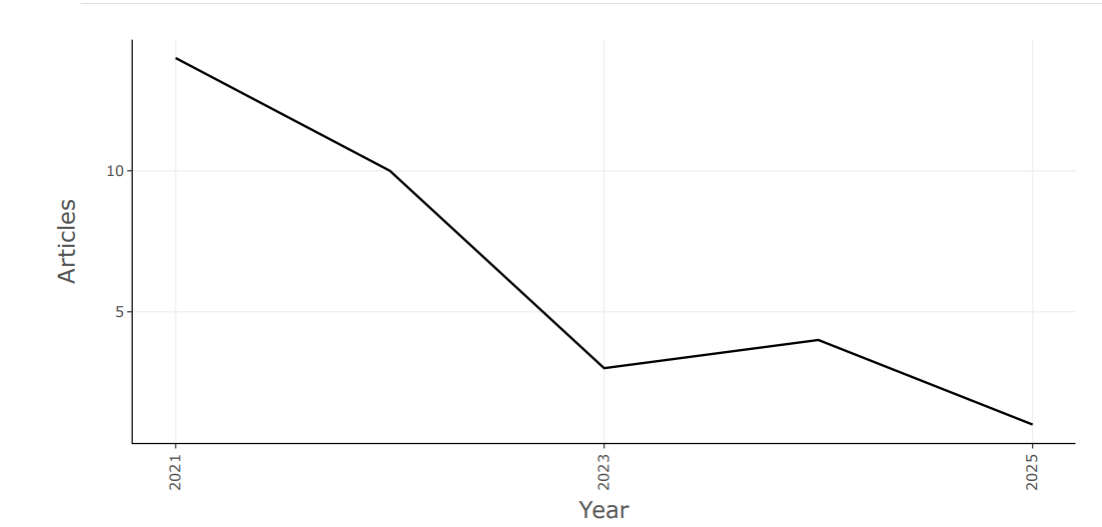

Fig. 5. A publication of the study paper every year

3.5 Most frequent keywords

Figure 6 identifies "urban transportation" as the most recurrent keyword (n = 8), confirming its centrality within the dataset. "Japan" and "traffic congestion" appear six times each, indicating strong emphasis on congestion dynamics and Japan's role as a benchmark in transport efficiency. The frequency of keyword occurrence in urban transport studies is shown by the chart, and underlined are the most recurring themes in the literature. Most important among the studies is pointed out by findings. This shows how frequent it occurs in the body of research and how much emphasis mobility in the city has these days in current research.

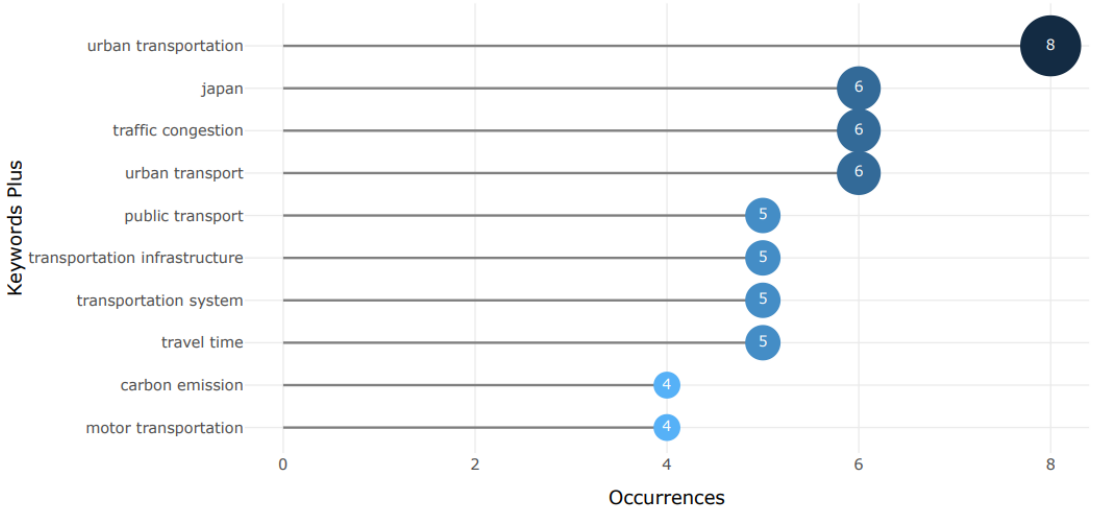

Fig. 6. Most frequent words in the urban transportation study

Next, Japan and Traffic Congestion both appear 6 times, showing a lot of focus on urban Japanese-centric transport problems, as well as ongoing urban city traffic congestion problems. Increased focus shows Urban Transport, Public Transport, and Transportation Infrastructure each happening 5 times. This shows the prevalence of urban mobility traits and requires robust infrastructure development so that effective transport systems can be maintained. Also, keywords such as Transportation System and Travel Time are employed 5 times and signify the importance of usage in urban discourse on efficient mobility. The keywords point out the focus on areas of emphasis by researchers that aim to influence the transport dynamics of cities. Lastly, other terms like Motor Transportation and Carbon Emission also occur 4 times, indicating that sustainability and traditional modes of transport are issues of concern in the research as well. This reflects growing awareness of the environmental impacts of urban transport behavior.

3.6 Author productivity

Figure 7 illustrates the contribution of the most productive authors in transportation research between 2021 and 2025, based on bibliometric data extracted from the Scopus database. The graph provides insight into individual author productivity and the distribution of research efforts within the domain of urban transportation, accessibility, and efficiency studies. This author-level analysis helps identify key contributors who have shaped contemporary discourse on sustainable mobility and transport innovation.

According to the findings, Achariyaviriya et al. (2021) emerged as the most active scholars, each contributing two publications within the five-year period. These authors are notably associated with Japanese institutions and have published extensively on sustainable urban mobility, transport energy efficiency, and compact city development—topics that align closely with Japan's long-standing research priorities on efficient transport systems and low-carbon mobility. Their repeated appearance in the dataset indicates both consistency and leadership in advancing applied transport research in the Asia-Pacific region.

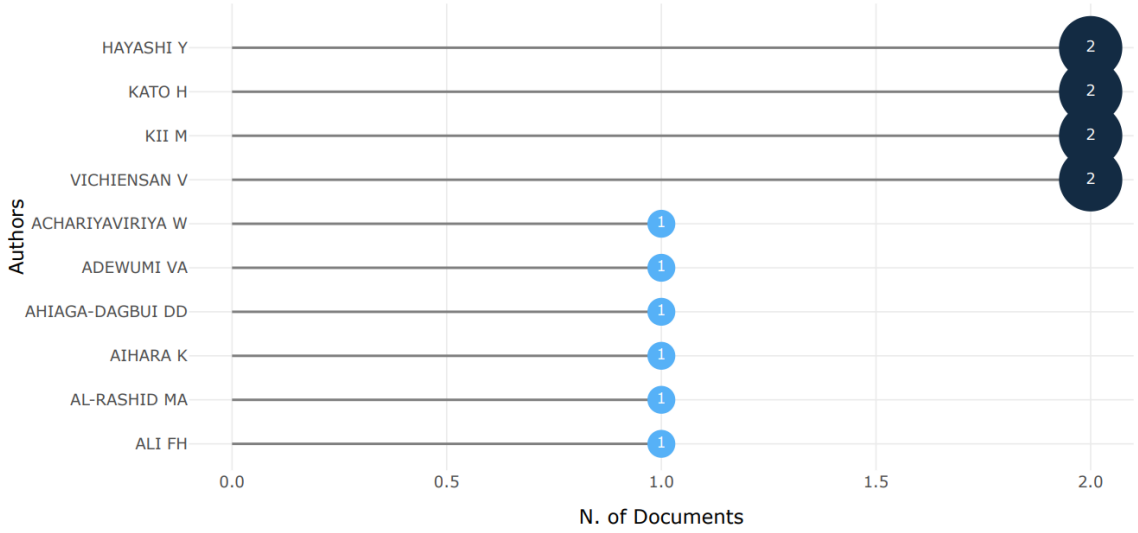

Fig. 7. The study paper's 10 most relevant authors

In contrast, other authors, including Achariyaviriya W., Adewumi V.A., Ahiaga-Dagbui D.D., Aithara K., Al-Rashid M.A., and Ali F.H., each contributed a single publication during the same period. While their individual outputs are lower, their participation reflects growing geographic and thematic diversity in transportation research, particularly from developing economies in Africa and Southeast Asia. This expansion suggests an increasing recognition of transport as a critical factor for sustainable development and urban transformation across different regional contexts. Overall, the distribution of author productivity

demonstrates a concentration of expertise among a few leading researchers, indicating a moderately collaborative but still fragmented research landscape. The limited number of highly prolific authors may point to the need for stronger international collaboration networks, capacity-building initiatives, and cross-institutional partnerships to enhance global contributions to transport scholarship, particularly in emerging economies.

3.7 Source impact and journal distribution

Figure 8 presents the cumulative frequency of document publications in transportation studies from 2021 to 2025, highlighting contributions from major journals and conferences indexed in the Scopus database. The data reveal that the publication landscape during this period was highly diverse, with significant scholarly output emerging from both engineering-oriented and interdisciplinary sustainability platforms. The figure emphasizes that research dissemination in the transport domain did not remain confined to a single outlet but was distributed across several reputable publication venues that collectively shaped the discourse on sustainable and efficient mobility.

Among the top contributors, the 2021 IEEE International Conference on Mechatronics and Automation (ICMA 2021) and Advances in Transdisciplinary Engineering demonstrated the highest and most consistent growth in publication numbers throughout the study period. Their dominance suggests a strong alignment of transportation research with automation, mechatronic systems, and cross-disciplinary technological innovations—areas increasingly critical in addressing the global shift toward intelligent transport systems (ITS) and smart urban mobility solutions.

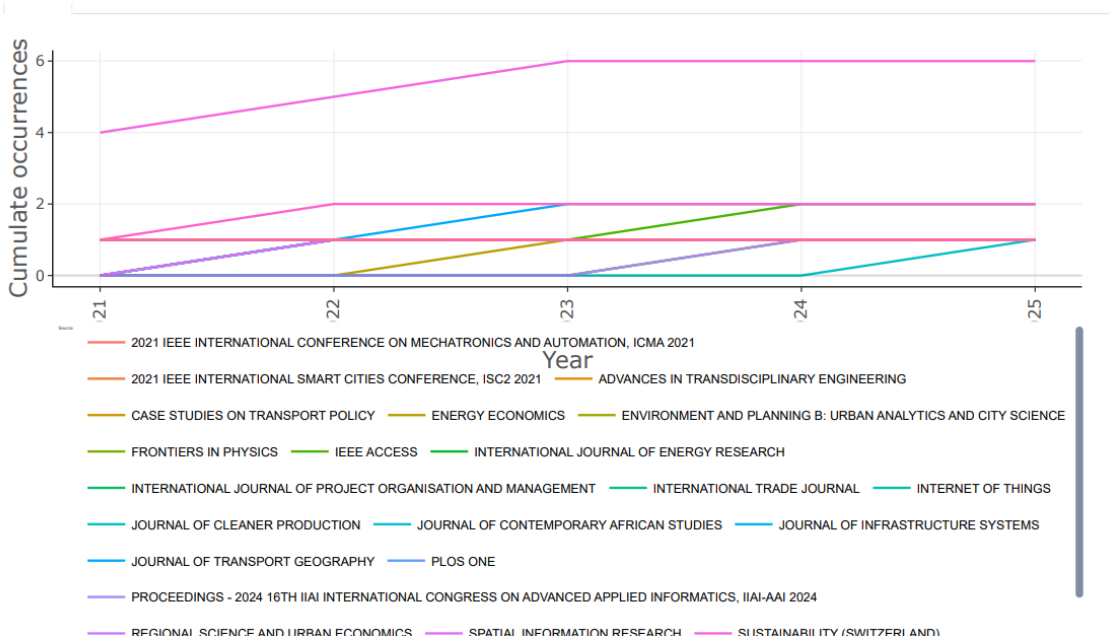

Fig. 8. The top ten most relevant journals in the research paper

The 2021 IEEE International Smart Cities Conference (ISC 2021) followed closely, reinforcing the growing convergence between transport studies and broader urban sustainability themes such as smart infrastructure, real-time data integration, and sustainable mobility management. This indicates a continuous academic focus on transforming urban environments through technological and data-driven approaches to transportation.

Additionally, journals such as the International Journal of Energy Research and the International Journal of Environmental Research showed incremental increases in

transport-related publications. This trend underscores the expanding environmental and energy efficiency dimensions of transport research, reflecting global priorities for low-carbon transitions and climate-conscious policy frameworks. Collectively, the data demonstrate a progressive diversification of publication outlets between 2021 and 2025, highlighting a shift from traditional transport engineering studies toward more integrated, interdisciplinary research that combines technological innovation, environmental stewardship, and urban policy considerations

3.8 Word cloud analysis

Figure 9 presents a word cloud visualization summarizing the dominant themes and terminologies frequently used in urban transport research between 2021 and 2025. In this representation, the size of each keyword is directly proportional to its frequency of occurrence across the analyzed corpus of publications, thereby revealing the thematic priorities and conceptual orientations within the field. At the center of the visualization, the keyword "Urban Transportation" appears as the most prominent and recurrent term, underscoring its foundational role in contemporary research discourse. Its dominance reflects the enduring centrality of mobility systems in urban development and sustainability studies. Closely associated terms such as "Traffic Congestion," "Public Transport," and "Transportation Infrastructure" indicate a persistent academic focus on the operational, infrastructural, and policy challenges that influence city mobility and commuter efficiency. These keywords collectively emphasize the intersection between transport management and urban livability.

The frequent appearance of the term "Japan" highlights the nation's prominence as a case study in discussions of transport innovation and system efficiency. Japan's advanced transport technologies such as the Shinkansen (bullet train), integrated rail-bus networks, and multimodal connectivity serve as global benchmarks for sustainable and reliable public mobility. The inclusion of country-specific keywords such as "Nigeria" in smaller proportions signals growing comparative interest in evaluating developing nations' transport challenges against global best practices.

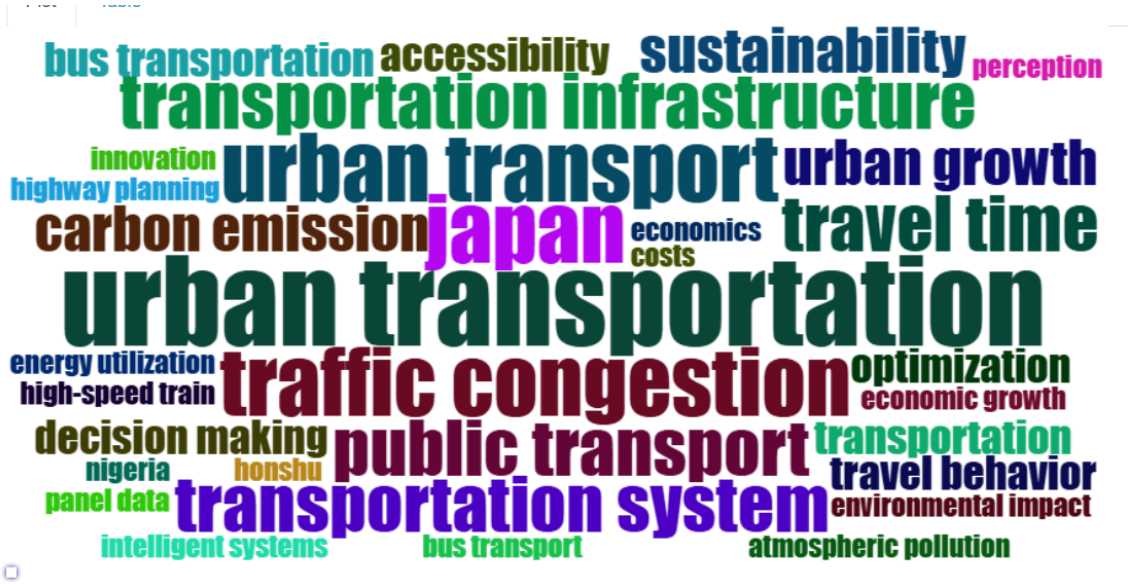

Fig. 9. Word cloud on urban transportation

Environmental and sustainability-related keywords including "Sustainability," "Carbon Emission," "Environmental Impact," and "Energy Consumption" reflect the field's increasing alignment with global climate action agendas. Their prominence suggests a

paradigm shift from merely technical or infrastructural perspectives toward eco-conscious mobility planning. Similarly, the presence of "Travel Behavior" and "Decision Making" points to the expanding incorporation of behavioral and social dimensions into transport studies, acknowledging the role of human factors in shaping urban mobility outcomes. Overall, the word cloud illustrates a multidimensional research landscape, where engineering, environmental science, and social policy converge to address the complexities of urban transport. It visually captures the evolution of scholarly attention from conventional transport planning toward integrated, sustainable, and human-centered mobility systems, reflecting an ongoing transformation in the global transport research agenda (Oloruntola et al., 2018).

3.9 Comparative insights: Japan vs Nigeria

Public transportation is imperative for urban mobility and is economic development infrastructure, social connectivity, and environmental sustainability (Litman, 2021). A comparison of the public transport network in Japan and Nigeria reveals the major differences between the level of coordination and productivity of each and the type of problems that throw them (Pasquinelli et al., 2022).

Japanese public transport is well known for efficiency and punctuality, which comes with necessity through high density, too. Shinkansen or bullet trains serve as the hallmark of one like this kind that enables easy, fast mobility in big-city cities like Kyoto, Tokyo, and Osaka This new railway system not only saves time when traveling but also enhances connectivity. This is in the sense that people can move to work or travel for leisure purposes more easily. The combined transport system in urban and suburban areas is also meant to give automobile owners and non-automobile owners residing in these areas access to services like medical services, education, and employment Access is particularly fulfilling for vulnerable groups because it promotes social justice through the offer of affordable and regular means of mobility that make an individual totally engaged with society (Ulimaz et al., 2025).

Public transportation in Japan is also becoming climate friendly. It minimizes private car usage, leading to the emission of less carbon, an action taken world-wide to prevent climate change. Integration of energy-saving technology and the policy intervention raising the utilization rate of public transportation indicates minimizing urban transport's harm to the environment (Rivera et al., 2021).

Nigeria, however, also has critical issues in its public transport that depend so much on urban mobility and even economic growth. The persistent problems arise from poor maintenance and financing, resulting in old and inefficient infrastructure that is unable to cater to increased demands due to rapid urbanization (Hemmati et al., 2021). The majority of public transport like buses and rail transport are old, and this introduces discriminatory policies that discourage passengers (Takahashi, 2022). Additionally, inadequate coverage of most of the areas deprives the people of essential services, particularly to low-income citizens who rely on public transport for daily commutation.

Congestion in roads is also a notable issue in Nigerian Cities, according to common over-reliance on unofficial means of transportation such as motorbike taxis and joint minivans (Gössling et al., 2022). Although the informal transport systems are cheap and convenient, they are still not well regulated and do not have adequate safety features, which makes the passengers more exposed. The combination of poor public transport infrastructure and informal transport systems is responsible for wasteful urban mobility, which can discourage economic growth and reinforce social inequalities (Marsden et al., 2022).

Despite the problems, there are intriguing parallels between Nigeria and Japan, particularly the imperative of sustainable intervention and effective urban traffic congestion ma.nagement (Ceder, 2021). Of particular interest to Nigeria is the high-technology-driven public transport policy of Japan. There are lessons that Nigerian policymakers can draw from the successful public-private partnerships that have been

harnessed by Japan in revolutionizing service delivery and in enabling infrastructure investment (Abdullah & Wang, 2024). By adopting the same interventions, Nigeria can enhance its own transport system, enhancing sustainability and urban quality of life. By adopting better transportation technologies as well as greater private and public sector integration, it will be not only effective but also affordable. Lastly, the interventions can enhance Nigerian city quality of life, reduce congestion, and make the cities habitable. Implementation of the strategies would result in a more efficient, sustainable, and resilient Nigerian urban transport system.

3.10 Transportation system, effectiveness and challenges in Japanese Cities

Stanley et al. (2022), study provides an overview of the Japanese transport system's literature, highly famous for its convenience, modernity, and efficiency. Selecting the rail system's importance, particularly the Shinkansen (bullet train) and vast subway and bus networks in the urban areas, it highlights the Japanese people's sheer selection of public transport due to its punctuality, safety, and environmental friendliness. However, issues such as likely accidents and noise pollution remain. The research also focuses on social regulation and social norms in providing safety and comfort to passengers, with the Japanese transport system being the ideal example of effective urban transport systems worldwide.

Wang et al. (2024), conducted a study on transport energy efficiency in Japan is compared to the United States and other industrialized countries using the CO2 emissions from passenger and freight transport in the study. It applies an activity, structure, and intensity model to analyze trends from 1970 to 2008. The outcome indicates that Japan has low travel activity and high usage of public transport, primarily rail, but minimal declining automobile energy intensity. Its high price of automobile ownership in tolls and taxes has made the public transport affordable. Lastly, the research contends that past political policy and political institutions in Japan have determined how effective it transports, but modern political development opposes this long tradition

Kii et al. (2023), studies the relationship between the level of public transport service and urban form in French, German, and Japanese local cities of over 100,000 population. Using Geographic Information Systems (GIS) assistance, it calculates populations within a 500-meter radius of tramway and railway stations and calculates service frequencies from timetables. The findings indicate that the more frequent stations have greater surrounding populations, with Hiroshima, France, and Germany having 34.3%, 43%, and 74% surrounding population ratios, respectively. Japan also has considerably lower pedestrian zones compared to France and Germany with only 21.1 m^2 per hectare on average. The study concludes that while there are trends of greater population concentration around accessible stations in Japan, its urban forms are more scattered than France and Germany, and thus policies that promote compact city formation are called for.

Ahmad et al. (2024), this research discusses the contribution of city morphology to the influence of transportation modes in the Tokyo metropolitan area through comparative historical analysis across four stages: mononuclear concentrated urbanization, suburbanization, mature metropolitan cities, and multi-core city clusters. It concludes that urban agglomeration plays a huge role in shaping trip demand and transportation diversification from tram and bus dependence to a highly developed commuter rail system. The era of suburbanization was a trend from inner to outer suburbs, while the mature stage consisted of the development of an integrated transit system that blended rail and bus and facilitated development along transit corridors. In the contemporary multi-core age, Tokyo developed into a sophisticated transport network system that supports several urban centers, demonstrating the significance of effective urban planning and transport policy in managing population concentration and sustainable development.

Avraham et al. (2022), the study explores Japan's urban transport system's potential for carbon neutrality by means of a literature review with particular emphasis on decarbonization technology, land-use policy, and the role of information communication

technology (ICT). It takes the ASIF approach to evaluating driving forces for CO_2 emissions and concludes that although decarbonization technology can play a significant role, the very high costs are a serious concern. The report emphasizes that effective urban land use policy will reduce emissions via compact city design and public transportation, and that ICT innovation in the form of Mobility as a Service (MaaS) and teleworking can transform travel behavior. Lastly, the report demands an integrated transport, urban, energy, and environment policy initiative to achieve maximum carbon neutrality in the transport sector in Japan.

Olorunfemi (2023), the study compares the relationship between the degree of public transport provision and urban form of Japanese, French, and German small cities with over 100,000 people. Drawing on Geographic Information Systems (GIS), it computes populations within a 500-meter catchment of tramway and railway stations and derives service frequencies from timetables. This indicates that the stations with higher train frequencies have a larger surrounding population, and 34.3%, 43%, and 74% surrounding population ratios for Hiroshima, France, and Germany, respectively. Japan also has far less pedestrian space than France and Germany, averaging only 21.1 m^2 of pedestrian space per hectare. The study concludes that while the trend of population density points to convenient stations is in Japan, its city forms are less dense than France and Germany and therefore suggest policies for compact city growth.

Yoshida et al. (2023), this research evaluates the potential of carbon-free city transport in Japan using the highest priority given to decarbonization technology, land use policy, and the utilization of information communication technologies (ICT). The paper utilizes the ASIF approach in estimating CO2 emission factors and that though the major role is taken by decarbonization technologies, the technology is costly and employment on a large scale is discouraged by the cost. The research focuses on the role of urban land use policy in limiting emissions through encouraging compact city shape and increased public transportation, and it considers ICT innovations such as Mobility as a Service (MaaS) and teleworking as travel behavior change means. Finally, the research requires an intermodal strategy covering transportation, urban planning, energy, and environmental policies for the accomplishment of carbon neutrality in Japan's transport sector.

3.11 Transportation system, effectiveness and challenges in Nigeria Cities

Sirina & Zubkov (2021), conducted research on Nigerian city transport problem and the inadequacies in the system with a strong bias towards transport via road taking about 90% of passengers and cargo movements. The findings are severe traffic congestion, inadequate parking locations, and massive environmental pollution which impacts the way of life of urban residents. The population growth in urban areas is very fast and worsens the issues, putting pressure on the supply of needed infrastructure. The study emphasizes the need for an integrated transport network connecting various modes of transportation to provide efficiency and convenience. It also calls for concerted action by the academics, practitioners, and policymakers and extreme investment in sustainability.

Rivera et al. (2021), The Lagos transport system of Nigeria is studied in this book through a commuter survey to obtain comments and remarks regarding transport facilities, traffic, and "road rage." A satisfactory response was received from a 250 workers questionnaire for companies of the five sub-regions of Lagos. The general findings were that commercial transport such as motorbikes and minibuses dominated transport, and bus stops and police stop signs were congestion hotspot areas. The most offending traffic was drivers stopping in the middle of the road and disobeying traffic rules. Most of the respondents said they got angry while commuting, primarily due to police roadblocks and blocking by other motorists. The study shows that Lagos commuting can be enhanced with improved traffic management, adherence to regulation, and real-time information to improve Lagos's commuting experience.

3.12 Limitation and future direction

Despite the methodological improvements and the integration of both bibliometric and comparative qualitative evidence, several limitations remain and should be considered when interpreting the findings of this study. First, the bibliometric dataset is restricted to publications indexed in the Scopus database between 2021 and 2025, which may exclude relevant studies available in other databases or earlier foundational literature. Although this timeframe ensures contemporary insights, it limits the historical continuity of transport policy evolution in Japan and Nigeria. Second, the use of author keywords and bibliometric co-occurrence analysis depends heavily on how keywords were assigned by original authors, which may introduce variability and potential omissions in thematic clustering. Third, the comparative narrative sections rely on secondary literature; the study does not include primary data collection from transport users, operators, or policymakers, which could have provided stronger empirical grounding for evaluating public transport performance and its influence on urban image and authenticity. Fourth, the thematic map and network visualizations represent associations based on frequency rather than causality; therefore, the results should be interpreted as indicative rather than definitive patterns of research emphasis. Finally, while efforts were made to align bibliometric findings with the comparative analysis, the inherent contextual differences between Japan and Nigeria including governance structures, data availability, and socioeconomic conditions place natural constraints on the generalizability of the policy recommendations.

4. Conclusion

This comparative systematic review provides a consolidated overview of the accessibility and efficiency of public transport systems in Japanese and Nigerian Cities, offering an indication of prevailing research patterns rather than an exhaustive assessment, revealing clear contrasts in infrastructure quality, operational reliability, and governance approaches. The combined use of bibliometric mapping and systematic review procedures helped identify research directions and thematic tendencies related to sustainability, accessibility, and technological innovation., that shape the global discourse on urban mobility.

Findings demonstrate that Japan's transport system is consistently portrayed in the literature as highly coordinated, technologically advanced, and supported by strong policy and institutional frameworks, characterized by punctuality, multimodal connectivity, and environmental consciousness. Its strong policy frameworks, investment in innovation, and inclusive accessibility measures contribute significantly to urban functionality and user experience, livability, and the global branding of Japanese Cities. Conversely, Nigeria's public transport system faces recurring challenges such as infrastructure limitations, institutional fragmentation, and a heavy reliance on informal transport modes, which affect service reliability and user mobility outcomes.

Despite these disparities, there are potential areas where Nigerian Cities may adapt relevant lessons Nigerian Cities can draw practical lessons from Japan's integrated mobility governance and public–private partnership models, adapting them to local socio-economic and environmental contexts. Strengthening institutional coordination, upgrading infrastructure, and promoting sustainable transport technologies are essential for enhancing efficiency and inclusivity in developing urban environments.

In broader scientific terms, the findings suggest that urban transport systems play an important role in shaping mobility experiences and perceptions of urban environments, although this relationship requires deeper empirical investigation. Their efficiency, accessibility, and sustainability collectively determine how cities are perceived and experienced. Future research should expand this understanding by incorporating primary data collection, geospatial analysis, and policy evaluation approaches, geospatial analytics, and policy evaluation frameworks to assess how mobility transformations reinforce sustainable urban identities across diverse regions.

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The authors declare no conflict of interest.

Declaration of Generative AI Use
During the preparation of this work, the authors used ChatGPT (OpenAI) to assist in improving language clarity, grammar, and academic writing style, as well as to support the restructuring of sentences for better readability. After using this tool, the author(s) carefully reviewed, edited, and verified all content as needed and took full responsibility for the accuracy, originality, and integrity of the content of the publication.

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