Sustainable Urban Mobility - Insights into Research Trends and Managerial Integration

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ABSTRACT

Against the backdrop of rising urban population density and intensifying territorial competition for investment, human capital, and technological resources, urban mobility transcends the operational sphere of transportation to become a strategic infrastructure for urban development. Pressures generated by congestion, pollution, logistical inefficiency, and institutional fragmentation necessitate the streamlining of mobility systems through integrated, sustainable, and digitalised solutions. Accordingly, this study analyses the evolution of scientific literature on urban mobility between 2015 and 2025, aiming to identify dominant thematic clusters and the extent to which the managerial dimension is integrated into the field's conceptual framework. The results of the bibliometric analysis indicate a significant potential for theoretical development at the intersection of strategic management, urban mobility, and territorial competitiveness.

KEYWORDS: *urban mobility, smart mobility, urban management, VOSviewer*

JEL CLASSIFICATION: *M10, O33, Q56, R41.*

1. INTRODUCTION

The acceleration of urbanisation, digitalisation, and energy transition has reshaped the role of mobility within the functional architecture of contemporary cities. The sustainable mobility paradigm marked a significant milestone in the evolution of research in the field, redefining urban policy objectives toward reducing emissions, increasing energy efficiency, and promoting multimodal transport (Banister, 2008). Subsequently, the development of digital technologies led to the integration of mobility into the broader framework of the smart city concept, characterised by the use of smart infrastructure, real-time data systems, and advanced digital coordination mechanisms (Papa and Lauwers, 2015; Lyons, 2018). In this paradigm, smart mobility is conceptualised as an interconnected subsystem of the smart city, supported by technologies such as the Internet of Things, artificial intelligence, autonomous vehicles, and digital twin architectures (Paiva et al., 2021; Xu et al., 2023).

Making urban mobility more efficient is one of the major priorities of contemporary public policies, in the context of pressures generated by accelerated urbanisation, intensification of transport flows, and the need to reduce environmental impact. According to the World Cities Report published by UN-Habitat (2022), more than 55% of the global population currently lives in urban areas, a percentage that is expected to increase to almost 70% by 2050. This trend implies a significant increase in demand for efficient, safe, and sustainable transport services, as well as an adaptation of infrastructure to respond to new challenges.

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Urban mobility is a complex phenomenon that transcends the technical dimension of the movement of people and goods. The European Commission (2020) stresses that it represents an integrated system with economic, social and ecological implications, in which infrastructure, services, individual behaviours and public policies interact permanently. In this sense, making mobility more efficient involves not only optimising transport networks and services, but also adapting them to the real needs, perceptions and behaviours of users (Faliagka et al., 2024).

Within this conceptual framework, bibliometric analysis serves as a robust tool for the systematic investigation of the evolution of urban mobility research, enabling the identification of dominant thematic structures and conceptual gaps relevant to the field of management (Aria & Cuccurullo, 2017; Donthu et al., 2021). By employing co-occurrence techniques and scientific mapping tools such as VOSviewer (van Eck & Waltman, 2010), the relationships between central concepts and the evolutionary dynamics of the field in recent years can be effectively highlighted. Accordingly, this study aims to analyse the evolution of scientific literature on urban mobility between 2015 and 2025, with the objective of identifying dominant thematic clusters and the extent to which the managerial dimension is integrated into the field's conceptual framework.

2. LITERATURE REVIEW

Recent literature emphasises that smart mobility does not produce solely technical or operational effects but also carries structural implications for the functioning of urban society. The relationship between smart mobility and the development of a smart society is highlighted by its impact on service accessibility, social inclusion, territorial equity, and the public perception of digital infrastructure and smart cities (Verma, 2022; Savastano et al., 2023). In this sense, mobility becomes a driver of social cohesion and urban competitiveness, influencing the attractiveness of cities and their ability to support sustainable economic development. At the same time, the transition to electric mobility and the integration of low-emission transport solutions are linked to decarbonisation and urban resilience goals (Badidi, 2022; Alam et al., 2024).

The concept of urban mobility encompasses all the means and infrastructures used to move people and goods within a city. Litman (2020) stresses that sustainable urban mobility must be efficient, accessible, safe, and environmentally friendly. Bıyık (2021) argues that the integration of various modes of transport – from personal vehicles and public transport to active mobility solutions, such as walking and cycling – is essential for achieving sustainable goals. Furthermore, according to Castellanos (2022), accessibility and connectivity between different modes of transport play a key role in reducing the dependence on cars and increasing the quality of urban life.

However, the rapid diversification of technologies and analytical models has led to a thematic fragmentation of the literature, where technological, institutional, and sustainability dimensions are frequently analysed in isolation. Studies on smart mobility governance highlight the complexity of coordinating public and private actors and the need for adaptive institutional mechanisms (Marsden & Reardon, 2017; Docherty et al., 2018; Faliagka et al., 2024). Nevertheless, the explicit conceptualisation of an integrative strategic management framework capable of linking technological transformation, sustainability goals, and the competitive performance of cities remains insufficiently established in the current literature.

Recent developments in artificial intelligence, machine learning, and the Internet of Things (IoT) are opening up new opportunities for sustainable urban mobility. Predictive models can anticipate variations in vehicle flows and adjust control strategies in real time, thus reducing the risk of congestion (Porru et al., 2020). The emergence of autonomous and electric vehicles will also require a reconfiguration of transportation infrastructure and communication protocols, fundamentally transforming the way urban mobility is managed (Litman, 2020).

Although urban mobility is recognised as a key driver of economic development and quality of life, dominant approaches prioritise technical solutions and performance evaluations at the expense of an integrated decision-making architecture. In the context of the increasing complexity of urban systems, the absence of a coherent managerial perspective can lead to sectoral implementations with limited effects on long-term territorial competitiveness.

3. RESEARCH METHODOLOGY

Bibliometric analysis is a quantitative method used to evaluate and map scientific output in a specific research field, enabling the identification of thematic trends, collaboration networks, and emerging directions in the academic literature (Aria & Cuccurullo, 2017; Donthu et al., 2021). To conduct the analysis, the Web of Science Core Collection database was used, recognised for the rigor of its indexing process and its relevance in international scientometric evaluations (Mongeon & Paul-Hus, 2016). The selection of this database is justified by its extensive coverage of high-impact journals and the ability to export data compatible with applications dedicated to bibliometric mapping.

The search strategy aimed to identify publications relevant to the field of urban mobility and sustainable urban management. The application of selection filters resulted in the following delimitation of the analysed corpus:

- document type: *scientific articles*.
- access: *open access*.
- time frame: *2015–2025*.
- language: *English*.
- research fields: *Transportation, Business Economics, Operations Research & Management Science.*

Following the application of these criteria, 3,709 scientific articles were identified, which form the empirical basis of the bibliometric analysis. The filtering process aimed to ensure academic relevance and comparability of the results, while reducing the risk of introducing publications that were not thematically aligned. The extracted data were processed using descriptive methods to analyse the temporal evolution of scientific output, as well as techniques for analysing the co-occurrence of keywords. The mapping of relationships between terms was performed using VOSviewer software (version 1.6.19), a well-established tool in bibliometric analysis for visualising citation networks and thematic clusters (Wong, 2018; Arruda et al., 2022). This software generated visualisations that allow for the identification of thematic structures in literature and the highlighting of relationships between dominant concepts, providing a systemic perspective on the development of the field.

4. RESULTS AND DISCUSSION

Analysing the temporal dynamics of scientific output is a first step in understanding the maturation of a research field, providing clues regarding the intensification of academic interest and the development of its associated thematic agenda (Donthu et al., 2021). In this regard, the annual distribution of publications identified in the Web of Science database for the period 2015–2025 allows for an assessment of the evolution of scientific interest in topics such as urban mobility, urban management, and the concept of the smart city. The results of the filtering are summarised in Table No.1, which highlights the progressive increase in the number of articles published over the analysed period, starting from 57 papers in 2015 and reaching 845 in 2025.

Table 1. Results of filtering the database of scientific publications from Web of Science, distribution over the 2015-2025 period

Year of publication	No. of publications
2025	845
2024	604
2023	497
2022	464
2021	410
2020	296
2019	198
2018	151
2017	102
2016	85
2015	57
Total	**3709**

Source: own analysis based on data from Web of Science

The trend shown indicates a clear upward trajectory in the number of scientific publications, with a noticeable acceleration after 2019. While growth was moderate between 2015 and 2018, during which the number of publications nearly tripled, the 2019–2022 period marks a significant expansion. This surge is likely associated with an increased focus on urban sustainability, digitalisation, and the smart transformation of transportation infrastructure. This growth reflects the consolidation of the field as an interdisciplinary area, situated at the intersection of transportation, urban economics, and operational management. A more pronounced increase is observed during the 2023–2025 period, when the number of annual publications consistently exceeds the threshold of 450 articles, reaching a peak in 2025.

This trend can be interpreted as a consequence of increased investment in smart technologies and the development of autonomous and electric vehicles, as well as the alignment of public policies with sustainable mobility and smart city goals. In the literature, these trends are associated with the integration of digital solutions and urban data platforms into mobility governance (Lyons, 2018; Papa & Lauwers, 2015). The steady increase in publication volume suggests that the field is in a phase of expansion and consolidation, characterised by the diversification of themes and the intensification of interdisciplinary collaborations. An analysis of the temporal evolution reveals not only a growing academic interest in urban mobility, but also its transformation into a strategic field of contemporary research, serving as the foundation for the in-depth thematic investigations presented in the following subsections.

Bibliometric mapping allows for the investigation of the intellectual structure of a scientific field by identifying relationships between dominant concepts and highlighting thematic clusters

(Donthu et al., 2021). In this case, the analysis was conducted based on the 3,709 articles identified in Web of Science. The network analysis was performed using VOSviewer software (version 1.6.19), and the results were visualised as a conceptual map.

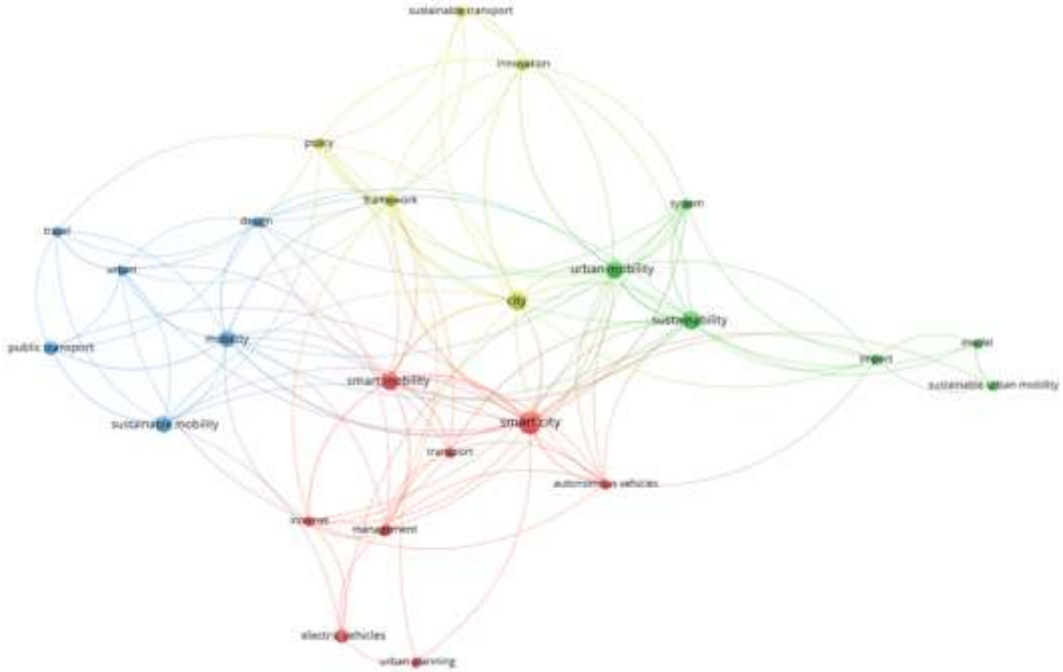

Figure 1. Visualisation of the conceptual network
Source: Result from VOSviewer analysis

In the graphical representation of the network, each node corresponds to a term, and its size reflects the frequency of occurrence. The links between nodes express the intensity of conceptual relationships (links and total link strength), and the spatial proximity of terms indicates the degree of thematic association between them. The network highlights the existence of four distinct thematic clusters, colour-coded (red, green, blue, and yellow), each grouping conceptually related terms and suggesting major research directions in the field.

Network positioning analysis reveals that terms such as *smart city*, *sustainability*, and *urban mobility* occupy central positions, characterised by a high frequency of occurrence and numerous connections to other terms. These function as conceptual nuclei in structuring the analysed field. The term "transport," although well-represented, appears rather integrated around these concepts, without possessing the same degree of centrality. Conversely, the term "management" has a more limited structural presence, occupying a peripheral position within the cluster to which it belongs and failing to emerge as a distinct conceptual core. It is primarily associated with concepts of a technological or operational nature. This distribution suggests a predominantly technological and sustainable orientation of specialised literature, in which urban mobility is analysed primarily through the lens of infrastructure, innovation, and environmental performance and, to a lesser extent, from an integrative strategic-managerial perspective.

To assess the temporal evolution of research themes, **overlay visualisation** was used, which encodes the average year of occurrence of terms through a progressive colour scale.

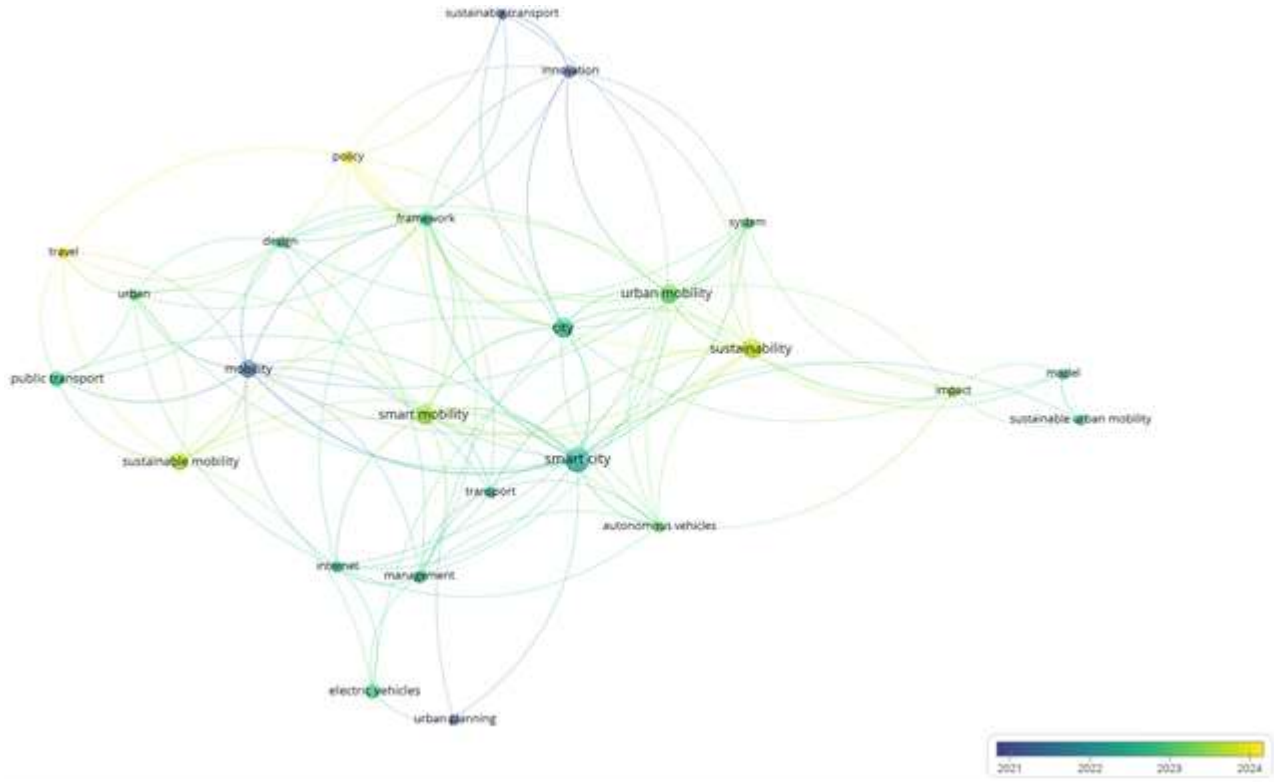

Figure 2. Temporal Dimension
Source: Result from VOSviewer analysis

In Figure 2, the overlay visualisation represents older terms in cool shades (blue), while more recent ones appear in warm shades (yellow). The analysis highlights that the initial research directions focused on *sustainable transport* and *urban planning*, whereas the recent period indicates an intensification of themes associated with digitalisation and technological innovation. Accordingly, the rise of terms such as *autonomous vehicles* and *smart mobility* reflects the transition toward connected and automated transportation systems, supported by digital technologies and the integration of urban systems. Furthermore, concepts such as "smart city" and "urban mobility" continue to play a central role, although they are increasingly acquiring technological dimensions.

In contrast, the dimension of *urban management* does not emerge as a prominent theme, suggesting that technological development is advancing at a faster pace than the consolidation of strategic and institutional coordination frameworks. This asymmetry between technological and managerial evolution underscores the need for an integrated approach capable of linking digital transformations with governance and strategic coordination mechanisms. To identify areas of thematic concentration, item density and cluster density visualisations were used, emphasising regions with high term frequency and dominant thematic clusters within the network.

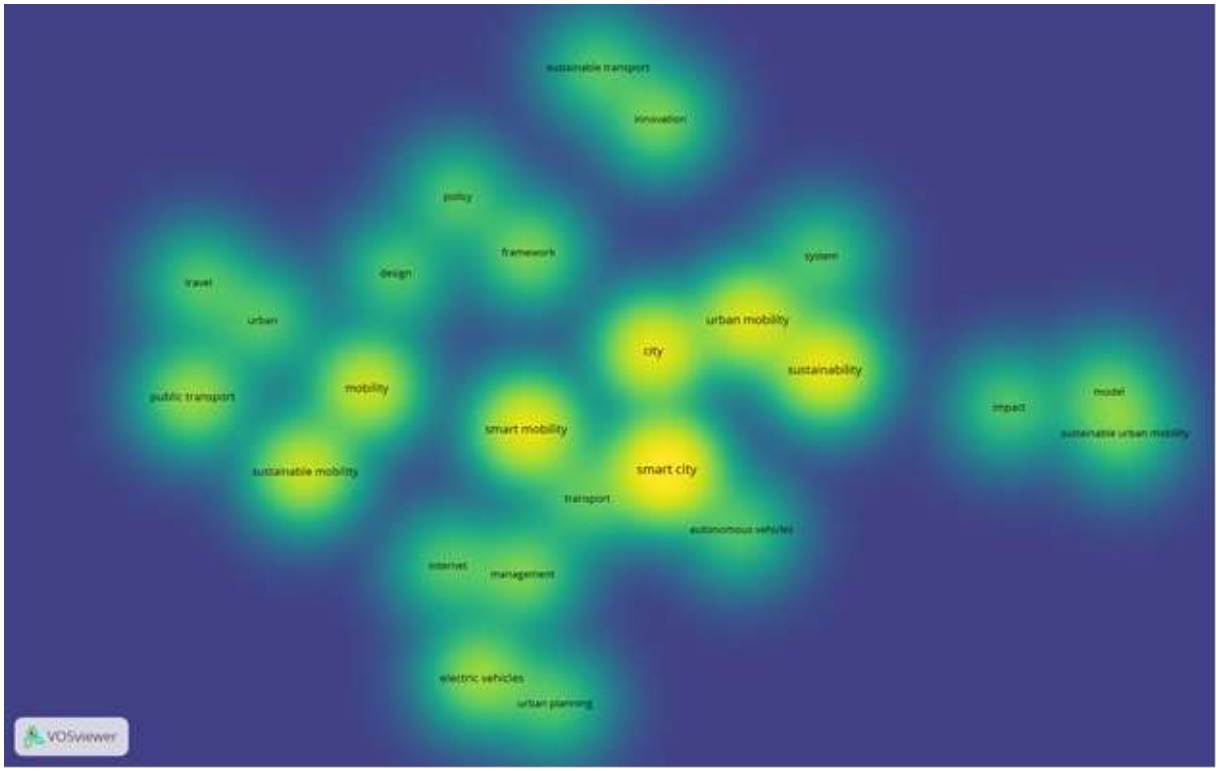

Figure 3. Item density in the network
Source: Result from VOSviewer analysis

The density visualisation generated by VOSviewer highlights the thematic focus of urban mobility research through colour variations reflecting the intensity of term co-occurrence. Areas marked by intense yellow indicate regions with high literature density, while green and blue tones signal themes with lower frequency and connectivity. A major concentration is observed around the terms *smart city*, *sustainability*, and *urban mobility*, which form the conceptual core of the field. This structure suggests that the current literature addresses urban mobility predominantly through the lens of digital transformation and sustainability goals, emphasising the integration of smart technologies into urban ecosystems. Concepts such as *public policy*, *conceptual framework*, *innovation*, and *sustainable transport* appear in the vicinity of this core, indicating the interdependence between technological and institutional dimensions. Conversely, the term "urban management" is positioned in an area of moderate density, without generating its own core of conceptual intensity; this suggests a cross-cutting rather than a dominant managerial perspective. Likewise, concepts such as *electric vehicles*, *urban planning*, or *impact* are located in peripheral areas, reflecting complementary but less central directions. Structurally, the density distribution confirms the research's orientation toward digitalisation and sustainability, while simultaneously underscoring the need to consolidate an integrated managerial approach capable of correlating these dimensions within a coherent strategic framework.

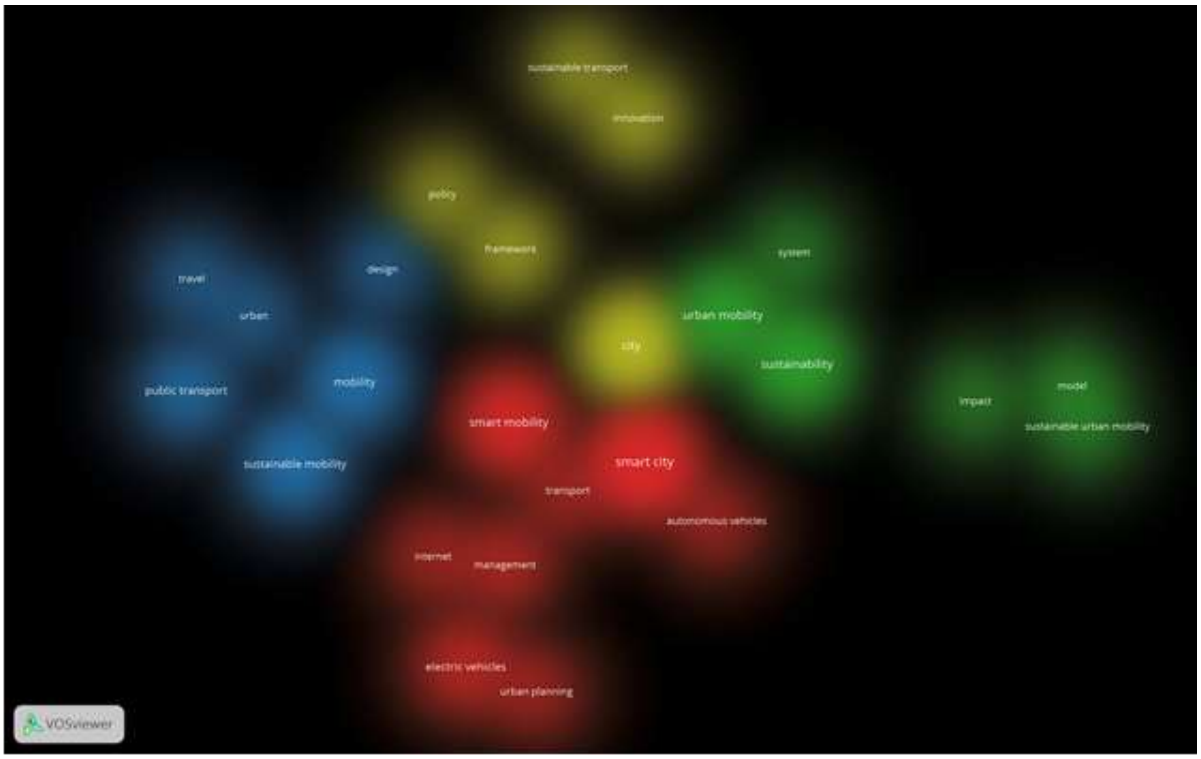

Figure 4. Clusters based on term density
Source: Result from VOSviewer analysis

Cluster density visualisation highlights the distribution and intensity of the major thematic areas within the analysed network. Areas marked by intense shades indicate areas of high scientific interest, characterised by a high frequency of terms and strong interconnections between them, while more diffuse regions correspond to emerging or less developed themes. A significant concentration is observed around the concepts of smart city, sustainability, and urban mobility, which form the core of current research. These themes are supported by related terms such as smart mobility, transport, and the city, suggesting an integrated approach focused on digitalisation, the optimisation of mobility flows, and the reduction of environmental impact. The high density of these concepts indicates an advanced degree of scientific maturity and their consolidation as dominant directions in the specialised literature. At the same time, relevant subfields are emerging in the vicinity of these core concepts, such as public policy, conceptual framework, innovation, and sustainable transport, reflecting the interdependence between the technological and institutional dimensions. The presence of these terms indicates that the development of urban mobility is not analysed exclusively from a technological perspective, but also in relation to regulatory mechanisms and strategic planning.

In contrast, concepts associated with the managerial dimension, such as urban management or management, do not form a distinct cluster and do not constitute an autonomous conceptual core. These are dispersed throughout the network, connected sporadically to terms such as internet or transport, which suggests a more operational than strategic approach to management in the context of urban mobility. Furthermore, certain areas such as electric vehicles, urban planning, or impact are positioned in peripheral zones, indicating their complementary role within the field.

After mapping the overall structure of the co-occurrence network and highlighting the evolutionary dynamics of dominant concepts, the analysis of thematic clusters allows for a deeper understanding of the internal architecture of the field of urban mobility. The clustering

of terms, performed using the modularity optimisation algorithm in VOSviewer, highlights how the scientific literature is organised around distinct conceptual nuclei, defined by the intensity of the relationships between keywords. These clusters are not merely thematic groupings, but reflect relatively autonomous structures of meaning, resulting from theoretical and methodological convergences. They indicate the dominant research directions, conceptual priorities, and recurring association patterns in the analysed literature. At the same time, the analysis of inter-conceptual relationships allows for an assessment of the degree of integration within the field: the extent to which these thematic nuclei communicate with one another or, conversely, evolve in parallel.

The network structure highlights a poly-nuclear organisation of research, in which the digitalisation of mobility, the sustainability of transport systems, urban governance, and the transition to electric mobility constitute major directions of development. The intensity of connections within the clusters, however, contrasts with the relatively weaker relationships between them, suggesting the existence of thematic approaches developed predominantly along parallel lines. This configuration raises a relevant issue from a strategic perspective: although the literature offers substantial analyses of each dimension individually, their integration into a unified conceptual framework remains limited. The managerial dimension, although present across the board in the network, does not emerge as an autonomous core capable of linking technological transformation, sustainability objectives, and urban performance within a coherent strategic framework. In this context, the detailed analysis of each cluster serves a dual purpose: on the one hand, it highlights the thematic specificity and internal coherence of each core; on the other hand, it allows for the identification of the degree of convergence or fragmentation among the dominant directions within the field. This systematic examination forms the foundation for identifying conceptual gaps and for positioning the study in relation to the need to develop an integrated strategic management framework for urban mobility.

The analysis of relational intensity (cluster 1) highlights the fact that the smart city functions as an aggregating node, generating strong connections with terms such as smart mobility, management, and the internet. This network of relationships suggests a clear orientation toward the integration of digital technologies into urban mobility management. The term smart mobility, in turn, exhibits high values in terms of both frequency and intensity, indicating its complementary role in structuring the cluster. Its association with transport and autonomous vehicles reflects the emphasis placed on the development of intelligent and automated transport systems. At the same time, concepts such as electric vehicles and autonomous vehicles highlight the technological dimension of the cluster, suggesting that research is oriented toward innovative solutions for sustainable and automated mobility. The presence of the term urban planning, although with lower values, indicates a connection to the spatial and strategic dimension of urban development. In contrast, the term “management,” although exhibiting a moderate level of connections, does not generate an autonomous conceptual core, being rather integrated into the cluster’s technological logic. This aspect suggests a predominantly operational approach to management, without independent theoretical development within the analysed literature.

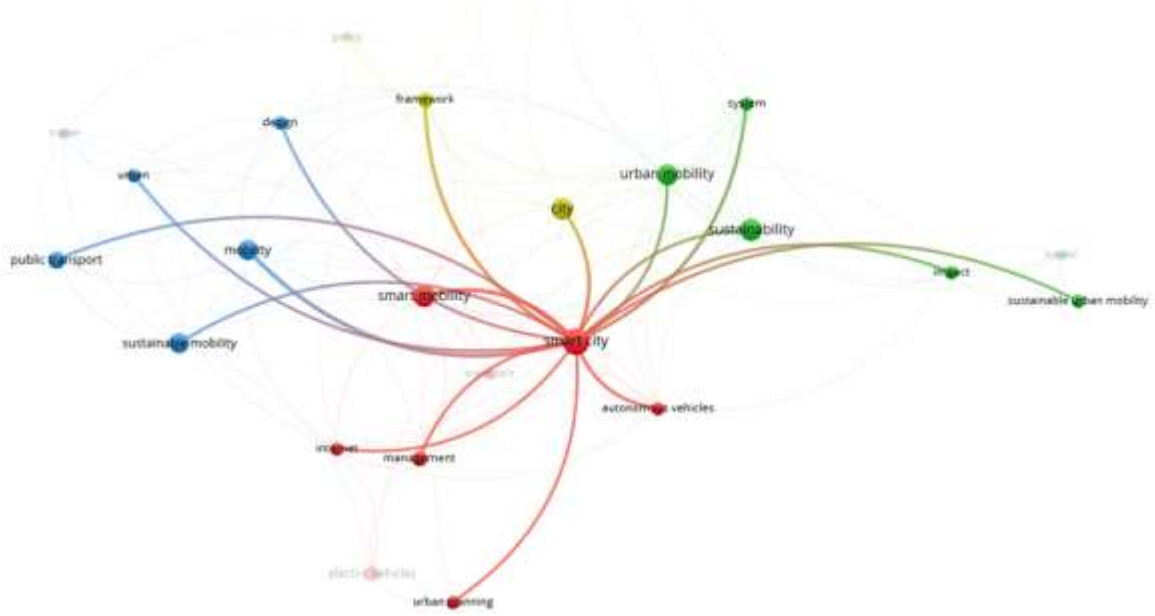

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Figure 5. Cluster 1 (red)
Source: Result from VOSviewer analysis

Overall, Cluster 1 reflects a strongly technology-oriented research focus, in which urban mobility is analysed through the lens of digitisation, automation, and innovation, while the managerial dimension remains subordinate to these processes. The close proximity of terms such as smart mobility, transport, management, and the internet indicates a high level of thematic integration, suggesting the existence of a coherent core oriented toward the digitisation and optimisation of urban mobility systems.

From a structural perspective, the cluster exhibits a high degree of internal coherence. The distribution of connections is relatively balanced, without pronounced polarisations, suggesting the consolidation of a well-defined research direction centred on the integration of digital technologies into urban mobility. Cluster 1 can be interpreted as representing the technological and operational dimension of urban mobility. The emphasis is on interconnectivity, automation, and the use of smart infrastructure to increase the efficiency of transportation systems. Mobility is approached as an integral part of urban digital transformation, being linked to real-time optimisation, monitoring, and management processes. This configuration confirms that the literature associated with the cluster prioritises technological solutions and infrastructure integration, reinforcing the smart city paradigm as the primary framework for analysing urban mobility.

Cluster 2 (Figure 6) highlights a clear orientation toward integrating sustainability principles into the analysis of urban mobility, with an emphasis on systemic, evaluative, and impact-oriented approaches. Unlike the technological cluster, this thematic cluster reflects a more balanced perspective, in which environmental, social, and functional dimensions are articulated within a coherent conceptual framework.

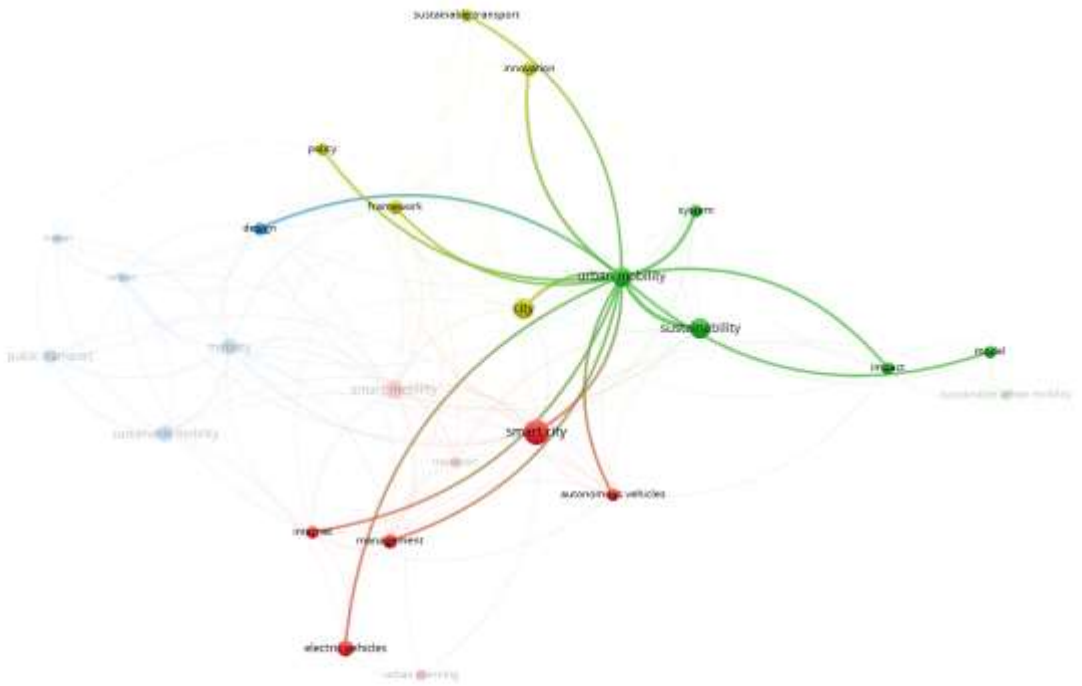

Figure 6. Cluster 2 (green)
Source: Result from VOSviewer analysis

An integrated analysis of quantitative indicators and graphical representations reveals a coherent thematic structure in which the term "urban mobility" occupies a central position. It records the highest values for both the number of links and the total link strength, confirming its role as the dominant structural node within the cluster. This centrality is further supported by its graphical positioning, where "urban mobility" is located at the centre of the green cluster and is directly connected to most of the relevant terms. Thus, the results indicate that urban mobility functions as a converging element of conceptual relationships, articulating the main research directions within this thematic core. The term *sustainability*, although exhibiting a high frequency of occurrence and comparable relational intensity, occupies a slightly peripheral position relative to the central core. Both the indicator values and the network positioning suggest that sustainability functions as a framework concept guiding scientific discourse, without, however, constituting the cluster's primary connectivity node. The term "system" occupies an intermediate position, both in the table and the graphical representation, maintaining connections between the central core and peripheral concepts. It reflects a systemic approach to urban mobility that facilitates the integration of infrastructural, institutional, and functional dimensions.

In the peripheral area of the cluster are concepts such as "model" and "impact," which, although directly connected to the central terms, exhibit lower indicator values. Their positioning indicates an instrumental role, associated with the methodological and evaluative dimensions of research, without influencing the cluster's basic conceptual structure. Furthermore, the term "sustainable urban mobility" appears with low intensity, suggesting that, although the explicit integration of the two concepts exists, it does not yet represent a consolidated core in the analysed literature. Overall, the correlation of quantitative data with the visual representation confirms that Cluster 2 is structured around urban mobility as an operational core, while sustainability functions as a normative paradigm. This configuration highlights a mature

research direction, characterised by the integration of functional, systemic, and evaluative dimensions into a coherent conceptual framework.

The graphical representation of Cluster 3 (blue) confirms the structure highlighted by the numerical analysis and indicates that the term "mobility" occupies the central position of the network. It is located at the centre of the cluster and exhibits the most numerous and intense connections with the other terms, reflecting its role as an aggregating node and an element of conceptual convergence.

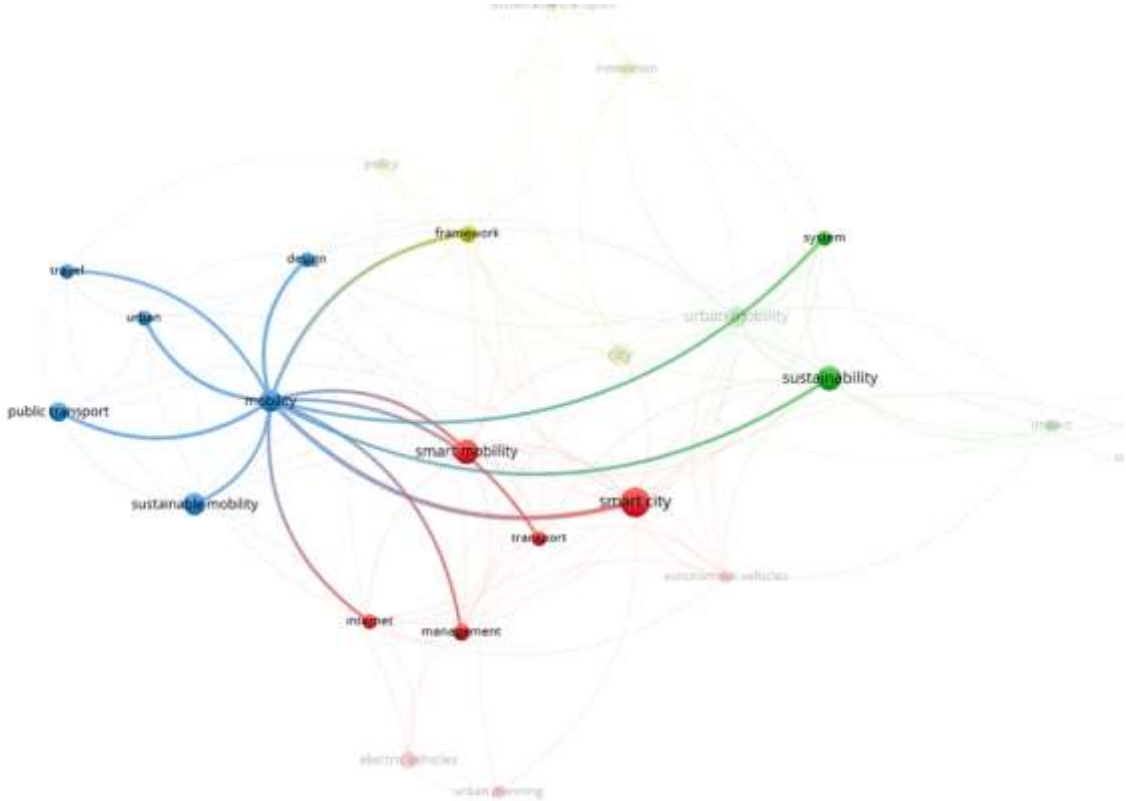

Figure 7. Cluster 3 (blue)
Source: Result from VOSviewer analysis

The immediate proximity of the terms "urban," "public transport," and "travel" to the central core indicates a strong thematic association between mobility and the functional dimensions of transportation systems. These short distances and direct links suggest that the literature analyses mobility in correlation with travel behaviours and public transport infrastructure within an operational framework. The term "sustainable mobility" is positioned near the core but slightly shifted toward the periphery, confirming its secondary role, as also highlighted by the quantitative indicators. This positioning suggests that the sustainability dimension is integrated into the analysis of mobility, but does not constitute the dominant element of this cluster. A relevant aspect is the positioning of the term "design," which appears as a connecting point between the blue cluster and other thematic cores. Its extensive connections and relatively intermediate position indicate its role as a conceptual interface, through which the design dimension contributes to the integration of mobility into broader analytical frameworks. Structurally, the cluster exhibits a relatively coherent organisation, with a clearly defined core and a radial distribution of secondary terms. No distinct subgroups are observed, indicating a relatively homogeneous body of literature centred on conceptualising mobility as a general phenomenon rather than on specialised or strongly differentiated directions.

The configuration of Cluster 4 highlights a pronounced orientation toward the institutional and governance dimensions of urban mobility, in which the city functions as the central unit of analysis, and the associated concepts reflect the instruments and mechanisms through which it is organised and regulated.

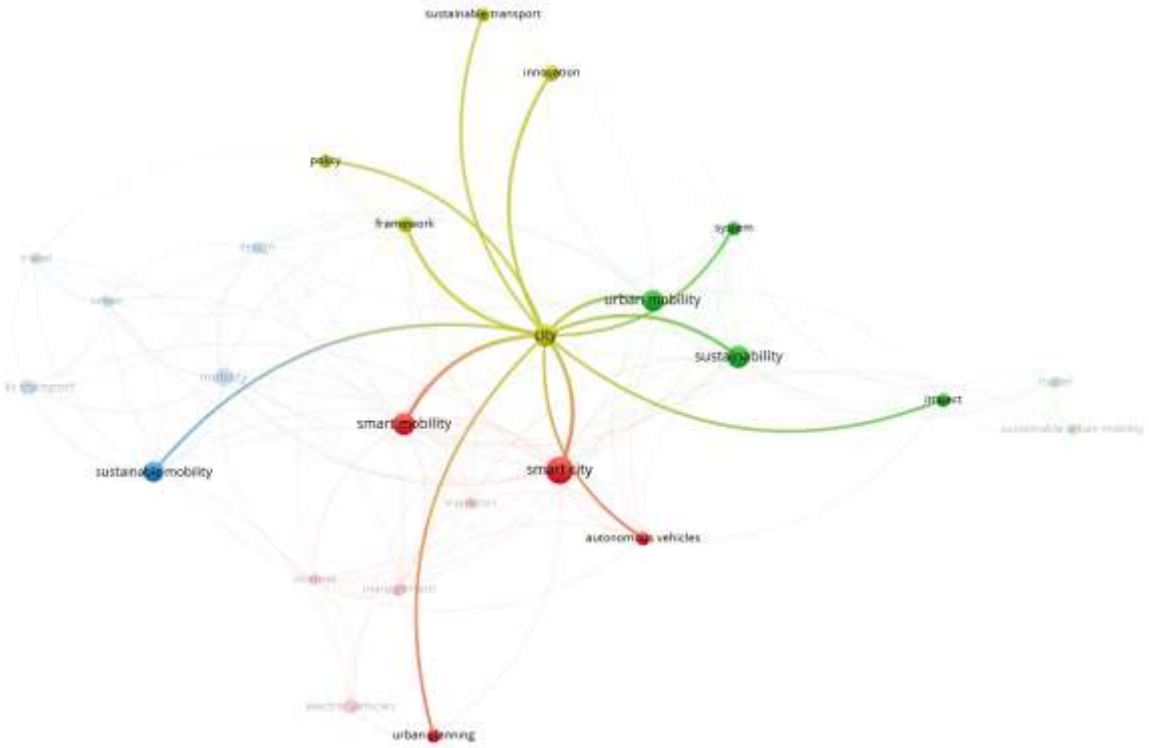

Figure 8. Cluster 4 (yellow)

The visual representation of Cluster 4 (yellow) highlights an organisation clearly centred around the term "city," which occupies a central position in the network and concentrates a high number of connections to other concepts. The node's size and positioning confirm its role as a conceptual convergence point, consistent with the high values of the quantitative indicators. In the immediate vicinity of the central core are the terms "framework" and "policy," connected directly and through substantial links to "city." The short distance between these nodes indicates a frequent association in the analysed literature between urban structure and regulatory and organisational instruments. This configuration suggests that urban mobility is analysed in this cluster through the lens of governance and the institutional framework. The term "innovation" is positioned in an intermediate zone, maintaining connections with both the central core and other clusters. Its placement reflects a bridge between the institutional dimension and urban transformation processes, indicating that innovation is integrated into the logic of adapting and modernising urban structures. The concept of *sustainable transport* appears in a more peripheral position, at a greater distance from the cluster's centre. This positioning suggests partial integration within the thematic framework, being more closely connected to the dimension of sustainability than to the institutional core itself. Thus, sustainable transport is approached as an object of urban policies and strategies, without constituting a central element of the cluster.

5. CONCLUSIONS

The bibliometric analysis conducted on the 3,709 articles indexed in Web of Science for the period 2015–2025 highlights the accelerated consolidation of research on urban mobility, from both quantitative and conceptual perspectives. The dynamics of scientific output and the expansion of the thematic scope indicate the maturation of the field and its integration into an interdisciplinary framework that brings together transportation, sustainability, digitalisation, and urban governance.

The conceptual mapping of the co-occurrence network reveals the existence of distinct thematic clusters corresponding to major research directions: (i) a technological core centred on the *smart city* and *smart mobility*, (ii) a sustainability core organised around *urban mobility* and *sustainability*, (iii) a functional cluster centred on *mobility* and the operational dimensions of transport, and (iv) an institutional cluster structured around the *city*, *public policy*, and the *conceptual framework*. This structure highlights a clear differentiation of the field along major thematic axes, with each cluster characterised by internal coherence and a dominant conceptual core. However, the integrated analysis of network indicators (links and total link strength) and the spatial distribution of nodes indicate a predominantly fragmented development of the field. The identified clusters evolve relatively autonomously, organised around dominant concepts, but without converging toward an integrative framework that explicitly correlates technological, sustainable, and institutional dimensions. Thus, digitalisation, sustainability, and urban governance are consistently addressed, yet their systemic intersection remains insufficiently conceptualised.

In this context, the term "management," although present in the conceptual network, does not generate a distinct cluster and does not occupy a central position in any of the identified thematic nuclei. Connectivity indicators highlight a predominantly operational integration of management, associated with the implementation of technologies or the coordination of processes, without the development of an autonomous strategic framework. The absence of a consolidated managerial core indicates that the literature does not systematically treat management as an integrative mechanism for urban transformations. This configuration reflects an asymmetry between the accelerated dynamics of technological innovation and the level of development of the strategic framework necessary to manage complex urban mobility systems. Although the literature offers robust analytical tools for assessing sustainability and for the integration of smart technologies, the conceptualisation of an integrated managerial architecture capable of correlating operational performance, sustainability objectives, and institutional coordination remains limited. Furthermore, the analysis does not highlight the emergence of a conceptual framework dedicated to the relationship between urban mobility and territorial competitiveness. Although the impact of mobility on urban attractiveness is implicitly recognised, it is not articulated within a coherent strategic model that treats mobility as a determinant of competitive advantage. This gap becomes relevant in the context of intensifying competition among cities for investment, human capital, and technological resources.

The results of the bibliometric analysis indicate the existence of a significant scope for theoretical development at the intersection of strategic management, urban mobility, and territorial competitiveness. The field is characterised by technological maturity and thematic diversification, yet the integration of these dimensions into a coherent conceptual and managerial framework remains insufficiently consolidated. Based on these findings, the study aims to develop an integrated strategic management framework for improving the efficiency of

urban mobility, focused on aligning technological and operational performance with sustainability objectives and the impact on urban competitiveness.

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