Urban Logistics in the 15-Minute City: A Systematic Review and Research Agenda

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Abstract. The 15-minute city has emerged as a dominant urban planning paradigm aimed at enhancing accessibility, sustainability, and liveability through spatial proximity. However, the logistics systems that enable such proximity remain underexplored. This study provides a structured review of the emerging literature at the intersection of urban logistics and the 15-minute city. Through a systematic literature review, the paper examines thematic trends, methodological approaches, key performance indicators (KPIs), and identifies enablers and barriers. The findings show that while interest in logistics within proximity-based urban models is rapidly increasing, the field remains conceptually and methodologically fragmented. Existing research predominantly focuses on environmental sustainability and last-mile solutions. In contrast, operational performance, economic viability, governance complexity, and long-term institutionalization are comparatively underdeveloped. Three major gaps are identified: (i) a conceptual gap, as proximity is measured but logistics systems are insufficiently theorized; (ii) a methodological gap, due to the absence of integrated, multi-dimensional frameworks of KPI; and (iii) a governance gap, with limited integration of logistics transitions within institutional and stakeholder-oriented analytical models. This study proposes a research agenda centered on integrated performance assessment, network design trade-offs, and governance mechanisms that support proximity-based logistics systems.

Keywords: 15-minute city · urban logistics · city logistics.

1 Introduction

According to the latest United Nations World Urbanization Prospects 2025 report, "in 2025, cities were home to 45 percent of the world's 8.2 billion people, more than double the 20 percent share in 1950" [1]. However, the growth of the urban population in recent decades has been accompanied by the phenomenon of urban sprawl [2], characterized by the expansion of suburban areas that has often been poorly regulated and

© The Author(s) 2027
Published by Springer Nature Switzerland AG 2027
G. Pezzotta et al. (Eds.): APMS 2026, IFIP AICT 809, pp. 345–359, 2027.
https://doi.org/10.1007/978-3-032-38602-1_24

inadequately planned [2]. This uncoordinated growth has resulted in limited access to essential urban functions, such as living, working, shopping, healthcare, education, and leisure, in peripheral areas, as well as increased reliance on private cars for commuting and accessing basic services [3]. This dynamic, together with the outbreak of the COVID-19 pandemic, has been instrumental in bringing the debate on cities back to the issue of proximity, fostering renewed recognition of the importance of locating local services close to residential areas. In this context, the concept of "chrono-urbanism" has regained prominence. It affirms that the quality of urban life is inversely related to the time spent on transportation, particularly when it relies on private automobiles [4]. This idea was further developed by Carlos Moreno in his formulation of the "15-minute city," envisioned as an urban model in which all essential services can be reached within a 15-minute walk from home. Within this framework, Moreno advocates for a rethinking of urban spaces as multifunctional, capable of adapting to different times of the day, days of the week, and periods of the year [5].

The 15-minute city model is structured around four core planning principles: (i) achieving an optimal density that balances environmental, economic, and social objectives; (ii) ensuring proximity to essential services; (iii) promoting diversity through mixed land use and socio-cultural variety; and (iv) fostering ubiquity, so that such neighborhoods are widely distributed and accessible across the urban area [4]. Over the past few years, Moreno's essay has generated a substantial body of academic contributions, most of which focus on sustainability, walkability, and mobility [6–8].

Despite the fact that access to retail and provisioning activities represents one of the fundamental urban functions highlighted by Moreno, urban logistics, and more broadly, the role of commercial activities such as HoReCa (Hotel, Restaurant, and Catering sector), supermarkets, and local retail remains underexplored in the literature. To overcome this gap, the primary objective of this research is to provide a structured overview of existing scientific contributions addressing the logistics dimension of the 15-minute city, understood as the supply-side system enabling proximity-based urban models. To guide the analysis, the study addresses the following research question: *"How is urban logistics conceptualized, operationalized, and integrated within the 15-minute city literature, and what solutions, enablers, barriers, and performance dimensions emerge from existing studies?"*

By addressing this question, the paper aims to provide a structured understanding of the current state of the literature and to identify the main gaps limiting the integration of logistics into proximity-based urban models. Beyond its academic contribution, this study also has relevant practical implications. By clarifying how urban logistics is conceptualized and integrated within the 15-minute city framework, the review provides insights for urban planners, policymakers, and logistics operators involved in the design and implementation of proximity-based urban models. The paper is structured as follows. Section 2 provides a brief contextual overview of the 15-minute city. Section 3 describes the research methodology. Section 4 presents the results of the analysis, which are discussed in Sect. 5. Finally, Sect. 6 concludes the paper.

2 Context Analysis

The 15-minute city has evolved from a compelling urban narrative [9] into a structured planning paradigm centered on temporal accessibility. While its core definition, ensuring that essential daily functions can be accessed within a safe 15-minute walk or bike ride, is well known, Moreno's contribution lies less in the temporal threshold itself and more in the reframing of urban sustainability through chrono-urbanism [4], rooting its reflections in a consolidated traditions of studies about the relationships between time and cities [10], shifting attention from mobility performance to lived accessibility. Moreno's model proposes a reorganization of urban systems around four interrelated pillars (e.g., density, proximity, diversity, and ubiquity) intended to enable neighborhood-scale functioning without promoting isolation. The model gained traction in the post-pandemic context, where disruptions exposed vulnerabilities associated with long commuting patterns and centralized economic systems. However, its conceptual appeal does not automatically translate into operational clarity. Subsequent literature has expanded and critically examined the 15-minute city paradigm. On the one hand, proximity-based urban models are strongly associated with environmental and public health benefits. Compact urban form, reduced car dependency, improved air quality, and increased physical activity are often cited as expected outcomes [7]. On the other hand, scholars have cautioned against interpreting the model as a universally valid or purely normative solution. The 15-minute city builds on long-standing planning principles (i.e., mixed-use development, neighborhood units, accessibility planning) rearticulated under a temporal logic. Its transformative potential depends on governance capacity, spatial equity, and institutional coordination rather than on the adoption of a symbolic time threshold alone [8]. Several criticisms of this model have been raised after its unequal application, which continues to exclude peripheries and low-income districts, promotes the quality of life of privileged people, and ignores the conditions of low-density urban areas [11]. Global reviews of 15-minute city practices confirm that implementation is highly heterogeneous [3]. Cities differ in emphasis: some prioritize street reallocation and active mobility infrastructure; others focus on decentralizing services or reforming zoning regulations; still others embed the concept within broader planning instruments such as Sustainable Urban Mobility Plans (SUMPs) [12]. Accessibility indicators, modal share targets, and performance-based metrics are increasingly used to translate proximity principles into planning practice [12]. Yet a consistent asymmetry emerges across these contributions. While passenger mobility and land-use integration receive substantial analytical attention, freight transport and urban logistics remain marginal. The 15-minute city discourse frequently highlights the importance of neighborhood retail, small shops, and the HoReCa sector as anchors of local vitality [3, 4]. However, the logistics systems that sustain such activities are rarely examined in depth.

Studies of pandemic-era economic change show spatial redistribution of business activity and increased neighborhood-level consumption under constrained mobility [13]. At the same time, retail and HoReCa sectors have demonstrated structural fragilities linked to cost structures, regulatory environments, and supply reliability. Moreover, research on shopping behavior indicates that proximity influences purchasing decisions but does not fully determine them; factors such as price, variety, and convenience continue to shape consumer choices [14]. This highlights a critical yet underdeveloped

dimension of the 15-minute city debate: urban logistics. A polycentric urban structure characterized by numerous small-scale retail and hospitality establishments implies specific urban logistics implications. Increased delivery frequency, smaller shipment sizes, intensified competition for curb space, and tighter delivery windows may accompany decentralized service distribution. Measures commonly associated with the 15-minute city (e.g., pedestrianization, traffic calming, low-emission zones) may constrain freight access if they are not supported by coherent curbside management and delivery strategies [3, 12]. Furthermore, the growth of e-commerce and home deliveries introduces additional pressure on last-mile systems. This is further exacerbated in heritage districts characterized by a narrow street network [15]. While proximity-based urbanism aims to reduce unnecessary travel and revitalize local commerce, delivery traffic may increase unless consolidation mechanisms and low-emission solutions are systematically integrated [7] and account for complex morphological constraints [15].

The literature to date largely frames the 15-minute city from a demand-side perspective, focusing on citizens' ability to access services within a short time frame. The supply-side dimension (i.e., inventory cycles, consolidation strategies, vehicle technologies, loading/unloading infrastructure, and spatial allocation for deliveries) remains comparatively under-theorized. Retail and HoReCa activities are often invoked as symbols of neighborhood vibrancy, yet the operational infrastructure that enables their daily functioning is seldom embedded in the model's conceptual core. This represents a structural research gap. Without integrating freight systems into proximity-based planning frameworks, the feasibility and scalability of the 15-minute city remain uncertain. A coherent 15-minute city requires synchronization between land-use redistribution, mobility governance, and logistics configuration. The vitality of neighborhood commerce depends not only on consumer accessibility but also on the efficiency and sustainability of urban logistics activities. The current research is motivated by the need to address this gap, finally aiming to move the 15-minute city from a compelling vision toward a fully operational urban model capable of balancing accessibility, sustainability, and efficient logistics operations.

3 Methodology

The methodology adopted for this paper is a systematic literature review (SLR) focused on identifying and understanding trends and gaps in research on freight logistics in the context of the 15-minute city. From a methodological point of view, adopting a systematic approach ensures replicability and an in-depth assessment of the topic. A review is systematic when it is based on a clear research protocol for searching, selecting and analyzing papers and summarizing the evidence gathered [16]. In this regard, the present study adopted an approach based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement protocol [17], ensuring transparency and reproducibility (Fig. 1).

The first step in the methodological framework was to define a search query using a list of keywords. Scopus, a scientific literature database, was selected as the source

because it is widely recognized as one of the most comprehensive databases of high-quality research products [18]. The string used for the search is as follows: TITLE-ABS-KEY ((“15 minut* cit*” OR “fifteen minut* cit*” OR “15-minute city” OR “fifteen-minute city”) AND (logistic* OR “urban freight*” OR retail* OR shop* OR “parcel locker*” OR “pick-up point*”)). At this stage, no inclusion criteria were applied regarding the time frame, type, and source of the documents or language, making the search as comprehensive as possible. The query retrieved a corpus of 36 papers.

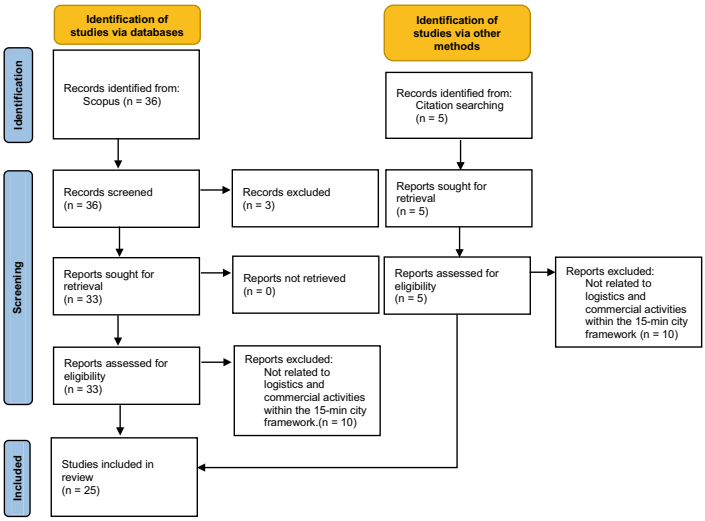


Fig. 1. PRISMA workflow.

In the second stage of the research, the authors independently reviewed the titles and abstracts of the papers. Three papers were eliminated at this stage because they were not relevant to the logistics of goods in the 15-minute city. The second screening phase involved reading the articles in full. Another 10 papers were found to be out of scope because the logistics topic was marginal. These papers, for example, focused on the meaning of proximity and the definition of distance thresholds. Finally, forward and backward snowballing were used to identify additional relevant papers not included in the search query. In the end, the selected corpus consisted of 25 papers. The 25 papers were read and coded to extract information relevant to answering the research question.

4 Results

This section presents the results of the systematic literature review and is structured into three complementary sub-sections. Section 4.1 provides a descriptive analysis of the corpus, highlighting its temporal, geographical, and publication-related characteristics. Sections 4.2 examines the objectives, enablers, and barriers of the 15-minute city, while Sect. 4.3 analyzes case studies and logistics-related practices, with particular attention to the employed methodologies and indicators.

4.1 Corpus Descriptive Analysis

The research topic is relatively recent, as the concept of the 15-minute city was developed by Moreno in 2016 and applied to the city of Paris [4]. The selected papers cover the period from 2021 to 2025, with no restriction on publication year. Furthermore, 52% of the papers in the corpus were published in 2025, indicating a growing, significant interest in logistics within the 15-minute city in recent years.

With regard to publication outlets, the corpus consists mainly of journal papers (76%), followed by conference papers (16%), reports (4%) and book chapters (4%). The distribution of outlets in the corpus shows a strong concentration in interdisciplinary journals related to urban studies and mobility. In particular, some publishers appear more frequently, such as *Cities*, *Journal of Transport Geography* and *Transportation Research Procedia*, indicating that the scientific debate on the subject lies mainly at the intersection between urban planning and transport studies. Other contributions are published in urban studies and sustainability journals, including *Urban Studies*, *Urban Sci*ence and *Sustainability*, confirming the interdisciplinary nature of the field. Overall, the variety of outlets reflects the convergence between urban studies, mobility and smart city research.

The geographical distribution of the publications highlights a predominantly European network, with a core in Spain, contributing 16% of the corpus, followed by Italy (12%), Germany (8%), and France (8%). Other European countries contributing to the corpus with one paper each are Poland, Sweden, Greece, Finland, Ireland and Cyprus. Outside Europe, contributions come from Canada and Egypt (12%), with Australia, the United States, New Zealand and Colombia each contributing one publication. Consequently, the 15-minute city model is attracting interest worldwide, but its core (68%) is in Europe.

4.2 Objectives, Enablers, and Barriers in the Transition to the 15-Minute City

The objectives of the analyzed papers are manifold. First, it should be noted that most papers focus on the 15-minute city from a comprehensive and general point of view; none consider only the logistics practices as the main goal, even if each paper refers to commercial and HoReCa activities. Among the stated goals, we can first and foremost find the mapping of practices implemented to promote the 15-minute city [19], as well as some discussion of challenges that may limit the successful adoption and implementation of the 15-minute city [12, 19, 20]. Many articles then focus on quantitatively assessing the readiness of the 15-minute city implementation in cities used as case studies [21–24]. Among these are specific examples that analyze readiness for the adoption of the 15-minute city in small municipalities [25], historic cities with small, intricate streets [15, 26] and cities in developing areas [26]. These perspectives can help in assessing whether the 15-minute city framework is also valid and valuable in non-traditional cities with peculiar characteristics. Linked to the assessment of readiness, some examples focus on promoting the sustainability of this approach, ensuring not only its successful implementation but also its long-term benefits [15, 27].

Another recurring objective is to assess the accessibility of points of interest (POIs) to support the 15-minute city. In fact, for successful implementation, it is necessary

that key services (e.g., schools, retail, parks, work, and healthcare) are accessible to all citizens within 15 min. Consequently, assessing the feasibility of the 15-minute city must start with evaluating the accessibility of these POIs [28–30]. In this regard, the corpus provides various indices for carrying out this assessment objectively. These are described in more detail in Sect. 4.3 below. In addition to quantitative assessment, other papers aim to improve accessibility through solutions and policies, including Mobility-as-a-Feature, which integrates a variety of mobility options into a single app [27] and mixed-use zoning, which concentrates different types of services in the same area [20]. In addition to assessing and improving the accessibility of POIs, a complementary strategy to promote the development of the 15-minute city is to enhance active transport, which is one of the other objectives of the papers [14, 21, 31]. Active transport refers to walking or cycling. Among these, one paper in particular assesses the impact of open markets converted from transport spaces (e.g., roads, plazas, parking) on promoting active transport [32]. Others demonstrate that increasing retail options increases active transport [14]. However, not everyone can move around easily. For example, older people are subject to physical constraints that limit their independence of movement. People with certain medical conditions may be more prone to fatigue. In addition, people living in suburban areas may have greater difficulty in adopting active transport due to a lack of infrastructure, such as walkable areas and public transport, safety concerns, or longer travel distances. For this reason, some papers aim to assess the inclusiveness of the proposed solutions, verifying that all citizens are in a position to reap the benefits of the 15-minute city and checking whether the adoption of this framework could lead to exclusion and segregation due to increased house prices in well-served areas [25, 33–35]. Finally, the last objective mentioned in the papers is to improve resilience guaranteed by proximity to POIs. Having all basic services nearby allows for the development of urban areas that are more responsive to customer needs and, in cases of adverse events such as the COVID-19 pandemic, reduces crowds and risks for citizens [13, 19]. Overall, these contributions predominantly adopt a demand-side perspective, focusing on individuals' ability to access essential services within a 15-minute time threshold, and emphasizing accessibility, active transport, and inclusiveness as key dimensions of the 15-minute city.

A complementary, yet comparatively underexplored, perspective concerns the supply-side dimension, namely the urban logistics systems required to enable such accessibility conditions. From this perspective, the literature identifies a set of enablers and barriers that influence not only the feasibility of the 15-minute city but also the configuration and performance of underlying logistics systems. These are summarized in Fig. 2. The most common enablers are: proximity, allowing residents to meet daily needs within walking distance of their homes, minimizing the need for long commutes and reliance on private cars [14, 20, 30, 36]; diversity through mixed-use zoning [31], and activities density [36]. In addition, there is digitalization [25, 31], support from public regulation [27, 35], walkability and cyclability [20, 31]. Furthermore, other cited enablers are the availability of public transport [34], of geospatial data [22] and of infrastructure [35]. Others are equity and safety [20], and transformative resilience perspective [32]. The barriers most commonly mentioned as elements that can hinder the proper implementation of the 15-minute city are financial constraints, which limit the possibility of adopting practices and innovations that enable the achievement of the 15-minute city [20, 22, 26].

Another prominent barrier is represented by socio-demographic inequalities associated in particular with the rapid aging [33, 35]. Then, other barriers are traffic congestion [26], urban sprawl [23], spatial segregation [34], and gentrification leading to an increase in property prices and rents, often causing the displacement of long-standing residents and the loss of the neighborhood's cultural identity [22]. Other less cited barriers and enablers are represented in Fig. 2.

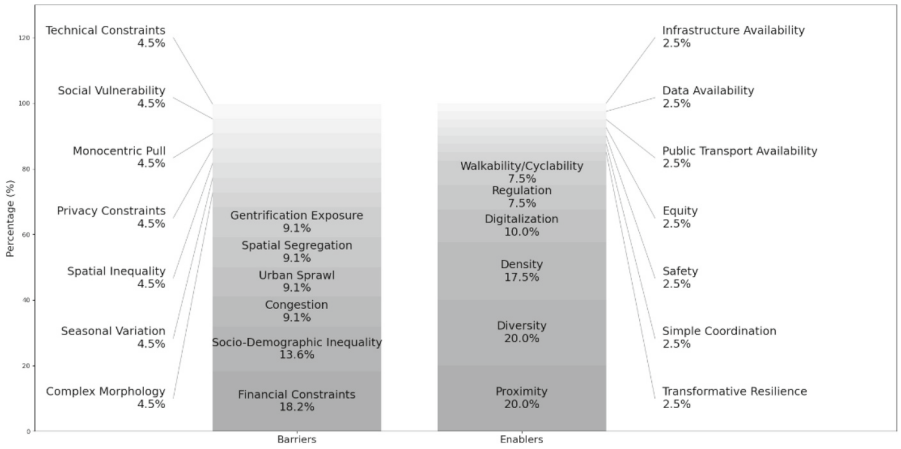


Fig. 2. Enablers and barriers identified in the literature. Percentages refer to the frequency of occurrence of each element within the reviewed corpus (i.e., the proportion of papers in which each enabler or barrier is mentioned), rather than to relative weights within categories.

While the literature provides extensive insights into accessibility and mobility-related dimensions, logistics-related aspects remain less systematically addressed. This gap is further explored in the following section.

4.3 Logistic Case Studies Within the 15-Minute City

In contrast to the extensive focus on people's accessibility and mobility discussed in the previous section, logistics within the 15-minute city is often addressed only indirectly, typically through retail and HoReCa activities as points of interest (POIs), while explicit modeling of freight flows and logistics operations remains limited across the corpus. In more detail, the analysis of the papers shows that 92% of the selected corpus comprises case studies based on real cities. Of these, 12% analyze solutions applied in more than one city. The cities used as a case study spanned multiple continents, sizes, and socio-economic contexts. European cities such as Paris [32], Valencia [15], Barcelona [33], Bologna [28], and Turin [22] are the most frequent and are included alongside North American cities like Chicago [13] and Seattle [14], as well as cities in Asia and the Middle East, such as Seoul [20] and Cairo [26]. The selection also features smaller municipalities or less traditional urban settings, including Limassol (CY) [23], Koszalin (PL) [30], and various locations in Sweden [25] and the Netherlands [4]. This diversity in study areas allows for a broad assessment of the 15-minute city framework, testing

its applicability not only in dense, historic, or well-planned urban centers but also in emerging, sprawling, or geographically unique cities. Such a wide range of contexts helps identify both common challenges and context-specific solutions, providing insights into factors such as accessibility, active transport potential, inclusivity, and resilience. In these cities, several types of solutions are being investigated to promote the 15-minute city. Some examples include reforms to support the revitalization of urban areas [23], improving walkability and cyclability through appropriate solutions and infrastructure [23, 26] such as bike sharing [20], strengthening and incentivizing public transport [26] with solutions such as mobility as a service [20], and reducing dependence on cars [31]. Municipal-level efforts should focus on ensuring a mix of housing tenures and, critically, preventing the privatization of more affordable, municipally owned rental properties in 15-minute neighborhoods [25]. Community engagement [26] is important for understanding the varied preferences of urban residents in shaping policies and planning for sustainable cities [35, 37]. Some initiatives involve digital solutions to promote the integration of services [22, 27].

On the other hand, logistic practices are often overlooked. Creating viable environments for local enterprises to thrive and curbing the ever-increasing mileage of delivery vehicles is vital for realizing the 15-minute city objectives. However, few cities that pursue 15-minute city practices related to urban logistics. Business owners expressed cautious optimism about the increased foot traffic that revitalization might bring. However, they also voiced concerns about access for deliveries and customers who rely on private vehicles [19]. Researchers emphasized the need for inclusive planning that incorporates the voices of small business owners operating in historically significant locations [26]. This scarcity does not imply a lack of solutions to address these challenges. In the city of Hamburg, all deliveries within the neighborhood are to be made by cargo bikes or via underground tunnels in designated loading zones. An ethical deliveries cooperative is active in Bologna through a co-design process with merchants, delivery people, trade associations, entrepreneurs, and researchers to guarantee fair salaries for riders, minimize the environmental impact, and establish a more direct relationship with small traders. In Wien, a delivery business, a delivery company, or a private person can drop off, collect, or store parcels in boxes operating 24/7. As a result, business-to-business and customer-to-customer deliveries are simplified, contributing to climate mitigation, customer satisfaction and reduced costs for businesses [19]. A spatial decision support system was also tested to position logistics platforms in vacant commercial units [15]. Finally, the implementation of temporary air markets to promote retail POI accessibility and active transport for shopping was tested in Paris [32]. These instances exemplify innovative approaches to addressing economic and logistical hurdles, yet underscore the necessity for continued experimentation and advancement in this domain [19].

To study the effects of the solutions described above for implementing and promoting the 15-minute city from a logistical point of view, various methodologies are used in the corpus' papers. 52% of the papers use geospatial data analysis, mainly to monitor POI accessibility [15, 20, 23, 30, 33]. 28% use surveys to gather information from relevant stakeholders such as policymakers, citizens, and actors involved in retail or transport activities [14, 36, 37]. These surveys are used to gather input for analyses or to evaluate the effectiveness of the proposed solutions. 16% of the studies are based on scientific or

grey literature [12, 27]. 12% are based on case studies analyzing cities adhering in the 15-minute city framework [29, 34]. 8% are based on other types of data analysis, such as structural equation modeling [32] or cluster analysis [37]. Other methodologies used include discrete choice modeling [14], field observation [26], interviews [26], analytic hierarchical processing [37], scenario analysis [35] and optimization [28]. Each methodology in this group is used by 4% of the corpus. Each article may use more than one methodology. In many cases, these methodologies rely on quantitative data and, in some cases, propose key performance indicators to objectively assess the impacts of the 15-minute city. 68% use at least one indicator. Among these, the most common indicators (36% of the corpus) measure POI accessibility. Some examples are the service accessibility index [30], the partial accessibility quality index and the overall accessibility quality index [33], the composite 15-minute accessibility index [20], and the percentage of trips under 15 min [21]. Coverage indicators that measure the demand for services covered [15, 23, 29] are also common (12%). 8% of the corpus uses indices that measure walkability [21, 36]. Other indices measure the income ratio within the 15-minute neighborhood [25], the reduction of greenhouse gases [27], spatial homogeneity [15], the urban sprawl index [23] and the amenity diversity index [28].

5 Discussion

The findings of this review confirm that the intersection between the 15-minute city paradigm and urban logistics represents a rapidly consolidating but still theoretically immature research domain. While the notion of proximity has been extensively operationalized in urban planning through accessibility indices, land-use mix indicators, and spatial coverage measures, the logistics systems that materially enable such proximity remain under-conceptualized. Logistics appears in much of the analyzed corpus as an enabling infrastructure or as a downstream operational layer, rather than as a structural design variable embedded in the architecture of proximity-based urban models. In this respect, the findings of this study contribute to answering the research question by showing that, while the 15-minute city literature increasingly acknowledges the relevance of urban logistics, it remains only partially conceptualized, operationalized, and integrated within proximity-based urban models. This tendency is also visible in the case studies reported in Sect. 4.3, where logistic practices are not explicitly modeled as freight distribution systems [19, 20, 26]. Moreover, the solutions identified in the literature frequently address specific operational components of urban logistics, such as last-mile delivery modes, parcel collection infrastructure, or micro-distribution facilities, without considering the configuration of the entire urban supply chain (e.g., microhubs and parcel lockers [15, 19]). These considerations underscore the necessity of continued experimentation and advancement to seamlessly integrate logistics systems within the 15-minute city paradigm.

From a theoretical point of view, the results suggest that the 15-minute city should be reframed not only as a spatial-planning paradigm but as a logistics design challenge. Proximity is not merely an urban-morphological outcome: it is the emergent property of supply chain configurations that can reposition inventory, redesign distribution nodes, and reorganize last-mile flows from regional to neighborhood scale. Several

cases in the literature (such as the positioning of logistics platforms in vacant commercial units [15], the parcel locker system in Wien [19]) demonstrate different approaches to reorganizing last-mile logistics in proximity-oriented urban environments. This shift in perspective calls for a stronger integration between urban planning theory and supply chain management frameworks. The literature currently exhibits three conceptual limitations. First, there is a prevailing normative orientation: many contributions assume that decentralized logistics solutions (e.g., microhubs, cargo bikes, local consolidation points) inherently support sustainability and liveability objectives, but limited attention is paid to systemic trade-offs: economies of scale, cost-efficiency erosion, land competition, and coordination complexity are often acknowledged but rarely modeled rigorously. Second, performance assessment remains fragmented. Environmental KPIs, particularly emissions reduction, are dominant, while operational metrics such as service reliability, scalability, cost structures, and resilience are inconsistently incorporated. The absence of integrated, multidimensional evaluation frameworks hinders the development of cumulative knowledge. Third, governance is frequently described as a contextual barrier or enabler, yet insufficiently theorized within institutional, stakeholder, or transition frameworks and theories. This gap is particularly evident in studies highlighting the role of local business, citizens and policymakers in shaping logistic solutions [19, 26, 35]. Given that proximity-based logistics requires spatial reallocation and regulatory intervention, governance should be treated as a central explanatory variable rather than an enabling condition. From this perspective, stakeholder theory provides a useful lens to interpret the coordination challenges emerging in proximity-based logistics systems, where the interests of retailers, logistics operators, municipalities, and residents must be balanced within limited urban space [38]. At the same time, institutional theory can help explain how regulatory frameworks, zoning rules, and public policy interventions shape the feasibility and adoption of decentralized logistics solutions [39]. Collectively, these gaps indicate that the field is still in an exploratory phase, characterized by case-driven experimentation and spatial modeling dominance, but lacking theory-building efforts that connect proximity objectives to supply chain configuration theory, network design models, and institutional change perspectives.

From a managerial perspective, the findings highlight that implementing logistics systems compatible with the 15-minute city requires more than adopting innovative last-mile technologies. The evidence suggests that technological solutions (i.e., electric cargo bikes, digital platforms, or micro-consolidation centers) are necessary but not sufficient conditions for successful implementation. The critical determinants of success lie in governance alignment, stakeholder coordination, and long-term economic sustainability.

For urban policymakers, the results underscore the importance of integrating logistics explicitly into urban master planning, zoning regulations, and public space allocation. Proximity objectives cannot be achieved without reserving physical space for consolidation nodes, curb management systems, and loading/unloading areas. Moreover, municipalities must balance environmental ambitions with financial viability, avoiding pilot-based approaches that lack scalable business models.

For logistics service providers and retailers, the transition toward proximity-based distribution models implies a reconfiguration of network design decisions, including inventory positioning, service frequency, vehicle fleet composition, and collaboration mechanisms. Decentralized micro-fulfillment and neighborhood-based distribution can enhance service responsiveness and reduce externalities, but they also increase coordination costs and require advanced demand forecasting and digital integration capabilities.

Finally, the managerial evidence suggests that proximity-oriented logistics should be evaluated through comprehensive performance dashboards rather than single-dimension sustainability metrics. Decision-makers need integrated assessment tools capable of capturing environmental gains alongside cost implications, service levels, spatial efficiency, and system resilience. Without such integrated evaluation frameworks, there is a risk that proximity-based initiatives remain politically attractive but operationally fragile.

6 Conclusion

This study offers a structured review of the emerging literature on logistics within the 15-minute city paradigm. Although academic interest is rapidly increasing, logistics remains only partially integrated into proximity-based urban models. Existing research predominantly emphasizes environmental sustainability and last-mile solutions, while operational performance, governance complexity, and long-term institutionalization receive comparatively limited attention.

In light of the present research, three main gaps emerge. Conceptually, proximity is widely measured, yet the logistics systems that enable it are insufficiently theorized. Methodologically, the lack of integrated KPI frameworks constrains comprehensive performance evaluation. From a governance perspective, barriers and enablers are acknowledged but rarely embedded within robust institutional or stakeholder-based analytical models. Future research should develop multi-dimensional performance frameworks that integrate environmental, operational, economic, and resilience indicators; expand comparative analyses to strengthen generalizability; and examine governance mechanisms that support scalable and financially sustainable solutions. More broadly, proximity should be conceptualized as a constraint within urban supply chain network design, explicitly addressing trade-offs between decentralization and efficiency.

Overall, the 15-minute city represents a significant research and managerial agenda for logistics and supply chain management. Its consolidation, however, requires moving beyond descriptive and normative approaches toward theoretically grounded, performance-oriented, and governance-aware models of urban supply chain reconfiguration.

Acknowledgments. The research leading to this publication has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101238585.

The authors have no competing interests to declare that are relevant to the content of this article.

Disclosure of Interests. The authors have no competing interests to declare that are relevant to the content of this article.

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