The Bazaars of Jalandhar

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CHAPTER 1 – THE BAZARS OF JALANDHAR

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Abstract

This chapter explores the role and significance of informal bazaars within the urban context of Jalandhar, with a specific focus on the Jyoti Chowk area. Informal sector activities, including street vending and small-scale trading, form a crucial part of the city's economic and social structure by providing employment opportunities and ensuring access to affordable goods and services. The study examines how these informal bazaars are spatially distributed along high-footfall commercial corridors and their interaction with formal land use, circulation networks, and public spaces. Through a combination of field observations, mapping, and analysis, the chapter highlights the contribution of informal vendors to urban vitality, accessibility, and inclusivity. At the same time, it identifies key challenges such

as congestion, lack of designated vending spaces, infrastructure deficiencies, and conflicts between formal and informal systems. The limitations of current planning approaches and gaps in policy implementation, particularly in the context of vendor regulation, are also discussed. The chapter emphasizes that informal bazaars should not be viewed as temporary or disruptive elements but as integral components of the urban system. It advocates for a shift towards inclusive and context-sensitive planning strategies that recognize informal vendors as legitimate stakeholders. By addressing spatial, social, and economic dimensions, the study aims to provide a foundation for developing interventions that balance mobility, functionality, and livelihood protection.

Overall, the chapter contributes to a deeper understanding of informal urbanism and highlights the need for integrating informal sectors into formal planning frameworks to achieve sustainable and equitable urban development.

1. Introduction

Informal bazaars form an integral and indispensable component of urban economies in developing countries like India.

These bazaars are not merely spaces of economic exchange but are deeply embedded within the social, cultural, and spatial fabric of cities. Operating outside formal regulatory frameworks, the informal sector encompasses a wide range of activities including street vending, hawking, small-scale retail, and service provision. It provides employment opportunities to a large segment of the urban population, particularly migrants, low-income groups, and those lacking access to formal job markets. In this way, the informal sector acts as a critical support system, ensuring economic survival and social inclusion within rapidly growing urban environments.

Beyond their economic role, informal bazaars contribute significantly to the vibrancy and functionality of urban spaces. They enhance accessibility to affordable goods and services, especially for middle- and lower-income populations, thereby supporting everyday urban life. These markets often emerge in strategic locations such as transport nodes, commercial corridors, and high pedestrian movement areas, where they benefit from visibility and footfall. Their flexible and adaptive nature allows them to respond quickly to changing

consumer demands, seasonal variations, and spatial constraints.

In cities like Jalandhar, informal bazaars located in high-footfall areas such as Jyoti Chowk play a vital role in sustaining livelihoods while simultaneously complementing formal economic systems. They create a dynamic interface between formal and informal activities, where coexistence and interdependence are clearly visible. However, despite their importance, these bazaars often remain under-recognized in planning processes. Understanding their role and integrating them into urban planning frameworks is therefore essential for achieving inclusive, equitable, and sustainable urban development.

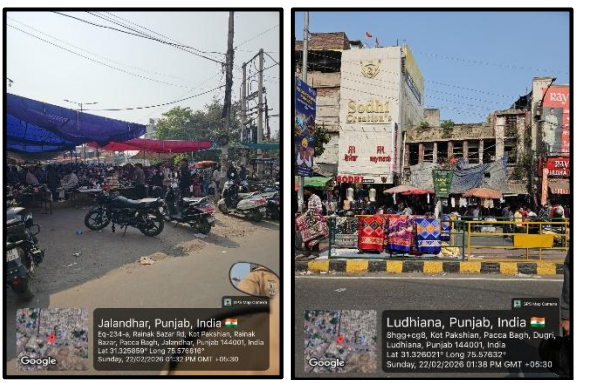


Figure 1.1 Informal Market

Source:- Primary survey,2026

2. Study Area

The study area for this studio focuses on selected wards within Jalandhar city, Punjab, with a detailed examination of informal sector activities concentrated around Jyoti Chowk and its surrounding commercial corridors. Jalandhar, one of the major urban centers in Punjab, is characterized by a mix of traditional markets, emerging commercial zones, and dense mixed-use neighbourhoods. The city serves as an important economic hub, with activities ranging from small-scale manufacturing to retail and service-based enterprises. Jyoti Chowk functions as a prominent commercial node within the city, marked by high pedestrian and vehicular movement throughout the day. Its strategic location, connectivity to major roads, and proximity to retail establishments make it a hotspot for informal economic activities. The presence of street vendors, hawkers, and temporary stalls is particularly visible along major streets, intersections, and near transport access points. These activities are closely linked to daily commuter flows and consumer demand patterns, making the area a dynamic urban marketplace.

The study area includes not only the core junction of Jyoti Chowk but also its adjoining streets, secondary roads, and nearby mixed-

use neighbourhoods where informal activities spill over. These areas exhibit a strong interaction between formal shops and informal vendors, often competing for limited public space such as footpaths and road edges. The lack of designated vending zones has resulted in shared usage of circulation spaces, leading to congestion, pedestrian conflicts, and safety concerns. From a spatial perspective, the area is characterized by high density, narrow road widths, inadequate pedestrian infrastructure, and mixed land use patterns. Informal activities tend to cluster in areas with maximum visibility and footfall, such as near commercial frontages, transit stops, and street intersections. Seasonal variations and time-based patterns also influence the intensity and distribution of vending activities.

This study area has been selected to understand the nature of informal sector operations, their spatial distribution, socio-economic characteristics, and their interaction with formal urban systems. The insights derived from this analysis will help in formulating context-specific planning strategies aimed at integrating informal bazaars into the urban framework while

ensuring improved mobility, safety, and livelihood protection.

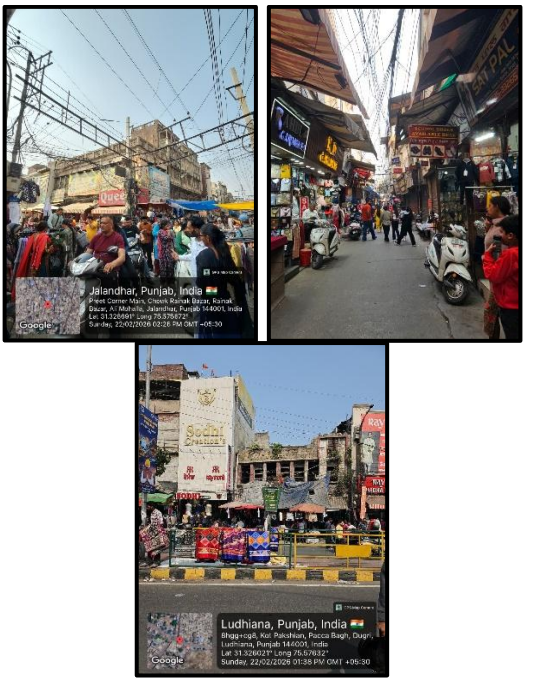
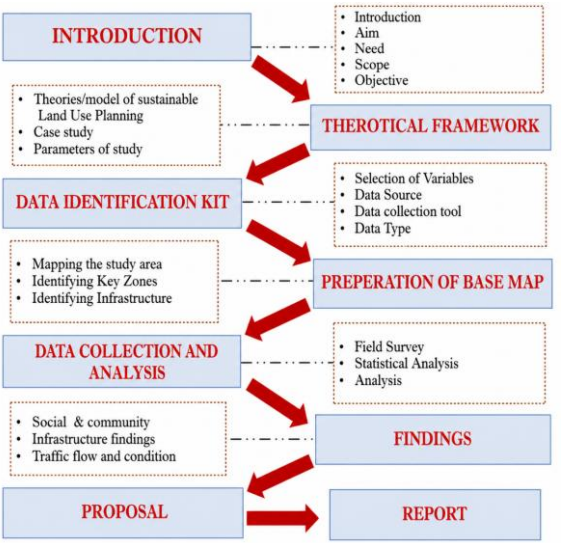


Figure 1.2 Bazars of Jalandhar
Source:- Primary Survey, 2026

3. Methodology

This study adopts a mixed-method approach to understand the informal sector. Primary data was collected through field surveys, observations, stakeholder interactions, and photographic documentation. Mapping of vending locations and activity zones helped

identify spatial patterns and usage trends. Movement of pedestrians and vehicles was analysed to understand circulation and conflicts. Secondary data from plans, policies (Street Vendors Act, 2014), and literature supported the study. The combined analysis helped identify key issues and develop practical and inclusive planning strategies.



4. Role of Informal Sector in Indian Cities

The informal sector constitutes a substantial share of urban employment in India and plays a critical role in shaping the economic and social structure of cities. It acts as a vital safety net for economically weaker sections, migrant populations, and those excluded

from formal employment systems. In rapidly urbanizing cities, where formal job creation often fails to keep pace with population growth, the informal sector absorbs a significant portion of the workforce. It ensures access to livelihood opportunities while simultaneously providing affordable goods and services, thereby supporting inclusive urban development.

From a planning perspective, the informal sector is not an isolated component but an integrated part of the urban system, interacting closely with land use, mobility, and public spaces. Its contributions can be understood through the following aspects:

- Employment Generation: The sector provides large-scale employment opportunities, particularly for unskilled and semi-skilled labour. It reduces urban poverty and dependency by enabling self-employment and micro-entrepreneurship.
- Economic Flexibility: Informal activities are highly adaptable and responsive to changing market demands, seasonal variations, and spatial conditions. This flexibility allows cities to maintain economic resilience during fluctuations.

- Urban Service Delivery: Informal vendors play a key role in delivering everyday services at the neighbourhood level. They provide convenient, low-cost access to food, household goods, and essential services, especially in areas where formal retail is limited.
- Support to Formal Economy**:** The informal sector maintains strong linkages with the formal economy through supply chains, wholesale markets, and production networks. This interdependence strengthens the overall urban economic system.

Spatially, informal activities tend to cluster in high-density commercial areas, transport nodes, and pedestrian corridors, where visibility and accessibility are high. This reinforces their importance in shaping street life, influencing movement patterns, and contributing to urban vibrancy. However, their concentration in such areas also leads to conflicts over space usage, highlighting the need for inclusive and well-integrated planning approaches.

5. Importance of Bazaars in Urban Life

Informal bazaars play a multifaceted role in urban environments, extending far beyond their function as spaces of economic

exchange. They act as vibrant public realms where social, cultural, and economic activities intersect, contributing significantly to the character and identity of cities. In the Indian urban context, bazaars have historically been central to everyday life, fostering interaction, diversity, and accessibility. Informal bazaars, in particular, enhance inclusivity by catering to a wide range of socio-economic groups, ensuring that urban spaces remain active, engaging, and people-oriented.

From a planning perspective, informal bazaars contribute to the liveliness and functionality of cities in the following ways:

- Accessibility: Informal bazaars are strategically located along streets, junctions, and transit nodes, making goods and services easily accessible to pedestrians and commuters. Their proximity reduces travel time and enhances convenience.
- Affordability: They provide low-cost goods and services, making daily necessities accessible to economically weaker sections. This affordability supports inclusive consumption patterns within the city.
- Social Interaction: These spaces function as informal community hubs where

people interact, socialize, and build relationships beyond mere transactions. They strengthen the social fabric of urban neighbourhoods.

- Urban Vitality: Informal bazaars increase street activity and footfall, contributing to safer and more vibrant public spaces. The presence of vendors and people creates "eyes on the street," enhancing natural surveillance.
- Adaptive Use of Space: They efficiently utilize leftover, transitional, or underused urban spaces such as sidewalks, edges, and open areas, demonstrating flexibility and spatial adaptability.

In areas characterized by high pedestrian movement, such as commercial corridors and market streets, informal bazaars often emerge as extensions of the urban public realm. They blur the boundaries between formal and informal spaces, contributing to both economic dynamism and social sustainability. Recognizing their importance is essential for creating inclusive, lively, and human-centric urban environments.

6. Challenges of Formalisation

Despite their importance in sustaining livelihoods and supporting the local economy, informal bazaars in Jalandhar—particularly around Jyoti Chowk and adjoining

commercial streets face significant challenges within the formal urban planning framework. The area is characterized by high pedestrian movement, mixed land use, and intense commercial activity, making it a prime location for informal vendors. However, planning and management approaches in the city often prioritize traffic flow, road widening, and visual order, leading to conflicts with informal sector operations.

In the context of this study area, the challenges of formalisation can be understood as follows:

- Lack of Recognition: Informal vending activities in Jyoti Chowk are not clearly integrated into local planning documents or zoning regulations. The absence of designated vending zones leads to unorganized and scattered occupation of footpaths and road edges.
- Eviction and Displacement: Vendors frequently face removal drives, especially during traffic management operations or special city initiatives. This creates uncertainty and disrupts their daily income and livelihood stability.
- Conflict with Formal Sector: Shop owners in the area often perceive street vendors as competitors for customers and space. This results in frequent disputes

over encroachment and accessibility in front of formal shops.

- Infrastructure Deficiencies: The study area lacks basic facilities such as organized vending spaces, waste disposal systems, and storage areas. This not only affects vendors' working conditions but also contributes to congestion and sanitation issues.
- Regulatory and Management Issues: Although policies like the Street Vendors Act, 2014 exist, their implementation at the local level remains limited. There is a lack of proper vendor registration, identification of vending zones, and institutional coordination.

In Jyoti Chowk, formalisation efforts often focus on removal rather than integration, ignoring the spatial logic and demand-driven nature of informal activities. Vendors tend to locate themselves in areas of maximum footfall and visibility, which are also critical urban nodes. Therefore, rigid planning approaches fail to accommodate their functional needs.

This highlights the need for context-specific, inclusive planning strategies in Jalandhar that recognize informal bazaars as essential components of the urban system. Instead of

displacement, planning interventions should aim at organizing, regulating, and integrating these activities to achieve a balance between mobility, accessibility, and livelihood protection.

7. Studio Intent and Research Questions

This studio focuses on understanding the role and functioning of the informal sector within the urban fabric of Jalandhar, with a specific emphasis on Jyoti Chowk and its surrounding commercial corridors. The study aims to analyse the spatial distribution, socio-economic conditions, and operational characteristics of informal bazaars, and their interaction with formal land use and circulation systems. Given the high pedestrian footfall, mixed land use, and congestion issues in the area, the informal sector plays a significant yet under-recognized role in shaping everyday urban dynamics.

Studio Intent

The primary intent of this studio is to develop inclusive and context-responsive planning strategies that integrate informal bazaars into the formal urban framework. In the case of Jyoti Chowk, where informal vendors occupy critical public spaces such as footpaths and road edges, the aim is not to remove but to

organize and accommodate these activities in a way that balances mobility, accessibility, and livelihood needs.

The study seeks to:

- Recognize informal vendors as legitimate stakeholders in the urban economy
- Bridge the gap between formal planning systems and ground realities
- Improve spatial organization and infrastructure for informal activities
- Reduce conflicts between pedestrians, vehicles, and vendors
- Propose practical and implementable solutions suited to the local context

Research Questions

The study is guided by the following key research questions specific to the Jyoti Chowk area:

- What are the different types and spatial patterns of informal sector activities in the study area? (e.g., food vendors, stationary stalls, mobile hawkers, time-based vending).
- How do informal bazaars interact with formal land use, circulation networks, and public spaces? (impact on footpaths,

roads, shop frontages, and pedestrian movement).

- What are the socio-economic characteristics of informal sector workers? (income levels, dependency on vending, migration background, working conditions).
- What conflicts and synergies exist between formal and informal systems? (competition vs. support between shops and vendors, shared customer base).
- How can planning interventions support livelihood protection while improving urban functionality? (designated vending zones, street design improvements, policy implementation).

This framework helps in developing a grounded understanding of informal urbanism and provides a basis for proposing balanced, inclusive, and sustainable planning solutions for Jalandhar.

8. Conclusion

The study of informal bazaars in Jalandhar, particularly in the Jyoti Chowk area, highlights the critical role played by the informal sector in shaping the economic, social, and spatial dynamics of the city. Informal vendors are not only providers of affordable goods and services but also key

contributors to employment generation and urban vibrancy. Their presence along major commercial corridors and high-footfall areas reflects a strong relationship between accessibility, demand, and spatial opportunity.

However, the analysis also reveals that the informal sector operates within a complex and often conflicting urban environment. Issues such as congestion, lack of designated spaces, infrastructure deficiencies, and tensions with formal establishments indicate the limitations of current planning approaches. The absence of proper recognition and integration of informal activities within planning frameworks further intensifies these challenges, leading to displacement and livelihood insecurity. At the same time, the study emphasizes that informal bazaars are not a problem to be removed but a system to be understood and managed. Their adaptability, resilience, and close connection with everyday urban life make them essential components of a functional and inclusive city. In the context of Jyoti Chowk, there is a clear need to shift from exclusionary practices towards inclusive and context-sensitive planning strategies.

Therefore, the way forward lies in recognizing informal vendors as legitimate

urban stakeholders and integrating their activities through well-designed interventions such as organized vending zones, improved pedestrian infrastructure, and effective policy implementation. By balancing mobility, accessibility, and livelihood needs, urban planning can transform areas like Jyoti Chowk into more efficient, equitable, and vibrant public spaces.

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CHAPTER 2 – INFORMALITY IN URBAN PLANNING

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Abstract

This chapter examines the concept of informality in urban planning, focusing on the relationship between formal and informal systems and their role in shaping urban environments. It explores the theoretical distinction between informality and formality, highlighting that both operate along a continuum and are interdependent rather than separate. Drawing from global and Indian perspectives, the chapter emphasizes that informality is a dominant mode of urbanization, contributing significantly to employment, service delivery, and economic resilience. It also discusses the role of the informal economy in enhancing urban resilience by providing adaptability,

livelihood opportunities, and support to vulnerable populations.

In the context of Jyoti Chowk, Jalandhar, the chapter analyses how informal activities are spatially embedded in high-access areas and interact with formal land use, circulation systems, and public spaces. It further addresses the debate between regulation and integration, demonstrating the limitations of traditional planning approaches based on control and eviction. The chapter concludes by advocating for inclusive, flexible, and context-sensitive planning strategies that recognize informal vendors as legitimate stakeholders and integrate them into the urban framework. Overall, it provides a conceptual and analytical foundation for developing sustainable and inclusive urban planning interventions.

1. Introduction

Indian cities' urbanization involves the juxtaposition of formal and informal systems. Though formal planning guides regulated land uses and infrastructures, much of the city's operations are conducted through informal, flexible, and demand-driven

processes. Informality is not an ephemeral state but a core element of urban systems, especially in fast-growing cities. Informal processes are deeply integrated into formal marketplaces, networks, and urban public spaces in locations like Jyoti Chowk, Jalandhar, thus creating both possibilities and obstacles. This chapter explores the idea of informality, the connections between informality and formalism, and the role of informality in urban processes. It addresses the controversy between regulation and integration to highlight the need for participatory urban planning approaches.

2. Concept of Informality vs Formality

Informality and formality are two dimensions associated with each other in terms of urban economics and planning systems. Informality refers to any activity operating outside formal regulatory and legal systems and lacks any kind of official recognition and tenure. They are mostly small scale, require manual labour, and utilise local resources, skills, and networks. On the other hand, formality implies any activities having an institutional structure which is governed by laws. Registration, licensing, planning,

infrastructure development and zoning are all included in formal activities.

However, as far as urban planning is concerned, there exists a continuum between formality and informality in urban economic and spatial systems. The formal system requires a lot of time for setting up whereas informality is quick. Both the systems have interdependencies among themselves and thus work together. For instance, in case of Indian cities and especially in areas like Jyoti Chowk in Jalandhar, both systems interact and depend upon each other because informal vendors depend upon goods coming from formal wholesale markets whereas formal shops derive benefits of customers attracted to informal zones.

Key Characteristics
Formal Sector: Regulatory and formally recognised, organised by using zoning and master plans, Utilises infrastructure and utilities, Employment based on contracts.

Informal Sector: Unregulated or poorly regulated, Adaptive and flexible, Operated from temporary and shared spaces, Self-employed and easy entry.

Urban Planning Perspective: Informal system arises where formal planning does not satisfy

needs (space, employment, services)**,** Occupies leftover and transitional urban spaces (e.g., footpaths, edges of streets, road intersections)**,** Adapted to pedestrian flow and economic opportunities rather than land use

3. Global & Indian Prespective

Informality is no longer seen as a temporary or minor trend at the global level; instead, it is seen as the main way that cities are growing, especially in developing countries in Asia, Africa, and Latin America. Rapid urban growth, migration, and a lack of formal job opportunities have caused informal economies to grow as important ways to survive and be productive. UN-Habitat and other organizations point out that informal activities are not strange or out of the ordinary; they are built into the way cities grow. In cities where formal systems can't meet the needs of the people, they are very important for providing jobs, affordable services, and the ability to change.

In India, informality has always been an important part of urban systems. A big part of the workforce does informal work, which is a

big reason why cities have jobs and services. As your study sheets show, informal bazaars and street vending are a big part of everyday life in cities, especially in areas with a lot of businesses.

Important Things to Know in India:

Jobs and Ways to Make a Living: The informal sector employs a large number of people in cities, especially migrants and people with low incomes, because it offers easy ways to make a living.

Change in policy toward inclusion: Earlier planning methods saw informal activities as intrusions that messed up order and flow. But recent laws like the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 show that vendors' rights are now being recognized, regulated, and protected by the law.

Challenges in planning and institutions: Even though there are progressive policies, they aren't always put into action because institutions aren't strong enough, there isn't enough data, and there are disagreements between different groups.

The spatial logic of informality: Informal activities tend to happen in places that are easy to get to and in high demand, like transport hubs, market streets, and intersections.

In cities like Jalandhar, especially around Jyoti Chowk, informal markets pop up along busy shopping streets and areas with a lot of foot traffic. Their presence strengthens their functional necessity within the urban system, as they directly respond to movement patterns, consumer demand, and spatial opportunities.

4. Informal Economy and Urban Resilience

The informal economy plays a critical role in strengthening urban resilience, particularly in cities experiencing rapid urbanization, economic uncertainty, migration pressures, and limited formal employment opportunities. Urban resilience refers to the ability of a city and its communities to adapt, absorb, and recover from economic, social, and spatial stresses. In this context, the informal sector acts as a flexible and responsive system that

supports both livelihoods and urban functioning.

As reflected in your sheet under *"evolution and drivers of informality,"* the growth of informal activities is closely linked to structural factors such as rural-urban migration, lack of formal job opportunities, and increasing urban demand for affordable services. In cities where formal systems are unable to provide sufficient employment or services, the informal economy fills this gap, ensuring continuity in economic activity and social stability.

In the case of Jyoti Chowk, Jalandhar, the role of informal vendors in enhancing resilience becomes clearly visible:

- Vendors adjust their operations based on time-based demand, with peak activity during evenings, weekends, and festive seasons
- Activities shift spatially according to footfall, accessibility, and visibility, allowing efficient use of high-demand locations

- Low entry barriers enable individuals to quickly enter or re-enter the market, supporting economic recovery during disruptions

Key Contributions to Urban Resilience

- Employment Absorption: The informal sector provides immediate livelihood opportunities, absorbing surplus labour and reducing unemployment pressures.
- Economic Adaptability: Informal activities are highly flexible and can quickly respond to changing market conditions, consumer preferences, and seasonal variations.
- Social Safety Net: It supports vulnerable groups, including migrants, women, and low-income populations, by offering accessible income-generating opportunities.
- Continuity of Urban Services: Informal vendors ensure uninterrupted access to essential goods and services at the neighborhood level, even during economic or infrastructural disruptions.

5. Limitations and Challenges

Despite its strengths, the resilience of the informal sector is constrained by several factors:

- Lack of basic infrastructure such as organized vending spaces, sanitation, and storage
- Policy and regulatory gaps, including weak implementation of supportive frameworks
- Exposure to evictions, harassment, and economic insecurity

Debates: Regulation vs Integration

One of the central debates in urban planning revolves around how informal activities should be addressed within the city—whether they should be regulated and controlled or integrated and accommodated. Traditionally, planning frameworks have viewed informality as a disruption to order, circulation, and urban aesthetics. As a result, the dominant approach was based on regulation, focusing on control, removal, and enforcement. However, over time, this perspective has evolved, and contemporary planning increasingly advocates for integration, recognizing the informal sector

as a legitimate and functional part of the urban system.

Regulation Approach (Traditional Planning)

The regulation approach is rooted in modernist planning principles, which prioritize order, uniformity, and clear spatial boundaries. Informal activities are often categorized as encroachments that obstruct circulation and degrade the visual quality of urban spaces.

- Focus on removal and eviction of street vendors
- Emphasis on traffic flow, road widening, and urban aesthetics
- Strict enforcement of zoning and land use regulations
- Leads to livelihood insecurity and displacement
- Often results in temporary solutions, as vendors return to the same high-demand areas

In areas like Jyoti Chowk, such approaches are frequently implemented through clearance drives. However, these measures

fail to address the underlying economic and spatial logic of informality.

Integration Approach

In contrast, the integration approach is based on the understanding that informal activities are essential to urban life and should be accommodated within planning frameworks rather than excluded.

- Recognizes vendors as legitimate urban stakeholders
- Promotes designated vending zones and organized clusters
- Encourages inclusive street design, balancing pedestrians, vendors, and vehicles
- Supports livelihood protection along with urban functionality
- Focuses on participatory and negotiated planning processes

This approach aligns with policies like the *Street Vendors Act, 2014*, which emphasizes protection, regulation, and integration rather than eviction.

Shift in Planning Perspective

Your analysis clearly reflects a transition in planning thought: From "enforcement and eviction", To "negotiated and inclusive planning".

This includes strategies such as:

- Time-space planning (different uses at different times)
- Vending clusters and zones
- Shared street concepts

Ground Reality: Jyoti Chowk

In the context of Jyoti Chowk, strict regulation-based approaches often fail due to the inherent nature of informal activities:

- Vendors choose locations based on maximum footfall, visibility, and accessibility
- These locations are economically strategic and cannot be easily replaced
- Evictions lead to re-emergence of vendors in the same or nearby locations
- Demand from pedestrians and consumers continues to sustain informal activities

This demonstrates that informality is driven by urban demand and spatial logic, not just lack of regulation.

Planning Insight

Effective urban planning does not lie in eliminating informal activities but in managing and integrating them within the urban system.

A balanced approach should:

- Combine regulation with flexibility
- Ensure efficient use of space without compromising livelihoods
- Promote coexistence between formal and informal systems

6. Key Takeaway

The analysis of informality through literature, policy frameworks, and on-ground observations in Jyoti Chowk, Jalandhar leads to a clear understanding that informal activities are not temporary disruptions but systemic and functional components of the urban environment. Informality operates through its own logic of location, demand, and adaptability, which aligns closely with patterns of pedestrian movement, accessibility, and economic opportunity. Therefore, treating it as an anomaly or problem results in ineffective planning outcomes. Informal bazaars are spatially

embedded in high-access urban nodes, such as commercial corridors, transport intersections, and pedestrian-heavy streets.

In Jyoti Chowk, vendors occupy spaces that maximize visibility and customer interaction, indicating a strong relationship between informality and urban movement patterns. This demonstrates that informality is demand-driven and location-sensitive, rather than random or unorganized.

A key issue identified is that planning failures often arise not from the presence of informal activities, but from the inability of formal planning systems to understand and accommodate their logic. Approaches based solely on removal or strict regulation ignore the economic necessity and spatial intelligence of informal systems, leading to recurring conflicts and re-emergence of vendors.

Way Forward for Planning

To address these challenges, future planning approaches must shift towards inclusive and adaptive strategies, focusing on:

- Recognition: Acknowledge informal vendors as legitimate stakeholders within the urban economy and incorporate them into planning frameworks.
- Spatial Integration: Design and allocate appropriate spaces such as vending zones, clusters, and shared streets that align with existing movement patterns and demand.
- Policy Implementation: Strengthen the execution of policies like the *Street Vendors Act, 2014* through proper identification, registration, and management mechanisms.
- Design-Based Solutions: Use urban design interventions such as improved footpaths, modular vending units, time-based zoning, and organized layouts to reduce conflicts and enhance functionality.

7. Conclusion

This chapter establishes that informality is not a marginal or temporary phenomenon but a core component of urban systems**,** particularly in rapidly growing Indian cities. The relationship between formal and informal sectors is interdependent**,** where

both coexist and contribute to the functioning of urban spaces. Global and Indian perspectives highlight that informal activities are deeply embedded in patterns of accessibility, demand, and everyday life. In the context of Jyoti Chowk, Jalandhar**,** informal vendors occupy high-footfall areas based on clear economic logic, contributing to employment, accessibility, and urban vibrancy while interacting closely with formal markets and circulation networks.

At the same time, the study reveals that challenges such as congestion, spatial conflicts, and lack of infrastructure arise not from informality itself but from its poor integration within planning frameworks**.** The debate between regulation and integration shows that traditional approaches of eviction and control are often ineffective, whereas inclusive and adaptive strategies offer more sustainable solutions. Therefore, planning must shift towards **a** context-sensitive and people-centric approach**, f**ocusing on recognition, spatial integration, and design-based interventions. This will enable areas like Jyoti Chowk to evolve into **more**

efficient, inclusive, and balanced urban environments**,** where both formal and informal systems function in harmony.

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CHAPTER 3 – JALANDHAR: CITY CONTEXT AND BAZAAR CULTURE

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Abstract

Jalandhar, one of Punjab's oldest cities, has developed into a major industrial and commercial center due to its strategic location and strong connectivity. Known for its sports goods industry, it reflects a blend of economic growth and cultural heritage. This study explores the evolution of traditional markets from post-partition informal spaces to modern hybrid systems. These bazaars support livelihoods and social interaction, maintaining cultural identity. Despite congestion and infrastructure challenges, their resilience and accessibility ensure their continued relevance in the urban fabric.

1. Introduction to Jalandhar City

Jalandhar, historically known as Jullundur, is one of the oldest and most prominent cities in Punjab. It is located in the fertile Doaba region, situated between the Beas and Sutlej rivers. Due to its strategic geographical position, the city has developed into a major economic, industrial, and transportation hub with strong connectivity through road and rail networks. The city is widely recognized for its sports goods manufacturing industry, which has established Jalandhar as a key industrial center at both national and international levels. Alongside its industrial identity, Jalandhar holds significant cultural value, reflected in its temples, traditional bazaars, and historic neighborhoods that showcase a rich urban heritage. Jalandhar's growth is closely linked to agricultural prosperity, particularly during the Green Revolution, which strengthened rural-urban linkages and boosted economic development. In the present day, the city represents a blend of tradition and modernity. While formal commercial sectors and planned developments continue to expand, informal markets remain deeply embedded in the

urban fabric, supporting livelihoods and ensuring access to affordable goods and services for a large section of the population.



Figure 3.1 Location of Jalandhar city
Source:- IndiaNetZone

2. Evolution of Traditional Markets

The evolution of traditional markets in Jalandhar reflects the broader socio-economic transformation of the city over time. These markets have adapted to changing economic conditions while retaining their cultural and functional significance.

Post-Partition Phase (1947–1960s): The Foundation

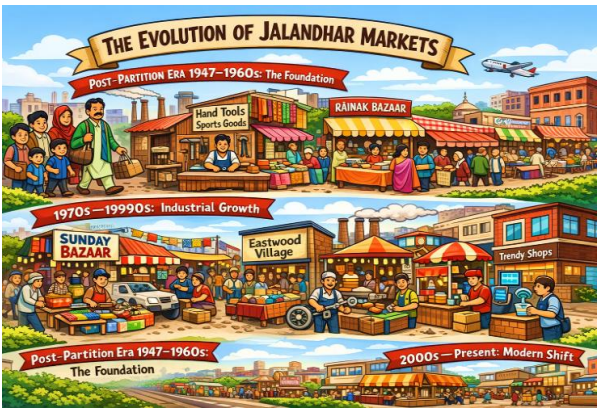


Figure 3.2. Evolution of Jalandhar markets
Source: conceptual infographic

Following the Partition of India in 1947, Jalandhar experienced significant demographic changes due to the influx of migrants. Traditional markets emerged as centers of rehabilitation, where displaced populations established small-scale businesses to rebuild their livelihoods. These bazaars were largely informal, community-driven, and played a crucial role in providing essential goods and services. They also acted as social spaces, fostering interaction and mutual support among residents.

Industrial Growth Phase (1970s–1990s)
With the expansion of industrial activities, particularly in sports goods manufacturing, Jalandhar witnessed rapid economic growth. This period saw a rise in commercial activities, leading to the expansion and consolidation of traditional markets. Key bazaars such as Rainak Bazaar and Jyoti Chowk evolved into major trade hubs, integrating wholesale and retail functions. Increased consumer demand and improved economic conditions contributed to the intensification of market activity during this phase.

Contemporary Phase (2000s–Present)
In recent decades, traditional markets have undergone significant transformation in response to modernization and changing consumer preferences. While formal retail sectors, including malls and branded outlets, have emerged, traditional bazaars have adapted by diversifying their offerings and improving accessibility. Many markets now function as hybrid spaces where formal and informal economies coexist. Despite challenges such as congestion, infrastructure

limitations, and competition from organized retail, these markets continue to thrive due to their affordability, accessibility, and strong customer relationships.

3. Socio-Cultural Significance of Bazaars

Traditional bazaars in Jalandhar are not merely centers of economic exchange; they are integral to the social and cultural life of the city.

Social Hubs

Bazaars serve as vibrant public spaces that facilitate daily social interaction and community engagement. They act as meeting points where people from diverse backgrounds come together, fostering social cohesion and cultural exchange.

Livelihoods and Inclusivity

These markets provide employment opportunities to a wide range of people, including informal workers, street vendors, and small traders. They contribute significantly to the local economy by supporting livelihoods and ensuring the availability of affordable goods for all sections of society.

Cultural Anchors

Jalandhar's bazaars reflect the cultural identity of the region. They host traditional shops, food stalls, handicrafts, and seasonal markets that celebrate Punjabi culture. Festivals and local events further enhance their cultural vibrancy, making them important centers of heritage and tradition.

Spatial Character

The physical structure of these markets is characterized by narrow streets, mixed land use, and pedestrian-oriented movement. While this creates a lively and dynamic environment, it also leads to challenges such as congestion and infrastructure stress.

Resilience and Adaptability

Despite facing multiple challenges, including competition from modern retail and urban infrastructure issues, traditional bazaars have demonstrated remarkable resilience. Their ability to adapt to changing economic conditions while maintaining strong connections with local communities has ensured their continued relevance.

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CHAPTER 4 – STUDIO FRAMEWORK AND METHODOLOGY

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Abstract

The study of the informal sector within urban planning requires a structured yet flexible framework that integrates theoretical understanding, empirical investigation, and design-based intervention. This chapter presents a comprehensive studio framework developed for analyzing and managing informal sector activities, with particular reference to Jalandhar and the case of Jyoti Chowk. It establishes a systematic approach that combines spatial analysis, socio-economic assessment, and policy review to address the complexities of street vending and urban encroachment.

The framework recognizes that informal activities are deeply embedded in the urban economy and function through dynamic temporal, spatial, and economic patterns.

Evidence from field observations, including temporal variation of vending activities, peak-hour congestion, and informal storage practices, demonstrates that encroachment is not merely a regulatory issue but a reflection of planning gaps and livelihood dependencies. The chapter therefore emphasizes the need for inclusive planning strategies that regulate rather than eliminate informal activities.

Through a combination of studio-based learning, field surveys, and analytical mapping, the methodology enables a detailed understanding of vendor behavior, spatial occupation, and infrastructure deficiencies. The outcomes aim to develop practical and context-sensitive planning proposals such as time-based vending allocation, designated zones, and improved circulation systems. Overall, the chapter highlights the importance of integrating informal sector dynamics into mainstream urban planning to achieve balanced, efficient, and inclusive city development.

1. Studio Framework

The studio framework is conceived as a comprehensive structure that integrates theoretical knowledge, field-based exploration, and planning intervention into a unified learning and research process. It is

designed to move beyond conventional classroom-based learning by situating students directly within real urban environments where informal sector activities are actively shaping public spaces.

At its core, the framework acknowledges that the informal sector is not an anomaly but an essential component of urban systems. In areas such as Jyoti Chowk, informal vending operates as a parallel economic network that supports livelihoods, enhances accessibility to goods, and contributes to urban vibrancy. However, the absence of formal planning integration leads to conflicts in space utilization, particularly in terms of pedestrian movement, traffic flow, and public safety. The framework is therefore structured around three interconnected dimensions. The first dimension involves understanding the theoretical foundations of informal economies, sustainable land use, and inclusive planning. The second dimension focuses on empirical investigation, where students conduct fieldwork to observe, document, and analyze real conditions. The third dimension emphasizes design and

policy intervention, translating analytical findings into actionable planning strategies. A key feature of this framework is its iterative nature. Insights gained from field observations continuously inform analytical processes, which in turn refine design proposals. This cyclical approach ensures that planning solutions remain grounded in reality while addressing the complexities of informal urban systems.

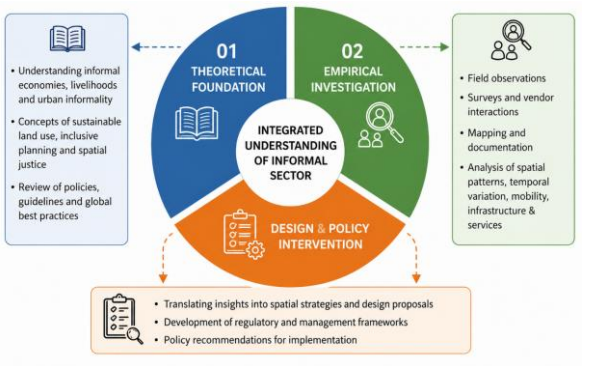


Figure 4.1 Frame work
Source:- Informal economy

2. Studio Objectives

The objectives of the studio are formulated to ensure a balance between analytical depth and practical application. The primary objective is to develop an understanding of

how informal sector activities function within urban environments and how they can be effectively integrated into planning frameworks.

The study aims to identify and classify different types of informal activities, particularly focusing on street vending patterns observed in Jyoti Chowk. It seeks to understand the diversity of goods sold, ranging from clothing and household items to food products, and how these activities are distributed spatially across the study area.

Another major objective is to examine the **socio-economic characteristics of vendors**, including their income sources, dependency on location, and operational constraints. This understanding is crucial in recognizing informal vending as a livelihood-driven activity rather than a purely spatial issue.

The studio also aims to analyze the **relationship between informal activities and urban systems**, such as transportation networks, pedestrian circulation, and land use patterns. Observations such as peak-hour congestion during evening periods and increased activity during festival seasons highlight the need for dynamic planning responses.

Ultimately, the objective is to develop planning and design strategies that support both **urban efficiency and economic**

inclusivity, ensuring that interventions do not disrupt livelihoods while improving spatial organization.



Figure 4.2 Frame work

Source:- Informal economy

3. Pedagogy

The pedagogy adopted in this studio is rooted in **experiential, participatory, and problem-based learning**. It emphasizes active engagement with real-world conditions, enabling students to develop a deeper understanding of urban complexities beyond theoretical constructs.

Learning in the studio is driven by direct interaction with the study area, where students observe vendor activities, map spatial patterns, and engage informally with

stakeholders. This approach fosters critical thinking and encourages students to question existing planning paradigms.

The pedagogical process is inherently collaborative, with students working in groups to analyze data, share insights, and develop integrated solutions. Visual tools such as mapping, diagramming, and spatial analysis are extensively used to enhance understanding and communication.

An important aspect of the pedagogy is its iterative nature. Students continuously refine their work based on feedback, field observations, and analytical findings. This iterative process not only improves the quality of outputs but also develops essential skills in adaptability and problem-solving.

By combining theory, practice, and design, the pedagogy ensures that students are equipped with both conceptual knowledge and practical expertise in urban planning.

4. Research Method

The research method adopted in this study is comprehensive and multi-dimensional, incorporating both qualitative and quantitative approaches. It is structured to capture the complexity of informal sector dynamics while ensuring analytical rigor. The process begins with the identification of key research parameters, including types of

vendors, temporal activity patterns, spatial distribution, and infrastructure availability. This stage establishes the foundation for data collection and analysis. Primary data is collected through field surveys, direct observation, and informal interviews with vendors and users. These methods provide valuable insights into daily operations, peak activity periods, and challenges faced by vendors. For instance, the observation that vending activity peaks during evening hours reflects the direct relationship between consumer behavior and spatial occupation. Secondary data sources, such as master plans, policy documents, and municipal records, are reviewed to understand the regulatory framework governing informal activities. This helps in identifying gaps between policy provisions and ground realities. The collected data is then analyzed using spatial and statistical techniques to identify patterns, conflicts, and opportunities. Special attention is given to issues such as congestion, encroachment levels, and inefficient use of public space.

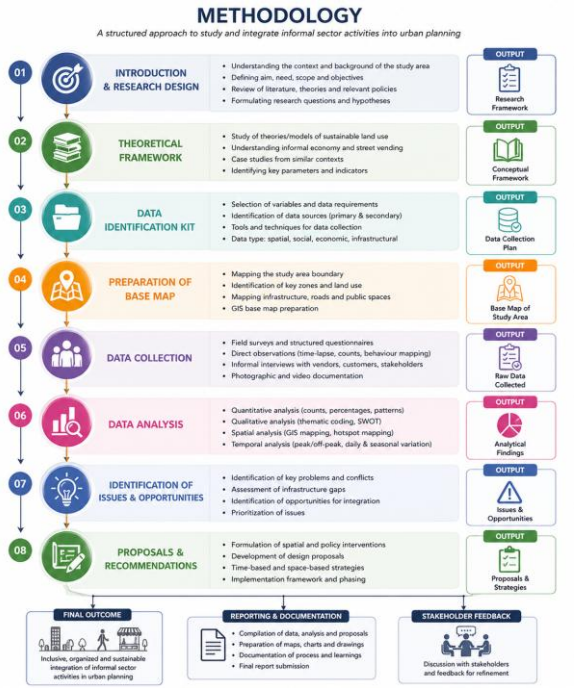


Figure 4.3 Research in the market
Source:- Primary Survey

5. Methodology

The methodology follows a structured sequence of stages, each building upon the previous to ensure a comprehensive analysis and effective proposal development.

The process begins with an introductory stage where the aim, need, and scope of the study are defined. This is followed by the development of a theoretical framework that establishes the conceptual basis for understanding informal sector dynamics.



The next stage involves the preparation of a data identification kit, which outlines the variables, tools, and methods required for data collection. This is followed by base map preparation, where the study area is mapped in terms of land use, circulation networks, and activity zones.

Data collection and analysis form the core of the methodology. This stage includes field surveys, mapping exercises, and analysis of social, economic, and infrastructural

conditions. Observations such as informal storage practices, supply chains from nearby cities like Ludhiana and Hoshiarpur, and the absence of designated vending spaces highlight the operational challenges faced by vendors.

Based on these findings, planning proposals are developed. These include strategies such as time-based allocation of vending activities, spatial zoning, and infrastructure improvements like designated loading/unloading areas and waste management systems.

The final stage involves compiling the findings, analysis, and proposals into a comprehensive report that reflects the entire research and design process.

6. Limitations

Despite the comprehensive nature of the study, certain limitations must be acknowledged. The lack of updated and reliable data on informal sector activities poses a challenge to achieving complete accuracy. Additionally, the dynamic nature of informal vending, which varies across time and seasons, makes it difficult to capture a fixed pattern.

Time and resource constraints may also limit the scale of field surveys and depth of analysis. Furthermore, the implementation of

proposed strategies depends heavily on institutional capacity, governance mechanisms, and policy enforcement, which may vary significantly.

7. Conclusion

The studio framework and methodology presented in this chapter provide a robust foundation for understanding and managing informal sector activities in urban areas. By integrating theoretical insights with field-based observations and design interventions, the study offers a comprehensive approach to addressing the challenges of street encroachment.

The case of Jyoti Chowk demonstrates that informal vending is an essential component of urban life, requiring structured integration rather than elimination. Through inclusive planning strategies, cities can achieve a balance between economic vitality, spatial efficiency, and social equity.

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CHAPTER 5 – MAPPING THE INFORMAL ECONOMY

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Abstract

Mapping the informal economy is a critical step in understanding how unregulated yet highly structured systems operate within dense urban environments. This chapter presents a detailed spatial, functional, and temporal analysis of informal economic activities in Jyoti Chowk. By combining land-use mapping, encroachment assessment, supply chain analysis, and field observations, the study demonstrates that informal activities are deeply embedded within the urban fabric and follow identifiable spatial logic. The chapter highlights how accessibility, pedestrian flow, and economic demand shape the distribution of vendors, while inadequate infrastructure and planning gaps lead to encroachment. The findings reinforce the importance of mapping as both a diagnostic and decision-making tool for inclusive urban planning.

1. Introduction

The informal economy represents one of the most dynamic components of urban systems in Indian cities. In high-density commercial areas like Jyoti Chowk, informal activities such as street vending, pushcart selling, temporary stalls, and spillover retail form an essential layer of economic activity. These activities not only support livelihoods but also ensure the availability of affordable goods to a wide range of users.

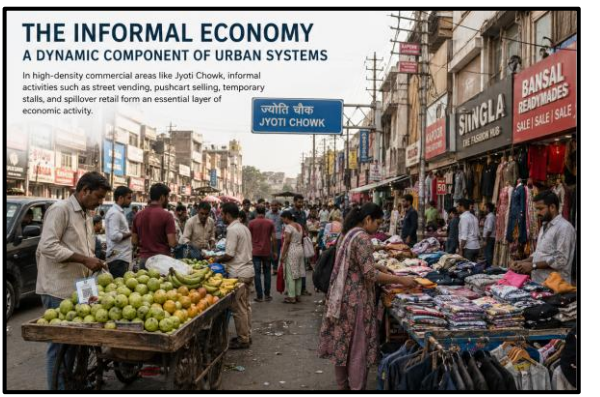


Figure 5.1 The Informal Econoomy
Source:- Generated image, 2026

However, due to the absence of formal recognition and spatial allocation, informal activities often manifest as encroachment on public spaces. This creates a complex urban condition where economic necessity and spatial regulation come into conflict.

Mapping becomes essential in this context, as it transforms qualitative observations into **quantifiable spatial patterns**, allowing planners to understand how, where, and why these activities occur.

2. Methodology for Mapping

The mapping of the informal economy in Jyoti Chowk is based on a combination of **primary surveys, visual documentation, and spatial analysis**. The methodology involves multiple stages:

The first stage includes base map preparation using land-use data, road networks, and ward boundaries. This establishes a spatial framework for analysis. The second stage involves field surveys, where observations are recorded regarding vendor locations, types of goods sold, movement patterns, and encroachment levels.

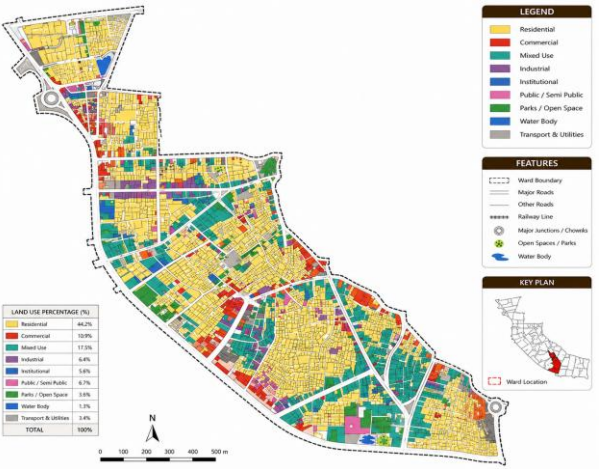


Figure 5.2 Landuse map

Data is further categorized into thematic layers such as:

- Land use
- Vendor typology
- Encroachment intensity
- Traffic and pedestrian flow
- Infrastructure availability

These layers are overlaid to identify correlations between economic activity and spatial characteristics. Temporal data is also incorporated to understand variations throughout the day and across seasons.

3. Land Use and Spatial Configuration

The land-use pattern of Jyoti Chowk reveals a highly compact and mixed urban

environment. Commercial land use dominates the primary corridors, particularly along major roads and intersections. Mixed-use areas, combining residential and commercial functions, are prevalent in secondary streets, creating continuous economic activity throughout the area.

Institutional and public spaces are limited, resulting in increased pressure on available open spaces. Transport corridors act as the primary structuring element, influencing both movement and economic activity.

Mapping shows that informal activities are concentrated along:

- Main commercial streets
- Junctions and intersections
- Areas with high pedestrian density
- Edges of transport corridors

This distribution highlights the importance of visibility, accessibility, and footfall in determining the location of informal activities.

4. Encroachment Mapping and Spatial Gradation

Encroachment mapping provides a nuanced understanding of how public space is occupied. Instead of treating encroachment as a uniform condition, the study categorizes it into different intensity levels based on the

extent of obstruction and impact on movement.

High encroachment zones are characterized by complete occupation of footpaths and partial occupation of carriageways. These areas exhibit severe congestion, minimal walking space, and high conflict between pedestrians and vehicles.



Figure 3 Enchroachment Map

Medium encroachment zones allow limited pedestrian movement but still affect traffic flow. Low encroachment areas maintain relatively clear pathways, while minimal encroachment zones are typically found in less commercial or more regulated spaces.

This spatial gradation demonstrates that encroachment is directly proportional to **economic intensity and spatial demand**. Areas with higher commercial activity attract

more vendors, leading to greater occupation of public space.

5. Typology and Distribution of Informal Activities

The mapping identifies a diverse range of informal activities, each occupying space in different ways. Street vendors using pushcarts or temporary stalls form the most visible category, often occupying footpaths and road edges.

Shopkeepers contribute to encroachment by extending their goods beyond shop boundaries, creating spillover retail zones. Mobile vendors move through the streets, adapting to changing demand patterns.

Table No1:- Types of Encroachment

Encroachment Type	Short Description	Typical Locations / Evidence	Source(s)	Impact / Notes
Street vendors / hawker stalls (temporary)	Pushcarts, temporary stalls set up on footpaths or	Shops /weekly market at Jyoti Chow	Visual Survey	Blocks pedestrian flow; redu

	carriageway	k; sidewalks and road-edge		ces carriageway width, causes congestion
Displayed goods / stock on footpath	Merchants place boxes, racks or display racks on the footpath in front of shops	Footpaths outside shops along the market stretch	Visual Survey	Forces pedestrians onto road; accessibility & safety issues
Illegal parking / parked	Two/three-wheeler or car parking on carriageway/kerb	Road side around Jyoti Chow	Visual Survey	Slows traffic, increases

vehicles	causing narrowing	k, near markets and sweet shops		congestion and accident risk
Weekly shoe/boot market (organized on encroached land)	Large periodic market occupying public land, often labelled "illegal" by M.C.	Shoe market / boot market near Red Cross Market / Jyoti Chowk (weekend)	Visual Survey	Large, predictable congestion; removal drives face resistance
Storage of wholesale goods / inventory	Shopkeepers store excess stock on pavement (boxes, crates)	Front of shops, lanes off main	Visual Survey	Blocks access, creates tripping

		market		hazards, fire risk
Waste /garbage & dumping	Piles of waste or bulky items kept on road edges or footpaths	Near market exits / side lanes	Visual Survey	Health hazard, attracts vermin, worsens hygiene
Handcarts / mobile sellers	Unregulated hand-pulled carts selling footwear/food/household items	Moving through market rows; parked between stalls	Visual Survey	Interrupts circulation; hard to regulate without alternatives

Source-: Computed Value 2026

Other forms of informal occupation include:
Temporary storage of goods

- Weekly or seasonal market setups
- Waste dumping and accumulation

These activities collectively transform public spaces into **multi-functional economic zones**, where circulation, trade, and storage coexist.

6. Supply Chain and Economic Network Mapping

A significant insight from the study is the structured nature of the informal supply chain. Vendors at Jyoti Chowk are connected to a regional economic network, forming a supply triangle involving:

- Ludhiana as the primary source of garments and manufactured goods
- Hoshiarpur as a secondary supply source
- Rural markets and mandis supplying fresh produce



Approximately **75% of goods originate from Ludhiana and 25% from Hoshiarpur**, indicating a strong dependency on industrial supply chains. Goods are transported through a combination of handcarts, rickshaws, shared autos, and small commercial vehicles. The absence of designated loading and unloading areas leads to temporary occupation of roads during early morning and late evening hours, contributing to congestion and encroachment.

7. Storage and Logistics Mapping

Storage practices play a crucial role in shaping spatial patterns of encroachment. Due to the lack of formal storage facilities, vendors rely on informal arrangements such as rented rooms in nearby lanes or storing goods at home.

In high-density areas, goods are often stored directly at vending locations, under or behind stalls. Some vendors establish informal agreements with nearby shopkeepers for temporary storage.

These practices result in:

- Spillover of goods onto footpaths
- Reduced effective walking space
- Increased clutter and visual congestion

Mapping these logistics patterns highlights the need for **support infrastructure** such as storage spaces and designated vending zones.

8. Temporal Mapping of Activities

Temporal analysis reveals that informal activities are highly dynamic and change throughout the day. Morning hours are primarily used for setup and loading activities, with moderate customer presence. Afternoon periods show stable activity levels, while evening hours witness peak congestion due to increased consumer movement.

Late-night periods see a decline in activity as vendors close. Seasonal variations further influence activity intensity, with festivals and marriage seasons leading to temporary spikes in vending density.

Table No2:- peak our and off-Peak hour

Time Scale	Activity Pattern	Observation
Time	Situation	Encroachment Level
Morning (9–11 AM)	Setup time, moderate buyers	Medium
Afternoon (1–4 PM)	Stable activity	Medium

Evening (5–8 PM)	Heavy buyer movement	High
Late Night	Vendors closing	Low
Daily	Vendors active from 9 AM – 9 PM	Peak congestion in evening

Source-: Computed Value 2026

This temporal variation indicates that informal activities are closely aligned with **consumer behavior and demand cycles**, suggesting the need for flexible and time-based planning strategies.

9. Impact on Mobility and Urban Space

The mapping clearly illustrates the impact of informal activities on urban systems. Encroachment reduces the effective width of roads and footpaths, leading to slower traffic movement and increased congestion. Pedestrians are often forced to walk on carriageways, increasing safety risks.

At the same time, informal activities contribute positively by activating public spaces, increasing economic interaction, and providing affordable goods. This dual nature

highlights the complexity of managing informal economies within urban environments.

10. Analytical Insights

The integration of spatial, temporal, and economic mapping reveals that the informal economy operates as a **highly adaptive and resilient system**. Its distribution is not random but is influenced by accessibility, land use, and demand patterns.

Encroachment emerges as a spatial response to economic necessity rather than deliberate violation. The lack of planned infrastructure and regulatory frameworks forces vendors to utilize available public space in flexible ways.

11. Conclusion

Mapping the informal economy at Jyoti Chowk provides a comprehensive understanding of how economic activities interact with urban space. The study demonstrates that informal systems are structured, efficient, and deeply integrated into the functioning of the city.

The findings emphasize that effective urban planning should not aim to eliminate informal activities but to **integrate and regulate them through spatial planning tools**. Strategies such as designated vending zones, improved pedestrian infrastructure,

organized loading and unloading systems, and time-based allocation can help balance livelihood protection with urban efficiency.
Ultimately, mapping serves as a powerful tool for transforming informal economies from sources of conflict into **organized and sustainable components of the urban system**.

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CHAPTER 6 – STAKEHOLDERS AND LIVELIHOOD SYSTEMS

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Abstract

Jyoti Market in Jalandhar is a vibrant commercial hub where formal and informal sectors coexist, supporting diverse livelihoods and offering affordable goods. Characterized by high pedestrian activity, especially during evenings, the market functions as a socio-economic and cultural space. However, issues such as encroachment, congestion, and spatial conflicts affect its efficiency. This study highlights stakeholder dynamics and governance challenges, proposing solutions like vending zones, spatial reorganization, and improved infrastructure to create a more organized, inclusive, and sustainable urban market environment.

1. Introduction of Jyoti Market

Jyoti Market, located in the Ali Mohalla area of Jalandhar, is a key commercial hub that connects to the broader Jyoti Chowk and Rainak Bazaar market areas. It is one of the busiest pedestrian-oriented zones in the city, attracting both local residents and visitors from surrounding regions. The market experiences consistent activity throughout the day, with peak footfall during evenings and weekends.

The market offers a wide range of goods, including clothing, footwear, accessories, and everyday items. It operates as a mixed retail environment where both formal and informal sectors coexist. The presence of diverse merchandise and price ranges caters to different socio-economic groups, making it an inclusive and accessible marketplace.

2. Vendor Profile

The vendor structure in Jyoti Market consists of a combination of formal and informal sectors:

Formal and Informal Shopkeepers

These include licensed, permanent shops with longer operating hours and established customer bases. Their business largely depends on consistent footfall and repeat customers.

Informal Street Vendors

These vendors operate through mobile or temporary setups such as stalls selling clothes, food, and small goods. They typically require lower capital investment and rely on daily income, offering flexibility in operations.

Hawkers

Hawkers are mobile sellers who move across the market, especially during peak hours, providing low-cost goods and contributing to the affordability of the market. This mix creates a dynamic commercial ecosystem where both structured and flexible business models coexist.

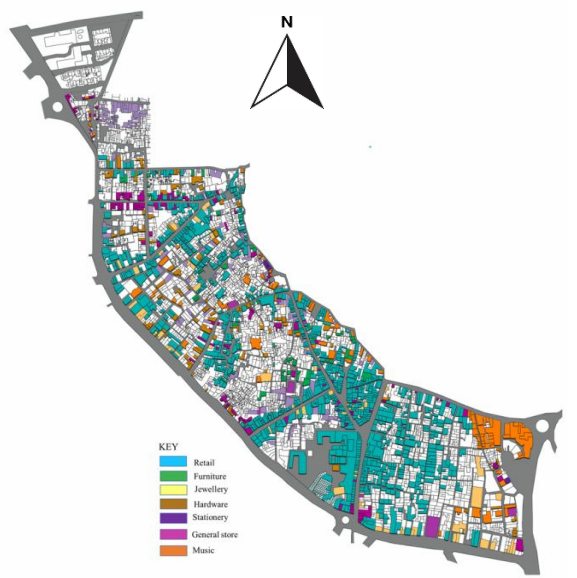


Figure 6.1 Vendor profile

Footfall and Daily Flows

Jyoti Market experiences dynamic variations in footfall throughout the day, reflecting its importance as a major commercial hub. Peak activity is generally observed during evening hours, when shoppers, visitors, and local residents contribute to increased pedestrian density. During daytime, the market remains moderately active, with steady movement driven by routine shopping and commercial activities. The area's strong dependence on

pedestrian movement highlights its role as a vibrant and people-oriented urban space. However, the absence of organized pathways and the presence of informal vending often lead to congestion and restricted movement during peak hours. Seasonal variations, weekends, and festive periods further amplify footfall, intensifying pressure on available space. Overall, the flow patterns indicate the need for better spatial management and pedestrian-focused planning interventions.

Table 6.1:- Footfall and daily flows

Time Period	**Activity Pattern**
Morning	Lower but steady activity, mainly involving early shoppers and traders
Afternoon	Gradual increase in footfall as more shoppers and workers enter the market
Evening	Peak activity period (7 PM – 9 PM), driven by leisure

	shopping and food-related activities
Weekends	Significant increase in footfall due to family outings, shopping, and recreational visits

Source:- Computed Value, 2026

Formal and Informal Interactions and Conflicts

Jyoti Market demonstrates a close interaction between formal shopkeepers and informal vendors. While formal shops occupy designated commercial spaces, informal vendors often use adjacent pavements and public spaces.A strong bargaining culture exists, reflecting traditional market practices. However, this coexistence also leads to conflicts, particularly related to space usage, encroachment, and congestion. Informal vendors occupying footpaths often obstruct movement, leading to friction between stakeholders.

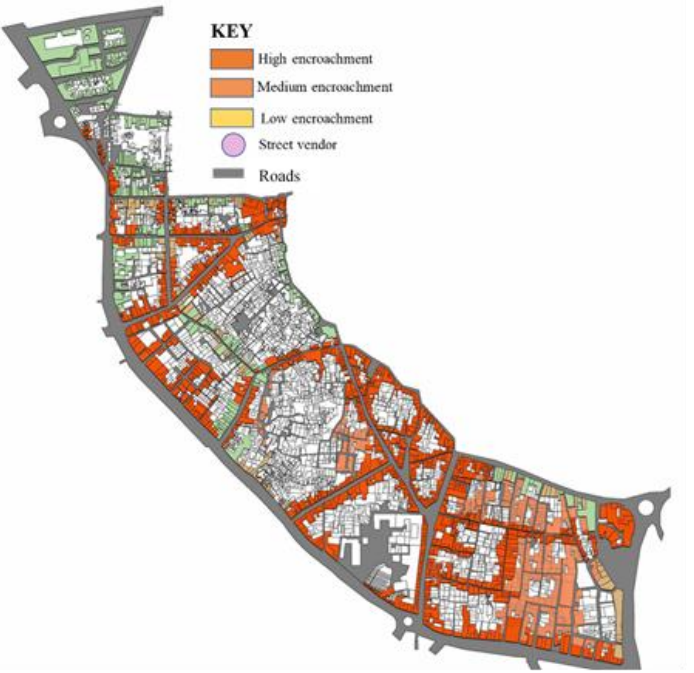


Figure 6.2 Encroachment map

Conflict Zones in Jyoti Market

Several areas within the market experience spatial conflicts due to high activity. The areas of conflict are encroachment on footpaths, obstruction of pedestrian movement and visibility, competition for space between vendors and customers and parking and traffic congestion. The impacts of conflict zones are reduced pedestrian

comfort, traffic bottlenecks, safety concerns and increased pressure on urban infrastructure. These conflicts highlight the challenges of managing high-density informal commercial spaces.

Vendor Associations and Informal Governance

In many Indian urban markets, vendors form informal associations or are linked to broader organizations such as street vendor unions. These groups advocate for vendor rights, space allocation, and representation in discussions with authorities. Such informal governance structures play a crucial role in managing everyday operations and resolving conflicts within the market.

Governance Dynamics

The functioning of Jyoti Market is influenced by both formal policies and informal practices. The Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014 mandates the creation of vending zones and committees. However, implementation at the local level is often inconsistent. Governance typically involves negotiation between municipal authorities, vendors, and market stakeholders. This results in a hybrid system of regulation combining formal laws with practical, on-ground adjustments.

Socio-Economic Characteristics

Jyoti Market represents a vibrant socio-economic system characterized by mixed economy with formal and informal sectors, significant livelihood generation, especially for low-income groups, migrants, and small entrepreneurs, affordable marketplace offering goods across various price ranges, strong dependence on high footfall, particularly during peak hours, a well-established bargaining culture that enhances

customer engagement and Informal networks based on trust and long-term relationships

Cultural and Social Significance

Jyoti Market is not only an economic center but also a cultural and social hub. It reflects local traditions, lifestyle patterns, and consumption habits.It acts as a gathering space for daily social interactions, supports local crafts, traditional goods, and food culture and becomes highly active during festivals and special occasions. The market contributes to preserving local identity while accommodating modern urban demands.

Community Identity

The market is frequented by people from different socio-economic backgrounds, making it an inclusive public space. It reinforces community ties, social interaction, and local consumption culture within the urban context of Jalandhar.

Stakeholder Mapping

Jyoti Market functions as a complex urban system shaped by the interaction of multiple stakeholders operating across formal and informal frameworks. Formal stakeholders

primarily include shop owners dealing in garments, footwear, jewellery, electronics, and general merchandise, who occupy permanent retail spaces and contribute significantly to the structured economy of the market. Informal stakeholders consist of street vendors, hawkers, and pushcart sellers who operate flexibly, often without permanent infrastructure, relying heavily on daily earnings. Governance stakeholders, such as the Municipal Corporation, police authorities, and licensing bodies, are responsible for regulation, enforcement, and spatial management, although their involvement tends to be inconsistent. Users of the market include customers, nearby residents, transport operators, and informal worker groups who depend on the market for goods, services, and livelihoods. The power-interest dynamics reveal that shop owners hold high power and high interest, positioning them as key players in decision-making processes. In contrast, municipal authorities possess high power but relatively lower day-to-day engagement, while street vendors and customers exhibit high interest but limited influence. This imbalance creates

tensions, particularly around space allocation, economic competition, and regulatory control.

Vendor and Shopkeeper Typologies

The commercial landscape of Jyoti Market is defined by a diverse range of shopkeepers and vendors, each operating under distinct economic and temporal patterns. Shopkeepers typically run fixed establishments with structured operating hours, generally from mid-morning to evening, and deal in a variety of goods such as clothing, footwear, jewellery, electronics, and books. Their peak business hours are concentrated in the afternoon and evening, aligning with increased customer activity. In contrast, vendors operate with greater flexibility, both spatially and temporally. Street food vendors, fruit sellers, hawkers, and accessory vendors often set up in response to footfall patterns, with peak activity occurring during the evening hours when pedestrian movement is highest. Their mobility allows them to adapt quickly to demand, but also places them in direct competition with formal retailers for prime

locations. This coexistence reflects both complementarity and competition, as vendors cater to affordability and convenience while shopkeepers provide stability and variety.

Table 6.2:- Types of shop keepers and their timings

S. No	Type of Shopkeeper	Goods Sold	Opening Time	Closing Time	Peak Activity Time
1	Garment	Suits, sarees, bridal wear	10:00 AM	8:30 PM	2 PM – 8 PM
2	Footwear	Shoes, sandals, bags	10:30 AM	8:30 PM	3 PM – 8 PM
3	Jewellery	Artificial + gold/silver	10:30 AM	8:30 PM	4 PM – 9 PM

		jewellery			
4	Electronics	Mobiles, accessories	10:30 AM	8:00 PM	2 PM – 7 PM
5	Book & Stationery	Books, notebooks, exam material	10:00 AM	8:00 PM	12 PM – 6 PM
6	General Retail Shops	Cosmetics, household items	10:00 AM	8:30 PM	3 PM – 8 PM

Source:- Computed Value, 2026

Vendor Zoning and Spatial Patterns

The spatial distribution of vendors in Jyoti Market reveals a strong correlation between economic activity and physical location. High levels of encroachment are observed along major roads, intersections, and key junctions where pedestrian and vehicular traffic converge. Vendors tend to cluster in

these high-footfall areas to maximize visibility and sales opportunities, often forming linear arrangements along streets and around chok points. Medium levels of encroachment occur in mixed-use areas where commercial and residential activities overlap, while relatively low encroachment is seen in predominantly residential zones. This unregulated spatial pattern leads to inefficient use of space, as vendors occupy footpaths and spill onto carriageways, reducing pedestrian accessibility and contributing to traffic congestion. The absence of clearly defined vending zones further exacerbates these issues, resulting in overlapping uses of space and frequent conflicts among stakeholders.

Table 6.3:- Types of vendors and their timings

S. No	Type of Vendor	Goods Sold	Setup Time	Closing Time	Peak Activity Time

1	Street Food Vendors	Chaat, golgappa, snacks	11:30 AM	10:00 PM	5 PM – 9 PM
2	Fruit Vendors	Fruits (seasonal)	9:30 AM	10:30 PM	6 PM – 10 PM
3	Hawkers (Clothes)	Clothes on racks	12:00 PM	9:30 PM	5 PM – 9 PM
4	Accessories Vendors	Sunglasses, belts, jewellery	12:00 PM	9:30 PM	5 PM – 9 PM
5	Toy Vendors	Toys, small items	1:00 PM	9:00 PM	6 PM – 9 PM

6	Tea & Juice Stalls	Tea, juice, refreshments	10:30 AM	10:30 PM	5 PM – 9 PM

Source:- Computed Value, 2026

Interaction Dynamics

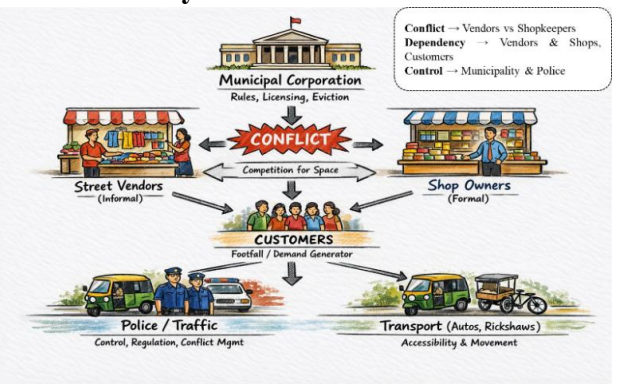


Figure 6.3 Relationship/ interaction diagram
Source:- conceptual infographic made for presentation/academic use

The interactions within Jyoti Market are characterized by a complex mix of cooperation and conflict among stakeholders. Vendors and shopkeepers share a common customer base, creating a form of economic interdependence where each contributes to the overall vibrancy of the market. However,

this relationship is often strained by competition for space, visibility, and customer attention. Vendors frequently position themselves in front of shops or along busy pathways, leading to disputes with shop owners. Customers benefit from the diversity and affordability offered by both sectors but are also affected by congestion and limited mobility. Governance authorities intervene periodically to regulate activities, but their actions are often reactive rather than proactive, resulting in temporary solutions rather than long-term improvements. This dynamic interplay highlights the need for structured management strategies to balance interests and reduce conflicts.

Key Challenges

Jyoti Market faces a range of interconnected challenges spanning physical, economic, and governance dimensions. Physically, the most pressing issues include encroachment on pedestrian pathways, traffic congestion, and inadequate parking facilities, all of which hinder smooth movement within the market.



Figure 6.4 Traffic congestion
Source: Primary survey

Economically, there is intense competition between formal shopkeepers and informal vendors, often leading to disputes over customer access and visibility. Vendors, in particular, face income instability due to their reliance on daily earnings and fluctuating demand. From a governance perspective, the lack of consistent enforcement of regulations, weak licensing systems, and the prevalence of informal or unauthorized setups contribute to disorder within the market. These



Figure 6.6 Parking problem
Source: Primary survey

challenges collectively reduce the efficiency, safety, and overall user experience of the market environment.



Figure 6.5 Encroachment
Source: Primary survey

4. Designated Vending Zones

To address spatial conflicts and improve market organization, it is proposed to establish clearly defined vending zones within Jyoti Market. These zones should be strategically located in areas that offer high accessibility, adequate pedestrian movement, and proximity to existing commercial activity, while avoiding major congestion points. Allocating approximately 5000 square meters for organized vending can help accommodate a significant number of vendors in a structured manner. Such zones

would not only reduce encroachment on roads and footpaths but also enhance the visibility and accessibility of vendors, thereby supporting their livelihoods while maintaining order within the market.



Figure 6.7 Designated Vending Zones

5. Spatial Reorganization

A systematic reorganization of space is necessary to optimize land use and reduce conflicts. This can be achieved by categorizing vendors into functional zones, such as food vendors, fruit and vegetable

sellers, and non-food retail vendors. By grouping similar activities together, the market can achieve greater efficiency and improve the overall shopping experience for customers. Additionally, vendors should be relocated away from narrow streets, chok points, and critical circulation areas to ensure unobstructed movement. This approach will help create a more balanced distribution of activities across the market.

6. Time-Based Regulation

Implementing time-based regulations can significantly enhance space utilization and reduce direct competition between vendors and shopkeepers. By allowing vendors to operate during specific time slots, such as evening hours when footfall is highest, the market can accommodate both formal and informal activities without overlap. For instance, daytime hours can prioritize shop-based retail, while evening hours can be designated for street vending. This temporal segregation ensures that space is used efficiently throughout the day and minimizes conflicts over prime locations.

7. Infrastructure Improvements

Improving basic infrastructure is essential for supporting both vendors and customers in Jyoti Market. This includes the provision of waste management systems, clean drinking water, adequate lighting, and clearly marked vending pitches. Proper infrastructure not only enhances the functionality of the market but also improves hygiene, safety, and overall user experience. Well-designed infrastructure can also contribute to better compliance with regulations, as vendors are more likely to adhere to organized systems when adequate facilities are provided.

8. Traffic and Pedestrian Management

Effective traffic and pedestrian management strategies are crucial for reducing congestion and improving accessibility within the market. Introducing pedestrian-only zones during peak hours, particularly in the evening, can significantly enhance mobility and safety. Restricting vehicular movement in key areas and providing designated parking facilities on the periphery can further reduce congestion within the core market area. These measures will create a more

pedestrian-friendly environment, encouraging longer visits and increased economic activity.

9. Vendor Registration and Licensing

A robust system for vendor registration and licensing is essential for formalizing the informal sector while protecting livelihoods. All vendors should be required to register with local authorities and obtain identification cards that specify their allocated vending spaces. This system will enable better monitoring and regulation, reduce the number of unauthorized vendors, and ensure fair distribution of space. At the same time, it will provide vendors with a sense of security and legitimacy, encouraging compliance with rules and regulations.

Table 6.4:- Vendor Registration and Licensing

Rule No.	Rule / Regulation	Description
1	Vendor Registration	Every street vendor must possess a Certificate of Vending issued by the Municipal Corporation

		or Town Vending Committee (TVC) before operating in the vending zone.
2	Payment of Fees	Vendors must pay regular vending fees or user charges to the local authority for the use of the designated vending space.
3	Hygiene and Cleanliness	Vendors must maintain clean surroundings and proper waste disposal. Each stall should keep a dustbin and dispose waste at designated collection points.
4	Stall Size Regulation	Vendors must operate within the allocated stall size and should not encroach on pedestrian pathways or public roads.

Source:- Computed Value, 2026

10. Conflict Resolution Strategies

Addressing conflicts between vendors and shopkeepers requires a combination of spatial, regulatory, and management interventions. Demarcating vending zones can prevent encroachment and ensure organized movement, while creating buffer zones in front of shops can protect visibility for formal retailers. Introducing rotational vending systems can ensure equitable access to prime locations, and pedestrianization strategies can reduce congestion. Additionally, enforcing vendor registration can help control overcrowding and reduce disputes arising from unauthorized setups. These measures collectively aim to create a balanced and harmonious market environment.

Table 6.4:- Conflict Resolution Strategies

Issue / Conflict	Cause	Solution Strategy	Implementation Method	Expected Outcome

Encroachment on walking space	No fixed vending areas	Demarcated vending zones	Mark stalls (paint / modular units) + clear pedestrian path	Organized movement, reduced congestion
Shop visibility blocked	Vendors in front of shops	Buffer zone in front of shops	Maintain 1–1.5m clear frontage	Better shop access & display
Competition for prime locations	High footfall areas limited	Rotational vending system	Allocate time/weekly shifts	Fair distribution of space

Peak hour congestion	Vendors + customers + vehicles	Pedestrianization	Restrict vehicles during peak hours	Smooth movement, safer streets
Uncontrolled vendor growth	No licensing system	Vendor registration	ID cards + fixed spots	Reduced overcrowding
Conflict with authorities	Informal/illegal setup	Policy-based inclusion	Legal vending zones + guidelines	Reduced eviction conflicts

Mixed activity chaos	Random vendor placement	Cluster-based zoning	Group vendors by type (food, clothes, etc.)	Better organization & user experience
Timing conflicts with shops	Same-time operation	Time-based zoning	Allow vending in specific hours	Reduced direct competition

Source:- Computed value, 2026

11. Cluster-Based Planning

Cluster-based planning involves grouping vendors based on the type of goods they sell, such as food, clothing, or accessories. This approach enhances the shopping experience by creating identifiable zones within the market, making it easier for customers to navigate and access desired goods. It also encourages healthy competition within clusters while reducing conflicts between dissimilar activities. Furthermore, clustering

can improve operational efficiency, as shared infrastructure and services can be provided more effectively within defined zones.

12. Strengthening Governance

Strengthening governance mechanisms is critical for the successful implementation of proposed interventions. This includes regular monitoring by municipal authorities, the use of digital systems for tracking vendor registration and space allocation, and consistent enforcement of regulations. Transparent and participatory governance processes, involving both formal and informal stakeholders, can help build trust and ensure compliance. By adopting a proactive and structured approach to governance, Jyoti Market can transition towards a more organized, inclusive, and sustainable urban system.

13. Conclusion

Jyoti Market exemplifies the dynamic interaction between formal and informal economic systems in an urban context, where both sectors are deeply interdependent yet often in conflict due to spatial and regulatory challenges. While the market plays a vital

role in supporting livelihoods, providing affordable goods, and fostering social interactions, its current unregulated state leads to congestion, inefficiencies, and disputes. Through the implementation of strategic interventions such as zoning, infrastructure development, time-based regulation, and strengthened governance, the market can be transformed into a well-organized and inclusive space. Such improvements will not only enhance economic productivity but also improve the overall quality of the urban environment for all stakeholders.

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CHAPTR 7 – SPATIAL AND MOBILITY ANALYSIS

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Abstract

This chapter presents a detailed and critical examination of the spatial configuration and mobility conditions of Jyoti Market, Jalandhar, which is one of the most intensely used commercial areas in the city. The analysis focuses on understanding how the physical structure of streets, patterns of movement, and presence of informal activities interact within a constrained urban environment. The study recognizes that Jyoti Market is not merely a circulation space but a complex socio-economic system where movement, commerce, and social interactions coexist and compete for space. The spatial structure of the area reflects an organically evolved urban fabric, where streets have gradually adapted to increasing

commercial pressure without formal planning interventions. As a result, the original hierarchy of streets has become blurred, and most streets now perform multiple overlapping functions. This leads to inefficiencies in movement and a lack of clarity in spatial organization. A significant focus of this chapter is on the interaction between pedestrians and vehicles, which often results in conflict due to the absence of proper segregation and infrastructure. The analysis also examines the role of encroachments, particularly informal vending and shop spillovers, in shaping the spatial dynamics of the area. While these elements contribute to economic activity and vibrancy, they also reduce effective movement space and create congestion.

1. STREET MORPHOLOGY AND HIERARCHY

The street morphology of Jyoti Market is characterized by an irregular and organically developed pattern, which reflects its gradual evolution over time. Unlike planned urban areas that follow a structured grid or hierarchy, the streets in this area vary

significantly in terms of width, alignment, and function. This irregularity creates a complex spatial environment where movement is not always intuitive or efficient. At the macro level, the market is connected by wider arterial and sub-arterial roads that facilitate access to the area. These roads are designed to accommodate higher volumes of vehicular traffic and act as primary movement corridors. However, as one moves deeper into the market, the street network becomes increasingly narrow and constrained. The internal streets and lanes are often defined by continuous building edges, with little or no setback. This results in limited space for movement, especially when combined with commercial activities that extend into the street. The absence of uniform building lines further adds to the irregularity of the spatial form.

A major issue observed in the area is the lack of a clear street hierarchy. Ideally, urban streets should be classified based on their function, such as primary roads for fast-moving traffic, secondary streets for distribution, and local streets for access. In

Jyoti Market, this distinction is largely absent. Most streets are used simultaneously for multiple purposes, including vehicular movement, pedestrian circulation, vending, and parking. This overlapping of functions leads to inefficient use of space and reduces the effectiveness of the street network. For example, a street that should ideally serve as a movement corridor is often obstructed by parked vehicles and vendors, reducing its carrying capacity. Similarly, narrow internal lanes that should function as pedestrian-friendly spaces are also used by vehicles, creating confusion and conflict.

2 STREET MORPHOLOGY AND HIERARCHY

Macro-Level Connectivity and Urban Context

At the macro level, Jyoti Market is strategically positioned within the urban fabric of Jalandhar and is well connected to major arterial and sub-arterial road networks that facilitate movement across different parts of the city. This connectivity plays a crucial role in attracting a large number of users to the area, as it provides easy access

for both local residents and visitors from surrounding regions. The arterial roads leading to the market act as primary movement corridors, supporting high volumes of vehicular traffic while also accommodating significant pedestrian activity due to the commercial nature of the area. However, this strong external connectivity also results in a continuous inflow of traffic into the market, placing immense pressure on the internal street network, which is not designed to handle such intensity. The mismatch between the capacity of external roads and the limited width and organization of internal streets creates congestion at entry points, intersections, and transition zones. Additionally, the commercial attractiveness of the area leads to increased stopping behavior along these roads, further affecting traffic flow and reducing efficiency.



Figure 7.1 Street Morphology And Hierarchy

3 Functional Hierarchy and Lack of Classification

A fundamental issue within Jyoti Market is the absence of a clearly defined functional hierarchy among its streets, which results in all streets being used for multiple purposes simultaneously. In a well-planned urban system, streets are categorized based on their intended function, allowing for efficient

distribution of traffic and activities. However, in this case, primary roads that should facilitate smooth vehicular movement are often occupied by parked vehicles, vendors, and pedestrian activity, reducing their effectiveness. Similarly, secondary and tertiary streets, which should ideally support local access and pedestrian movement, are also used by vehicles, leading to unnecessary conflicts and congestion. This lack of classification creates confusion among users, as there is no clear indication of how space should be used or prioritized. As a result, movement becomes unstructured and inefficient, with different modes competing for the same space. The absence of hierarchy also makes it difficult to implement traffic management measures or design interventions, as there is no clear framework for organizing activities. This highlights the need for a more structured approach that defines the role and function of each street within the network

18 M NH- 44	The road is wide (18m) with proper lane segregation and designed for fast-moving traffic. There is minimal encroachment and no street vending, allowing smooth traffic flow.
10.5 m local market road	This road connects the market area and carries both vehicles and pedestrians. On-street parking and partial encroachments reduce effective width, slowing down movement.
9.5 m local road	The width is limited and supports mixed traffic (rickshaws, bikes, pedestrians). Commercial activities along the road increase roadside friction and reduce mobility.
5.5 m local road	This is a narrow road with simultaneous pedestrian and vehicular movement. Encroachments (shop spillovers, vendors) further reduce usable space, causing frequent congestion.
local road	A 2.5 m wide internal street experiences severe congestion due to encroachment by shop owners, who have extended staircases onto the road, significantly reducing the usable carriageway width."

Figure7.2 Road hierarchy
Source:- Computed Value, 2026

Functional Hierarchy and Lack of Classification

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Street Section Analysis and Spatial

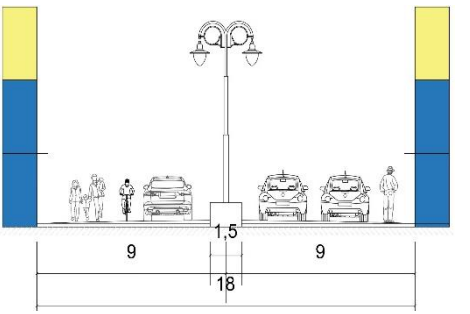


Figure7.3 Cross section
Source:- Self-Generated Image

Dimensions

significant variation in width and spatial organization, which directly affects movement efficiency and user experience. Although the total right-of-way may appear sufficient in certain areas, the effective width

available for movement is often reduced due to encroachments, parking, and informal activities. Shopfront extensions, display areas, and temporary structures occupy portions of the street, leaving limited space for pedestrians and vehicles. In many cases, there is no clear demarcation between different zones within the street section, such as pedestrian pathways, vehicular lanes, and activity areas. This lack of definition results in overlapping uses and inefficient space utilization. Furthermore, the irregularity of street sections creates inconsistencies in movement patterns, as users must constantly adjust to changing conditions. Narrow sections become bottlenecks during peak hours, while slightly wider sections may still be underutilized due to poor organization. The absence of standardized dimensions and design elements further complicates the

situation, making it difficult to ensure uniformity and predictability in movementThe street sections within Jyoti Market are highly constrained and exhibit.

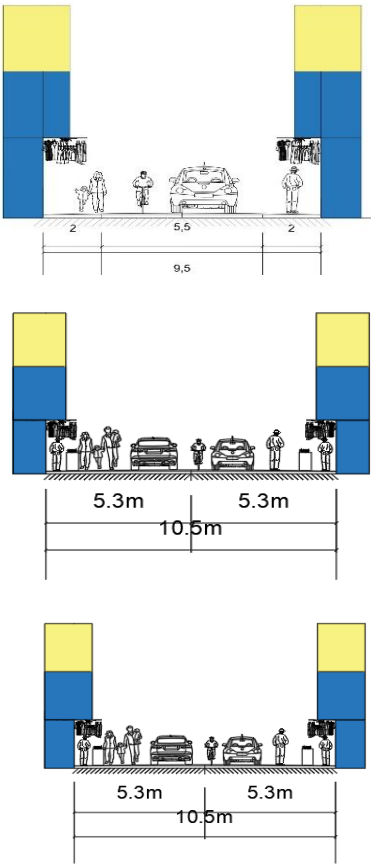


Figure7.4 Cross sections,
Source:- Self-Generated Image, 2026

These roads is the entry points of Jyoti market, this section is showing encroachment in the road from side by shop keepers and street vendors.

Built Form, Edge Conditions and Interface

The built form along the streets of Jyoti Market plays a significant role in shaping the spatial character and functionality of the area. Buildings are typically constructed along the edge of the street with minimal or no setbacks, creating a continuous and rigid edge condition that limits flexibility in space usage. This edge condition defines the boundaries of the street but also restricts the potential for expansion or reorganization. The interface between private and public space is highly active, with shopfronts extending into the street through displays, signage, and temporary structures. This creates a vibrant and engaging environment but also contributes to congestion and encroachment. The lack of clear separation between private and public space results in a blurred boundary, where activities spill over into the street and reduce the available movement space. Additionally, the visual complexity created

by signage, advertisements, and informal structures affects the overall aesthetic quality of the area. The built form, therefore, not only influences the physical dimensions of the street but also plays a crucial role in shaping user behavior and spatial interaction.

Temporal Variation in Street Usage



Figure 7.5 Street Usage
Source- primary survey, 2026

The usage of streets in Jyoti Market is not static but varies significantly throughout the day, reflecting the dynamic nature of the area. During peak hours, typically in the late morning and evening, the streets experience high levels of activity with increased pedestrian movement, vehicular traffic, and vending activity. This results in extreme congestion and reduced mobility efficiency.

In contrast, during off-peak hours, such as early morning or late night, the intensity of activity decreases, and movement becomes relatively smoother. This temporal variation highlights the flexibility of the space, as it is capable of accommodating different levels of activity at different times. However, the absence of structured management or time-based regulation means that this flexibility is not utilized effectively. Instead, the space remains unorganized, leading to inefficiencies even during periods of lower activity. Understanding these temporal patterns is essential for developing strategies that can optimize space usage and improve overall functionality.

4. PEDESTRIAN VS VEHICULAR CONFLICTS

Pedestrian Density and Movement Behaviour

Pedestrian movement in Jyoti Market forms the dominant mode of activity and is deeply influenced by the commercial nature of the area, which attracts a continuous and high volume of users throughout the day.The density of pedestrians is not uniform but varies spatially and temporally depending on

the location of commercial hotspots, street vendors, and accessibility points . Pedestrians in this environment exhibit highly dynamic and non-linear movement behaviour, as their paths are frequently interrupted by shopping activities, interactions with vendors, and the need to navigate through congested spaces. Unlike controlled pedestrian environments, where movement follows a relatively



Figure 7.6 Pedestrian Density
Source- primary survey , 2026

predictable flow, the behavior observed here is spontaneous and adaptive. Individuals often stop abruptly, change direction, or form clusters around points of interest, which disrupts the continuity of movement and reduces overall flow efficiency. The absence of dedicated pedestrian pathways further complicates this behavior, as pedestrians are forced to negotiate space with vehicles and other users. This results in a highly

fragmented movement pattern where walking is not only a mode of transport but also an activity intertwined with economic and social engagement.

Vehicular Composition and Flow Characteristics

The vehicular composition in Jyoti Market is highly heterogeneous, consisting of two-wheelers, private cars, delivery vehicles, handcarts, and intermediate public transport modes such as e-rickshaws. Each of these modes operates at different speeds and requires varying amounts of space, which adds complexity to the overall traffic system. Unlike regulated traffic environments, vehicular movement in this area is largely unstructured and influenced by immediate conditions rather than predefined rules. Vehicles frequently stop for short durations to accommodate parking, loading, or passenger pick-up and drop-off, which interrupts the flow and creates localized congestion. The lack of designated lanes or circulation patterns further contributes to inefficiency, as vehicles often maneuver unpredictably to navigate through crowded streets. Additionally, the presence of slow-moving

vehicles such as handcarts and e-rickshaws creates further delays, particularly in narrow sections where overtaking is not possible. The interaction between different vehicle types results in a highly complex flow pattern that is difficult to regulate and manage.

Conflict Points and Interaction Zones

Conflict points in Jyoti Market are specific locations where the movement paths of pedestrians and vehicles intersect, resulting in high levels of interaction and potential risk. These zones are typically concentrated near intersections, entry points, major commercial nodes, and areas with high vendor activity. At these locations, the lack of defined crossing points or segregation leads to continuous negotiation between users, where pedestrians attempt to cross or move through traffic while vehicles attempt to navigate through dense pedestrian flows. The intensity of conflict in these zones is influenced by both spatial constraints and user behavior, with narrower streets and higher activity levels resulting in more frequent and severe interactions. These areas often act as bottlenecks within the network, reducing overall movement

efficiency and increasing travel time. The absence of visual or physical cues to guide movement further exacerbates the situation, as users rely on informal negotiation rather than structured systems to navigate these spaces.

Peak Hour Dynamics and Congestion Patterns



Figure 7.7 Conflict Points
Source:- Primary Survey, 2026

The dynamics of movement in Jyoti Market vary significantly during peak hours, when the intensity of both pedestrian and vehicular activity reaches its highest levels. During these periods, the available space becomes highly saturated, leading to extreme congestion and reduced mobility. Pedestrians tend to occupy a larger portion of the street due to the lack of adequate walking space,

while vehicles struggle to move through dense crowds, resulting in slow speeds and frequent. The interaction between these modes creates a feedback loop, where congestion in one mode further affects the other. This leads to a breakdown of movement efficiency, where even short distances require significant time to traverse. The congestion patterns are also influenced by temporal factors such as market hours, festivals, and weekends, which further increase the complexity of the system. The lack of time-based regulation or traffic management measures means that the system operates under constant stress during peak periods, highlighting the need for more adaptive and responsive planning strategies.

Safety, Risk and User Vulnerability

The absence of clear segregation between pedestrians and vehicles in Jyoti Market creates a highly unsafe environment, particularly for vulnerable users such as children, elderly individuals, and differently-abled persons. The lack of infrastructure such as pedestrian crossings, signals, and protective barriers increases the risk of

accidents and injuries. In many cases, pedestrians are required to navigate through moving traffic, which exposes them to potential hazards. The unpredictability of vehicular movement further compounds this risk, as drivers must constantly adjust to changing conditions without clear guidance. Additionally, environmental factors such as poor lighting, uneven surfaces, and lack of signage contribute to safety concerns. The overall perception of safety in the area is therefore low, which affects the comfort and confidence of users. Addressing these issues requires a comprehensive approach that prioritizes pedestrian safety and introduces appropriate infrastructure and management measures.

5. Encroachments And Spatial Negotiations

Types And Nature Of Encroachments

Encroachments in Jyoti Market take various forms, including informal street vendors, shop spillovers, temporary kiosks, signage extensions, and parked vehicles. These elements occupy significant portions of public space, particularly along street edges

and footpaths, and are characterized by their temporary and flexible nature.

Unlike permanent structures, these encroachments can be easily relocated or adjusted, allowing them to respond to changing conditions and demands. However, this flexibility also makes them difficult to regulate, as their presence and intensity vary throughout the day. The nature of



Figure 7.8 Encroachments

Source:- Primary Survey, 2026

encroachments reflects the economic and social dynamics of the area, where limited space is continuously adapted to accommodate a wide range of activities.

Spatial Distribution and Density of Encroachments

The distribution of encroachments within Jyoti Market is not uniform but is influenced by factors such as pedestrian flow, commercial activity, and spatial availability. High-density encroachments are typically found in areas with greater footfall, where vendors can maximize their visibility and sales. These areas often coincide with major commercial streets and intersections, resulting in localized congestion and reduced movement efficiency. In contrast, areas with lower activity levels tend to have fewer encroachments, leading to uneven distribution of space utilization. This variation creates a patchwork of spatial conditions, where some areas are heavily congested while others remain relatively open. The density of encroachments also fluctuates throughout the day, reflecting temporal changes in activity and demand.



Figure 7.9 Spatial Distribution & Density Map

Economic and Social Role of Informal Activities

Informal activities, particularly street vending, play a crucial role in the economic and social functioning of Jyoti Market. These activities provide employment opportunities

for a large number of people and offer affordable goods and services to consumers. They also contribute to the vibrancy and attractiveness of the area, creating a lively and engaging environment that encourages social interaction. The presence of vendors enhances the accessibility of goods and services, particularly for lower-income groups, and supports the overall economic ecosystem of the market. Therefore, informal activities should not be viewed solely as a problem but as an integral part of the urban system that requires careful integration into planning and design.

Impact on Mobility and Spatial Efficiency

While encroachments contribute to economic activity, they also have a significant impact on mobility and spatial efficiency. By occupying portions of the street and footpath, they reduce the effective width available for movement, leading to congestion and restricted flow. This is particularly problematic in narrow streets, where even small encroachments can create major bottlenecks. The lack of organization and regulation further exacerbates the problem,

as encroachments often extend into critical movement zones. This results in inefficient use of space, where the available area is not optimally utilized for either movement or activity.

Spatial Negotiation and Adaptive Behaviour

The concept of spatial negotiation is central to understanding how Jyoti Market functions. In the absence of formal planning and regulation, users continuously adapt their behavior to navigate through limited and contested space. Pedestrians adjust their paths to avoid obstacles, vendors reposition themselves to attract customers, and vehicles maneuver through gaps in the crowd. This adaptive behavior creates a dynamic and flexible environment, where space is constantly redefined based on user needs. However, this flexibility comes at the cost of predictability and order, making it difficult to manage the space efficiently

6. ACCESSIBILITY AND MOVEMENT PATTERNS

External Connectivity and Regional Access

Jyoti Market benefits from strong external connectivity, as it is linked to major arterial roads that provide access to different parts of the city. This connectivity enhances the accessibility of the area and contributes to its high footfall and economic significance. However, the inflow of traffic from these roads also places pressure on the internal street network, which is not equipped to handle such volumes.

Internal Accessibility and Walkability Conditions

Internal accessibility within the market is highly constrained due to narrow streets, encroachments, and lack of infrastructure. Pedestrian pathways are often discontinuous or obstructed, making walking uncomfortable and inefficient. The absence of proper desig n elements such as paving, shading, and seating further reduces the quality of the pedestrian experience.

Modal Share and Movement Mix

The movement pattern in Jyoti Market is characterized by a highly mixed modal share, where pedestrians, vehicles, and vendors all occupy the same space. This lack of segregation leads to continuous interaction and conflict, reducing overall efficiency and safety.

Parking, Loading and Service Movement

Parking and loading activities are largely unregulated, with vehicles occupying significant portions of the street. This reduces the effective carriageway width and disrupts movement. The absence of designated zones for these activities further contributes to congestion.

Inclusive Accessibility and Universal Design Issues

The lack of inclusive design features such as ramps, tactile paving, and accessible crossings makes the area difficult to navigate for differently-abled users. This highlights a major gap in the design of the space.

CONCLUSION

The spatial and mobility analysis of Jyoti Market reveals a highly complex and layered urban environment where physical structure, user behavior, and economic activities are deeply interconnected. The organic growth pattern of the area has resulted in an irregular street morphology, absence of a clear hierarchy, and overlapping functional uses, which together contribute to inefficiencies in movement and space utilization. Streets that were originally designed for circulation have evolved into multifunctional spaces accommodating vending, parking, loading, and social interaction, thereby reducing their effectiveness as movement corridors. The analysis highlights that pedestrian movement dominates the area; however, the lack of continuous and obstruction-free pathways forces pedestrians to share space with vehicles, leading to congestion and safety concerns. Vehicular movement, on the other hand, is unregulated and highly mixed, further intensifying conflicts and reducing efficiency. Encroachments, particularly in the form of informal vending and shop spillovers, play a dual role by contributing to economic

vibrancy while simultaneously restricting movement and creating spatial disorder. Another critical issue identified is the lack of accessibility and inclusive design, which limits the usability of the space for differently-abled users and reduces overall comfort. The absence of proper infrastructure, traffic management, and spatial organization further exacerbates these challenges.

However, despite these issues, Jyoti Market demonstrates strong economic vitality, adaptability, and active street life, which are significant strengths that can be leveraged for improvement. The findings of this chapter emphasize that the primary problem lies not in the presence of activity but in the lack of structured organization and planning. Therefore, a balanced approach that prioritizes pedestrians, organizes space efficiently, and integrates informal activities is essential for improving mobility, safety, and overall urban experience.

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CHAPTR 8 – PHYSICAL INFRASTRACTURE

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Abstract

This study examines the spatial, infrastructural, environmental, and institutional challenges of the Jyoti Informal Market in Jalandhar, Punjab. The market represents a typical high-density informal commercial system characterized by unregulated growth, inadequate infrastructure, and inefficient service delivery. Through detailed analysis of solid waste management, lighting and electricity systems, mobility, service infrastructure, and policy frameworks, the study identifies critical gaps affecting urban functionality, public health, and economic efficiency.

The research reveals that waste management is largely reactive, with no segregation at source and dependence on centralized

disposal. Similarly, lighting and electrical infrastructure suffer from uneven distribution, unsafe informal connections, and lack of planning. Mobility is constrained due to encroachment, absence of loading zones, and unregulated vending patterns. Institutional fragmentation and weak enforcement further exacerbate these issues.

1. Solid Waste Management

Solid Waste Management (SWM) is a critical component of urban planning and environmental sustainability, concerned with the systematic handling of waste from its generation to final disposal. It includes key stages such as waste generation, segregation, storage, collection, transportation, processing, and safe disposal. In rapidly urbanizing cities, especially in developing countries like India, effective SWM is essential to maintain public health, environmental quality, and overall urban livability.

Municipal solid waste is generated from various sources such as households, commercial establishments, markets, and street vendors. In informal market areas, the

nature of waste is typically mixed and dominated by organic waste (from food and vegetable vendors), plastics (from packaging), and recyclables like cardboard. Due to high density and continuous activity, these areas generate waste throughout the day, often exceeding the capacity of existing management systems. One of the major challenges in SWM is the lack of segregation at source, which reduces the efficiency of recycling and processing systems. When waste is not separated into biodegradable, recyclable, and non-recyclable categories, it leads to excessive landfill use, environmental pollution, and loss of valuable resources. Improper disposal practices such as open dumping and burning further contribute to air, water, and soil pollution.

Efficient SWM systems aim to minimize waste generation, promote reuse and recycling, and reduce dependency on landfills through decentralized treatment methods like composting and material recovery facilities. In the context of informal markets, SWM becomes even more important due to space constraints, high

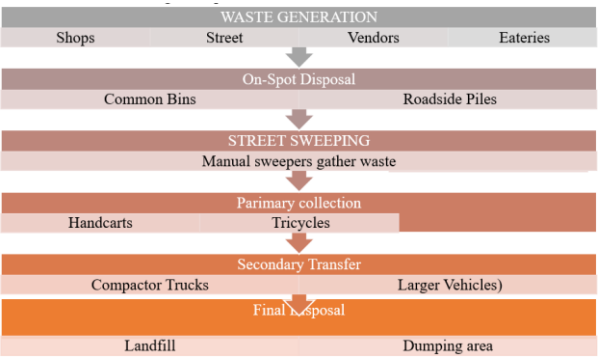
footfall, and direct impact on public health and hygiene.

Therefore, an integrated and well-planned solid waste management system is essential to ensure cleaner, healthier, and more sustainable urban environments, while also improving the efficiency and functionality of commercial spaces like informal markets.

Solid Waste Management Process

Waste generation from multiple sources such as shops, street areas, vendors, and eateries. Due to the mixed-use nature of the market, the waste produced includes organic matter, plastic packaging, cardboard, and other materials. However, there is no system of segregation at the source, resulting in all types of waste being mixed together from the very beginning. This lack of segregation reduces the potential for recycling and efficient processing later in the system.

Table 8.1:- Solid Waste Management Process



Source:- Computed Value, 2026

Table 8.1: Waste Generation

Waste Type	Major Source	Approx. Share
Organic Waste	Eateries, vegetable vendors	35–40%
Plastic Waste	Packaging, carry bags	25–30%
Cardboard	Garment & footwear shops	15–20%
Textile Scraps	Cloth shops	5–8%

Miscellaneous	Mixed commercial waste	5–10%

Source:- Computed Value, 2026

On-Site:- through informal and semi-formal methods. Some waste is placed in common bins, but due to their limited number and capacity, a significant portion is dumped along roadsides, forming open waste piles. This reflects an unplanned disposal system where accessibility and convenience take precedence over proper waste handling practices. Overflowing bins and roadsidedumping contribute to unhygienic conditions and visual pollution within the market.

Street Sweeping:- where manual sweepers collect scattered waste from roads, open spaces, and dumping points. This process is largely labor-intensive and depends heavily on human effort. While it helps in consolidating waste, it is not always efficient, especially during peak hours when waste generation is high and sweeping schedules are not synchronized.

Primary Collection Stage:- where it is transported using small-scale vehicles such as handcarts, tricycles, and small tippers. These vehicles are suitable for navigating the narrow lanes of the market, but the process is slow and often irregular. The lack of proper timing and coordination means that waste can accumulate before being collected, leading to temporary congestion and sanitation issues.

Secondary Transfer Stage:- where it is transferred into larger vehicles like compactor trucks or other transport vehicles. This stage is intended to facilitate the movement of waste out of the market area. However, due to the absence of well-defined transfer points and organized systems, delays and temporary accumulation of waste often occur, further reducing efficiency.

Final Disposal Stage:- where it is transported to landfills or dumping areas. At this point, the waste remains completely mixed, as no segregation, recycling, or treatment processes have been applied throughout the system. This results in heavy reliance on landfills, environmental pollution, and the loss of potentially reusable or recyclable

materials. Overall, the system follows a linear and reactive approach, lacking sustainability, efficiency, and proper planning.

2. Bin Location and Usage Strategy

The placement of bins in Jyoti Informal Market is based on activity intensity, waste generation type, and accessibility**.** Instead of random placement, bins are strategically distributed to ensure maximum coverage and ease of use**.**

In the high-density core market area (pedestrian zone)**,** where vegetable vendors and eateries are concentrated, bins are placed at a closer spacing of 10–15 meters**.** These locations include vendor clusters, intersections, and areas with high organic waste generation. Since this zone produces the highest volume of biodegradable waste, more green bins (organic) are provided here.

In the shared street zone (moderate activity area)**,** bins are placed at a slightly wider interval of 15–20 meters. These are located near shop fronts, small junctions, and along pedestrian pathways. This ensures that both

vendors and customers have easy access without causing obstruction to movement.

In the service and edge zones (outer roads), bins are placed at 20–25 meter intervals, mainly near loading/unloading points, parking areas, and entry nodes. These locations also include secondary storage points, where waste from inner areas is temporarily accumulated before collection.
Special attention is given to placing bins:

- At junctions (natural stopping points)
- Near vegetable and food vendors
- Close to high footfall areas
- Along service routes for easy collection access

This planned distribution prevents waste dumping in undesignated areas and ensures a clean and organized environment.

Types Of Bins Provided

3-bin segregation system is introduced across the market:

- Green Bin (Organic Waste):- For food waste, vegetable waste, and biodegradable materials

- Blue Bin (Recyclable Waste):- For plastic, paper, cardboard, and packaging materials
- Black Bin (Reject Waste):- For non-recyclable and contaminated waste.

Figure 8.1 Types of Bins

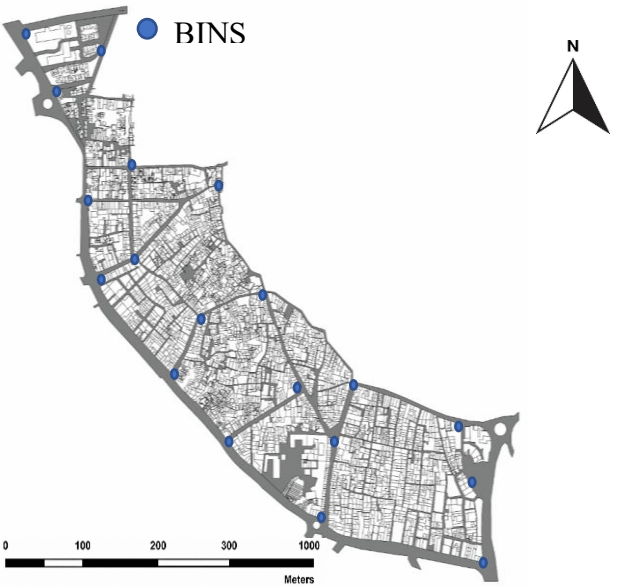


Figure 8.2 Bins Location

How Bins Are Used (Operational System)

The usage of bins follows a structured and user-friendly system designed for both vendors and visitors. Vendors are required to segregate waste at the source before disposal. For example, vegetable vendors dispose of organic waste in green bins, while shopkeepers place packaging materials in blue bins. Black bins are used only for residual waste that cannot be recycled or composted. To ensure efficiency, waste is disposed of multiple times throughout the day, preventing overflow. Vendors are encouraged to keep small temporary containers at their stalls and periodically empty them into the nearest bin cluster.

The bins are designed to be:-

- Covered to prevent odor and pest issues
- Durable and easy to clean
- Placed without obstructing movement

Collection And Linkage With System:-

- The bin system is directly connected to the waste collection network**:**
- Waste from bins is collected at fixed intervals (morning & evening)

- Collected waste is transported via handcarts/tricycles to edge points
- From there, it is moved to:
- Composting units (organic waste)
- Material Recovery Facility (recyclables)
- Landfill (reject waste)
- This creates a semi-circular system, reducing landfill dependency.

Benefits Of This Bin System

- Ensures cleaner streets and reduced littering
- Promotes segregation at source
- Improves efficiency of waste collection
- Reduces environmental impact
- Supports recycling and composting

3. Environmental and Spatial Impact

Poor solid waste management in the Jyoti Informal Market results in significant environmental degradation and urban inefficiencies. One of the primary impacts is the rapid decomposition of organic waste, especially from vegetable vendors and eateries. This leads to the emission of foul odors and the creation of unhygienic conditions that attract flies, rodents, and stray animals. Such conditions increase the risk of

vector-borne diseases and negatively affect public health for both vendors and visitors. In addition, open dumping and occasional burning of waste contribute to air pollution by releasing harmful gases and particulate matter into the atmosphere.

Plastic and packaging waste further aggravate environmental issues by clogging drainage systems. During rainfall, blocked drains lead to waterlogging, which not only disrupts daily activities but also damages infrastructure such as roads and pavements. Stagnant water combined with organic waste creates breeding grounds for mosquitoes, increasing the likelihood of diseases such as dengue and malaria. Moreover, leachate from decomposing waste can seep into the ground, contaminating soil and potentially affecting groundwater quality over time.

From a visual and aesthetic perspective, accumulated waste reduces the overall image and attractiveness of the market. A cluttered and dirty environment discourages customers, affecting local businesses and reducing economic vitality. It also impacts the perception of the city for visitors and tourists, lowering the overall urban experience.

Spatially, improper waste disposal has a direct impact on the functionality of the market. Roadside dumping and overflowing bins encroach upon pedestrian pathways, forcing people to walk on the carriageway and increasing the risk of accidents. This reduces effective road width and disrupts the smooth movement of both pedestrians and vehicles. Waste collection and handling activities, especially when carried out during peak hours, further contribute to traffic congestion and delays. The lack of designated spaces for waste storage and transfer leads to inefficient use of urban space, creating conflicts between movement, vending, and service activities.

4. Infrastructure Gaps

The analysis of the existing solid waste management system in Jyoti Informal Market reveals several critical gaps that limit its efficiency and sustainability. One of the most significant issues is the **absence of source segregation**, where waste is not separated into biodegradable, recyclable, and non-recyclable categories at the point of generation. As a result, all waste streams get mixed, making it difficult to recover valuable

materials and reducing the effectiveness of recycling and composting processes. This not only increases the volume of waste sent to landfills but also leads to the loss of potentially reusable resources.

Another major gap is the **insufficient and poorly distributed bin infrastructure** within the market. Existing bins are limited in number and are primarily located along main roads, leaving inner lanes and high-density vendor areas underserved. This uneven distribution forces vendors and users to dispose of waste in nearby open spaces, leading to roadside dumping and the formation of waste hotspots. Additionally, the lack of clearly designated bin types further discourages proper disposal practices.

The system also lacks **decentralized waste treatment facilities**, such as composting units for organic waste and Material Recovery Facilities (MRFs) for recyclables. Given that a large proportion of the waste generated is organic in nature, the absence of local processing units leads to unnecessary transportation of waste to distant landfills. This increases operational costs, energy consumption, and environmental impact,

while also overburdening municipal infrastructure.

A critical operational gap is the poor synchronization between waste generation and collection timing. Waste is generated continuously throughout the day, with peak accumulation during evening hours, whereas collection schedules are often fixed and not aligned with these patterns. This mismatch results in temporary waste accumulation, overflowing bins, and unhygienic conditions during peak periods. It also reduces the overall efficiency of the collection system.

Furthermore, the entire waste management approach is largely reactive rather than proactive or planned. Actions are taken only after waste accumulates, rather than preventing accumulation through systematic planning and monitoring. There is limited integration of waste management into the spatial planning of the market, and no structured mechanism for vendor participation or accountability.

These gaps collectively lead to inefficiencies in the waste management system, increased workload for municipal services, higher

operational costs, and deteriorating environmental and public health conditions. Addressing these issues requires a shift toward a more organized.

5. Lighting And Electricity

The existing street lighting system in Jyoti Informal Market is partially developed and lacks a comprehensive planning approach. While main roads are equipped with LED street lights, the internal streets and narrow lanes—where most market activities actually take place—remain poorly illuminated. The lighting distribution is highly uneven, with some stretches receiving adequate light while others remain dim or completely dark. This inconsistency is largely due to irregular pole spacing, varying mounting heights, and absence of a uniform design standard

In many inner areas, lighting depends on indirect sources such as spillover from shops, temporary bulbs, or informal connections. These sources are unreliable and insufficient for public use. Additionally, obstructions such as vendor stalls, signboards, and temporary structures block light distribution, creating shadow zones and reducing visibility.

The absence of a clearly defined lighting hierarchy—based on road type, activity level, and user needs—results in patchy illumination across the market.



Figure No. 6 Streetlight

Source:- AGC Lighting, (2020, May 12)

This condition becomes particularly problematic during evening and night hours when the market remains active. Poor lighting not only affects visibility but also reduces the sense of safety and comfort for pedestrians, especially women, elderly users, and children. It limits the usability of public spaces after dark and negatively impacts the overall economic potential of the market.



Figure No. 7 Streetlight

Source:- AGC Lighting, (2020, May 12)

Electrical Infrastructure

The electrical infrastructure in the market reflects a mix of formal and informal systems. While the area is connected to the municipal electricity grid, the supply is not equitably distributed. Formal shops generally have legal connections, but a large number of informal vendors do not have access to authorized electricity sources. As a result, they rely on temporary arrangements such as extension cords, shared connections, illegal tapping from nearby lines, or battery-operated lighting.

This informal setup leads to a highly congested network of overhead wires, often loosely hanging between poles and buildings. Multiple connections are drawn from a single source without proper insulation or load

management, creating a tangled and unsafe wiring environment. The lack of organized distribution infrastructure not only affects reliability but also creates significant visual clutter, degrading the overall streetscape quality.

Moreover, the absence of proper electrical planning results in uneven load distribution. Some areas experience voltage drops and fluctuations, affecting lighting performance and electrical appliances. In peak hours, overloading of circuits is common, increasing the risk of short circuits and system failures.



Figure No. 8 wires

Source: Primary Survey, 2026

Issues and Implications

The current lighting and electrical system presents several serious challenges. One of the most critical issues is the **risk of fire**

hazards, caused by exposed wires, illegal connections, and overloaded circuits. In a dense market environment with flammable materials such as plastic sheets, wooden stalls, and packaging materials, even a small electrical fault can lead to major accidents.

Another major concern is **unequal access to electricity**, which creates disparities between formal and informal users. Vendors without legal connections are forced to depend on unsafe alternatives, increasing both economic burden and safety risks. This also limits their ability to operate efficiently, particularly during evening hours. Poor lighting conditions further contribute to **safety and security issues**. Dark zones within the market increase the likelihood of theft, accidents, and antisocial activities. Inadequate illumination also affects navigation and reduces pedestrian comfort, discouraging people from visiting the market at night.

Additionally, the lack of reliable electrical infrastructure impacts the **economic performance of the market**. Shops and vendors are unable to display goods

effectively, and business hours are restricted due to insufficient lighting. This reduces customer engagement and overall revenue generation.

6. Gap Analysis

The analysis identifies several critical gaps in the existing system that need to be addressed through planning and design interventions. One of the primary gaps is the absence of underground cabling**,** which leads to excessive overhead wiring, visual clutter, and increased safety risks. Underground systems are essential for improving both safety and aesthetics.

Another major gap is the lack of formal electricity access for informal vendors. Without proper connections, vendors are forced into unsafe practices that compromise the entire system. There is a need for structured solutions such as shared electrical kiosks or regulated connections.

The lack of a lighting hierarchy is also a significant issue. Currently, lighting is not designed based on street type or activity intensity, resulting in inefficient and uneven

illumination. A planned hierarchy is required to ensure that high-activity areas receive higher illumination levels, while secondary areas are adequately but efficiently lit.



Figure 8.6 Street Light Map

7. Services And Mobility Analysis

Road and Mobility Access

The road and mobility conditions in Jyoti Informal Market are highly constrained due to the coexistence of multiple users within limited space. Pedestrians, cyclists, handcarts, two-wheelers, cars, and service vehicles all compete for the same carriageway, resulting in frequent conflicts and congestion. The situation is further aggravated by the organic growth of the market, where street vendors occupy portions of the roadway and footpaths without defined boundaries. This encroachment significantly reduces the effective width of the road, leaving insufficient space for smooth movement.

The absence of designated pedestrian pathways forces people to walk on the carriageway, increasing the risk of accidents and slowing down vehicular movement. In addition, informal activities such as temporary stalls, display of goods, and social interactions spill onto circulation spaces, further obstructing movement. On-street parking, particularly of two-wheelers and delivery vehicles, adds another layer of congestion by occupying valuable road space.

As a result, travel time within the market increases, accessibility is reduced, and the overall user experience becomes stressful and inefficient.

Loading and Off-Loading System



Figure 8.7 Loading & Unloading Zones
Source:- Generated Image, 2026

The loading and off-loading of goods in the market are currently unregulated and poorly managed. There are no designated zones or spaces allocated for these activities, leading to the use of public roads and intersections for unloading goods. Vendors and shopkeepers receive supplies directly in front of their establishments, often during peak business

hours when pedestrian and vehicular traffic is at its highest.

This practice creates temporary bottlenecks, as delivery vehicles occupy significant portions of the road while goods are being unloaded. The process is often slow and uncoordinated, involving manual handling and multiple trips, which further prolongs obstruction. In narrow streets, even a single delivery vehicle can block the entire passage, 56disrupting movement and causing delays. The lack of planning for loading and off-loading operations not only affects traffic flow but also reduces the efficiency of commercial activities.

Storage System

Storage is a major challenge within the market due to limited space and high density of commercial activities. Most shops and informal vendors do not have adequate internal storage facilities, forcing them to use adjacent public spaces such as footpaths, road edges, and open areas for storing goods. This includes stacking of crates, packaging materials, and unsold products.

Such practices lead to continuous encroachment of circulation spaces, reducing the available area for movement. It also creates visual clutter and contributes to an unorganized streetscape. From a safety perspective, goods stored in open areas are exposed to damage from weather, theft, or accidental collisions. The lack of secure and designated storage solutions increases operational inefficiencies and affects the overall functionality of the market.

Delivery and Timing System

The delivery system in the market operates without any defined schedule or regulation. Goods are delivered throughout the day based on convenience rather than planning, including during peak hours when the market is most crowded. This uncoordinated approach leads to frequent conflicts between delivery activities and pedestrian movement.

Peak-hour deliveries are particularly problematic, as they coincide with high customer footfall. Delivery vehicles entering the market during these times contribute significantly to congestion and delay. The

absence of time-based restrictions or designated delivery windows prevents efficient distribution of goods and increases operational stress for both vendors and service providers. Additionally, the lack of coordination between suppliers and vendors results in irregular delivery patterns, making it difficult to manage space and movement effectively. This highlights the need for a structured system that aligns delivery timing with market activity patterns.

Impact on Services and Infrastructure

The combined effect of inadequate mobility planning, unregulated loading activities, insufficient storage, and unstructured delivery systems leads to a range of negative impacts on the overall functioning of the market. Mobility is severely affected, with frequent congestion, delays, and reduced accessibility for both pedestrians and vehicles. Emergency access is also compromised, posing risks in critical situations.

Logistics operations become inefficient due to lack of coordination and space, increasing

time and cost for vendors and suppliers. The encroachment of public spaces reduces the usability of infrastructure and creates conflicts between different user groups. Safety is also a major concern, as crowded and unorganized conditions increase the likelihood of accidents and injuries. From an economic perspective, these inefficiencies reduce the productivity of the market and limit its growth potential. Customers may avoid visiting due to congestion and discomfort, affecting business performance. Overall, the lack of a structured services and mobility system significantly reduces the functionality, safety, and sustainability of the market.

8. Climate Challenges (Heat & Rain)

Heat

Informal markets such as Jyoti Bazaar are highly vulnerable to climatic conditions due to their unplanned layout and lack of resilient infrastructure. Extreme heat conditions significantly affect both vendors and users, as most vending spaces lack shading devices, proper roofing, or ventilation systems. During peak summer months, temperatures

rise considerably, creating uncomfortable and even unsafe working conditions. Vendors are often exposed to direct sunlight for long hours, which reduces productivity and increases health risks such as dehydration and heat stress. Additionally, heat accelerates the decomposition of organic waste, leading to foul odours, unhygienic conditions, and increased attraction of pests.

Rainfall

Rainfall presents another major challenge in such markets. The absence of proper drainage systems leads to waterlogging, especially in low-lying and densely built areas. Streets and narrow lanes become muddy and slippery, affecting pedestrian movement and reducing accessibility. Informal structures, often made of temporary materials, are not weather-resistant and are prone to damage during heavy rains. Water accumulation also mixes with waste materials, resulting in contaminated runoff that poses serious public health risks. Furthermore, poor drainage contributes to blockage of natural water flow, increasing the chances of localized flooding. These climatic challenges highlight the need

for climate-responsive planning interventions such as shaded walkways, improved drainage systems, elevated vending platforms, and the use of durable, weather-resistant materials.

Environmental Impacts of Bazaars



Figure 8.8 Environmental Impact
Source:- Generated Image, 2026

Informal bazaars have significant environmental implications due to their high density, continuous activity, and lack of structured infrastructure. One of the major impacts is related to solid waste generation.

Markets produce large quantities of mixed waste, including organic waste, plastics, packaging materials, and other non-biodegradable components. in the absence of proper segregation and management systems, this waste is often dumped on streets or in open areas, leading to land pollution and visual degradation. another critical issue is air pollution, which arises from multiple sources such as vehicular congestion, open burning of waste, and dust generated from unpaved or poorly maintained surfaces. high footfall and traffic movement in confined spaces further intensify pollution levels, affecting both environmental quality and human health.

Water pollution is also a major concern, particularly during the rainy season. Waste materials and organic matter are washed into drainage systems, clogging them and contaminating water bodies. This not only disrupts the urban drainage network but also contributes to long-term ecological damage. The lack of green spaces and vegetation in dense market areas reduces the natural capacity of the environment to regulate temperature and absorb pollutants. This

contributes to the urban heat island effect, making the market areas significantly hotter than surrounding regions.

Overall, the environmental impacts of informal bazaars are interconnected and cumulative, affecting air, water, and land quality. Addressing these issues requires integrated solutions such as waste segregation, improved infrastructure, green interventions, and sustainable urban management practices.

Water supply

The study area highlights critical issues related to urban infrastructure, particularly focusing on drainage, sewerage systems, and their impact on public health and market functioning. Rapid urbanization, inadequate infrastructure upgrades, and poor maintenance practices have led to severe environmental and health challenges.

Existing Sewerage and Drainage Condition

The area is primarily served by an old underground sewer network, which has not been significantly upgraded over time. A

major issue is the combined sewer system, where both rainwater and sewage are carried through the same pipelines. This leads to system overloading during rainfall events. Additionally, limited upgrading efforts have resulted in inefficiencies and frequent failures in the network. The stormwater drainage system is inadequate, and improper slope management prevents efficient flow of water. Encroachment over natural drains further reduces their carrying capacity, worsening the drainage condition.

Causes of Flooding and Waterlogging

Flooding in the area is the result of multiple interconnected factors. Blocked drains due to garbage dumping is one of the primary causes, as solid waste such as plastics obstructs water flow. The presence of low-lying market areas makes the locality highly vulnerable to water accumulation.Heavy rainfall intensity further aggravates the situation, while urban concretization reduces natural water infiltration. The loss of open spaces limits groundwater recharge, increasing surface runoff and flooding risk.

Solid Waste and Maintenance Issues

Improper solid waste management contributes significantly to drainage problems. Waste disposal in open drains leads to frequent blockages. The area also suffers from poor maintenance practices, including irregular desilting and a reactive approach instead of preventive measures. This further reduces the efficiency of drainage infrastructure.

Public Health Impacts

The poor sanitation and drainage conditions have serious public health implications. Contaminated water used for food preparation creates unsafe conditions for vendors and consumers. This results in:Reduced hygiene levels,increased customer health risksDamage to vendors' reputation ,additionally, stagnant water becomes a breeding ground for mosquitoes, leading to the spread of diseases such as dengue, malaria, cholera, and diarrhea. Food contamination is also a major concern in market areas.

Impact on Informal Market Areas

The informal market areas are heavily affected due to their location in low-lying zones. Waterlogging disrupts daily activities, damages goods, and reduces accessibility. Lack of proper infrastructure and unregulated vendor activities further worsen congestion and drainage blockage.

Institutional and Infrastructure Gaps

Another key issue is the lack of coordination between municipal services, which leads to inefficient management of drainage, waste, and infrastructure systems. The absence of integrated planning results in recurring problems rather than long-term solutions.

The study of Jyoti Chowk highlights the interrelationship between urban infrastructure deficiencies and the functioning of informal markets. The area represents a dense commercial node where drainage, sanitation, and street vending activities are closely interconnected. Rapid urbanization without adequate infrastructure planning has resulted in multiple challenges affecting both environmental conditions and economic activities. Another major

institutional gap is the absence of designated vending zones or planned hawker spaces, forcing vendors to occupy roads, footpaths, and intersections. Studies show that informal markets typically emerge in unplanned spaces such as road edges and vacant land, creating inefficiencies and conflicts in urban land use The area suffers from severe traffic congestion due to encroachment by vendors, lack of parking spaces, and absence of proper traffic management systems. Narrow road widths combined with high pedestrian and vehicular movement create unsafe conditions and frequent bottlenecks. The study of Jyoti Chowk highlights the interrelationship between urban infrastructure deficiencies and the functioning of informal markets. The area represents a dense commercial node where drainage, sanitation, and street vending activities are closely interconnected. Rapid urbanization without adequate infrastructure planning has resulted in multiple challenges affecting both environmental conditions and economic activities.

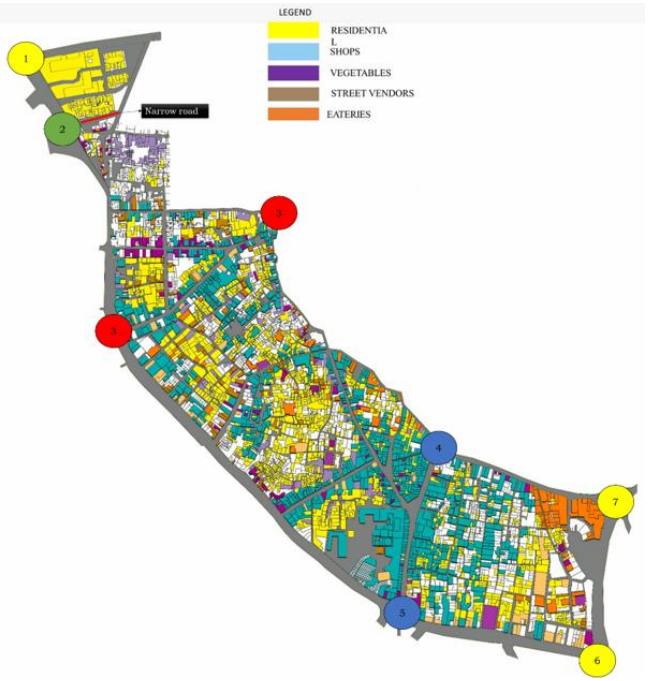


Figure 8.9 Infrastructure Gap Map

9. Zoning & Circulation Strategy

The proposal introduces a structured spatial framework to address congestion, improve mobility, and organize activities within the Jyoti Informal Market. Instead of removing informal activities, the strategy focuses on rearranging and managing space efficiently through a clear zoning system.

The Service and Logistics Corridor (Blue Zone) is located along the outer edges of the market and is designed to accommodate all heavy and service-related functions. These include loading and unloading of goods, waste collection operations, and designated parking areas. By shifting these activities away from the inner core, the proposal prevents large vehicles from entering narrow and congested streets. This not only improves internal circulation but also ensures that service operations are carried out in a controlled and efficient manner without disrupting pedestrian movement. The Pedestrian Priority Zone (Red Zone) forms the central core of the market, where vehicular access is restricted or completely eliminated. This transformation allows the space to function primarily as a pedestrian-friendly environment, improving safety, comfort, and accessibility. By removing vehicular conflicts, the zone enhances the overall shopping experience, encourages longer visitor stays, and supports local businesses. It also creates opportunities for better spatial organization of vendors,

improved cleanliness, and enhanced public interaction.



Figure No. 12

Source: Computed Value, 2026

The Shared Streets (Orange Zone) act as transition areas between the service corridor and the pedestrian core. These streets are designed to accommodate slow-moving vehicles while prioritizing pedestrian movement. Traffic calming measures such as reduced speed limits, textured paving, and visual cues are introduced to ensure safe coexistence of different users.

10. Infrastructure & Utility Upgrades

A key component of the proposal is the transformation of existing informal and unsafe systems into **formal, organized, and**

sustainable infrastructure. This ensures long-term reliability, safety, and efficiency.

In terms of **electricity**, the proposal recommends transitioning from chaotic overhead wiring to a system of **underground cabling** in dense market areas. This significantly reduces the risk of electrical hazards such as short circuits and fires, while also improving the visual quality of the streetscape. To support informal vendors, organized electrical kiosks are introduced at strategic locations. These kiosks provide regulated and metered electricity connections, ensuring fair access, reducing illegal tapping, and improving load management.

For solid waste management, a decentralized and efficient system is proposed. A 3-bin segregation system is implemented across the market, with color-coded bins placed at regular intervals based on activity intensity. This encourages segregation at source and improves waste handling efficiency. Organic waste, which forms a major portion of market waste, is processed locally through composting units located within or near vegetable vending areas. This reduces the

volume of waste transported to landfills and produces compost that can be reused.

Additionally, a Material Recovery Facility (MRF) is established at the edge of the market to handle recyclable waste such as plastic, paper, and cardboard. This facility enables sorting, storage, and transfer of recyclable materials, promoting resource recovery and reducing environmental impact. Together, these interventions create a semi-circular waste management system, moving away from the current linear disposal model.

11. Hierarchical Lighting System

To improve safety, usability, and economic activity, the proposal introduces a hierarchical lighting system designed according to street type and activity level. This ensures efficient distribution of light while minimizing energy consumption.On main roads and service corridors**,** high-mast LED lights with heights of 12–15 meters are proposed. These provide wide-area illumination, ensuring safe movement for vehicles and supporting night-time logistics operations. For **primary market streets**, **single-arm pole-mounted LED lights** with

heights of 6–8 meters are used. These provide balanced lighting suitable for both pedestrians and slow-moving vehicles.



Figure No. 13

Source: Computed Value, 2026

In dense inner lanes, where space is limited and pole installation is difficult, wall-mounted lighting fixtures are introduced. These save space while ensuring adequate



Figure 8.13 LED lights

Source:

illumination in narrow passages. At the **vendor level**, integrated strip lighting is proposed within stalls to enhance product visibility and improve the shopping experience.

Special attention is given to junctions and activity nodes**,** where focus lighting (flood lights) is installed to eliminate dark spots and improve safety. Similarly, utility lighting is provided at waste collection points and service areas to support night-time operations. The system also incorporates energy-efficient LED technology and can be integrated with solar power and smart controls for sustainability.

12. References

1. *Bureau of Indian Standards (BIS) – Code of Practice for Street Lighting*
2. *Central Public Health and Environmental Engineering Organisation (CPHEEO) – Manual on Solid Waste Management*
3. *Ministry of Housing and Urban Affairs (MoHUA), Government of India – Street Vendors Act, 2014*
4. *National Urban Livelihoods Mission (NULM) Guidelines*

5. *UN-Habitat – Planning Sustainable Cities: Global Report*
6. *World Bank – Urban Development and Informal Economy Reports*

CHAPTER 9 – POLICY AND GOVERNANCE FRAMEWORK

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Abstract

The policy and institutional analysis of Jyoti Informal Market highlights critical gaps in governance, regulation, and service coordination within the informal sector. Despite the presence of national frameworks such as the *Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014*, the study area lacks effective implementation at the local level. Vending activities operate without clearly demarcated zones, leading to spatial conflicts, congestion, and inefficient use of public space.

The existing licensing system is inadequate, with a significant number of vendors functioning without formal registration, resulting in limited accountability and reduced access to basic services. Institutional responsibilities are fragmented across multiple agencies, including municipal

authorities, electricity boards, and traffic police, with minimal coordination and absence of a unified management mechanism. This fragmented governance structure leads to delays in service delivery, weak enforcement of regulations, and poor infrastructure maintenance.

1. Introduction

Informal markets are an integral part of urban economies in India, providing employment opportunities, supporting small-scale entrepreneurship, and ensuring the availability of affordable goods and services. However, their organic and unregulated growth often results in spatial disorder, infrastructure deficiencies, and governance challenges. The effective management of such markets requires not only physical planning interventions but also a robust policy and institutional framework that can guide, regulate, and sustain their functioning.

2. Vending Zone Regulations

The Jyoti Informal Market currently operates without a clearly defined spatial framework for vending activities. In the absence of designated vending and non-vending zones, vendors occupy available spaces based on convenience, visibility, and customer flow rather than planning guidelines. As a result,

vending takes place on footpaths, road edges, intersections, and even within carriageways. This unregulated occupation leads to overlapping of activities, creating conflicts between pedestrians, vehicles, and vendors. The lack of zoning also makes it difficult to manage density and distribution of vendors across the market. High-demand areas become overcrowded, while other areas remain underutilized. Critical nodes such as junctions and entry points, which should remain clear for movement and visibility, are often heavily encroached. This not only reduces accessibility but also compromises safety and emergency response.

Furthermore, the absence of a formal zoning policy limits the ability of authorities to regulate or relocate vendors effectively. Without a structured framework, any enforcement action is perceived as arbitrary, leading to resistance from vendors. A planned zoning system is therefore essential to balance livelihood needs with spatial efficiency.

3. Licensing Framework

The licensing system for vendors in the market is either weak or inadequately implemented. A significant number of vendors operate without formal licenses,

while those who are registered often deal with outdated and manual systems. The lack of a comprehensive and updated database makes it difficult for authorities to track the number, type, and location of vendors. The absence of a digital and transparent licensing mechanism leads to several issues, including duplication of licenses, unauthorized vending, and lack of accountability. It also creates opportunities for informal payments and corruption, further weakening the governance system. Vendors without licenses remain vulnerable to eviction or harassment, as they do not have legal recognition or protection.

Additionally, the current system does not link licensing with service provision or spatial allocation. There is no mechanism to ensure that licensed vendors follow designated zones, waste management practices, or operational guidelines. This disconnect between licensing and planning reduces the effectiveness of regulatory measures.

4. Institutional Responsibility

The management of the market involves multiple agencies, each responsible for specific services. The municipal corporation handles waste management and sanitation, the electricity department manages power

supply, and traffic police oversee mobility and enforcement. While these agencies perform their individual roles, there is a lack of coordination and integration among them.

This fragmented governance structure results in overlapping responsibilities and gaps in service delivery. For example, waste collection may not align with traffic management plans, or electrical infrastructure improvements may not consider vendor layouts. The absence of a unified management body leads to inconsistent decision-making and delays in implementation.

Communication between agencies is often limited, and there is no centralized platform for planning or monitoring market operations. This reduces the efficiency of interventions and makes it difficult to address complex issues that require multi-agency collaboration.

5. Issues

The overall policy and institutional framework is characterized by the absence of a unified authority responsible for managing the market holistically. This leads to fragmented governance, where each agency

operates in isolation without a shared vision or coordinated strategy. As a result, policies are implemented inconsistently, and enforcement remains weak.

Another major issue is the **lack of effective enforcement mechanisms**. Even when regulations exist, they are not strictly followed due to limited monitoring, resource constraints, and resistance from stakeholders. This allows informal practices such as encroachment, illegal connections, and unregulated vending to continue unchecked.

The informal sector itself is not adequately integrated into the formal planning system. Vendors are often treated as encroachers rather than essential contributors to the urban economy. This exclusion results in policies that do not address their needs or realities, leading to conflicts and inefficiencies. There is also a lack of **participatory planning**, where vendors and local stakeholders are involved in decision-making processes. Without their input, policies may fail to reflect ground realities and are less likely to be successfully implemented.

Overall, the policy and institutional gaps highlight the need for a **coordinated, inclusive, and transparent governance framework** that integrates informal activities

into formal planning, strengthens enforcement, and improves inter-agency collaboration.

6. References

1. *Bureau of Indian Standards (BIS)* – Code of Practice for Street Lighting
2. *Central Public Health and Environmental Engineering Organisation (CPHEEO)* – Manual on Solid Waste Management
3. *Ministry of Housing and Urban Affairs (MoHUA), Government of India* – Street Vendors Act, 2014
4. *UN-Habitat* – Planning Sustainable Cities: Global Report
5. *World Bank* – Urban Development and Informal Economy Reports

CHAPTER 10 – KEY ISSUES AND OPPORTUNITY AREAS

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Abstract

This chapter provides a comprehensive and deeply analytical synthesis of the spatial and mobility conditions observed in Jyoti Market, translating the findings of the previous chapter into a structured understanding of key issues and potential opportunities for intervention. The analysis recognizes that the existing condition of the market is not simply a result of poor planning but rather an outcome of continuous adaptation, economic pressure, and user-driven spatial transformation. The chapter critically examines how the interaction between built form, movement systems, and informal activities has resulted in a complex urban environment where efficiency and disorder coexist. It highlights that the challenges faced in the area—such as congestion, lack of spatial clarity, pedestrian-vehicular conflicts, and accessibility issues—are deeply interconnected and cannot be addressed in

isolation. At the same time, the chapter identifies that the same factors contributing to inefficiency also create strong opportunities for transformation, as the area possesses high pedestrian activity, economic vibrancy, and adaptability. By examining these conditions in detail, the chapter establishes a clear framework for identifying intervention strategies that are both context-sensitive and inclusive, ultimately bridging the gap between analysis and design.

1. Introduction

Jyoti Market represents a highly complex urban condition where multiple layers of activity, movement, and economic interaction coexist within a constrained spatial framework. The detailed analysis carried out in the previous chapter demonstrates that the area functions as a dense and dynamic commercial system, where the demand for space consistently exceeds the available capacity. Despite this, the market continues to operate successfully due to its adaptability and the ability of users to negotiate space informally. However, this informal functioning also results in inefficiencies, conflicts, and safety concerns that affect the overall quality of the environment.

The purpose of this chapter is to interpret and consolidate the findings of the spatial and mobility analysis in order to identify the most critical issues affecting the performance of the area. Rather than simply listing problems, the chapter aims to understand the root causes of these issues and the relationships between them. This involves examining how physical constraints, user behavior, and economic activities interact to shape the existing condition. At the same time, the chapter shifts the focus towards identifying opportunities for improvement. Jyoti Market possesses several inherent strengths, such as high footfall, strong economic activity, and a vibrant street life, which can be leveraged to enhance its functionality. The chapter therefore adopts a balanced approach that considers both challenges and opportunities, providing a comprehensive framework for developing effective and sustainable design interventions.

2. Synthesis of All Analysis

Highly Dense and Compact Built Form Creating Infrastructure Stress

The spatial structure of Jyoti Market is defined by a highly dense and compact built environment, where buildings are closely packed with minimal setbacks and almost no provision for open spaces. This dense urban

fabric significantly restricts the capacity of the area to accommodate essential infrastructure and limits opportunities for spatial expansion or redevelopment. One of the most critical impacts of this compactness is on drainage and water management systems. Due to the absence of permeable surfaces, rainwater infiltration is minimal, leading to increased surface runoff during rainfall events. This results in frequent waterlogging, especially in low-lying areas and poorly drained streets, further exacerbated by clogged and outdated drainage infrastructure. In addition to hydrological challenges, the compact built form contributes to the formation of localized urban heat islands, as hard surfaces such as concrete and asphalt absorb and retain heat, raising ambient temperatures and reducing thermal comfort. The lack of open spaces also restricts air circulation, creating poorly ventilated conditions that affect both environmental quality and user comfort. Furthermore, the dense layout makes it difficult to introduce new infrastructure such as wider roads, utility corridors, or service lanes, thereby constraining future development and improvement. Overall, the compact built form acts as a fundamental constraint on environmental performance,

infrastructure efficiency, and urban livability within the market area.

Uneven and Unstructured Street Lighting Infrastructure with Safety and Visibility Challenges

The street lighting infrastructure in Jyoti Market reflects a highly uneven and unstructured system, where planning has primarily focused on main circulation routes while internal market areas remain inadequately served. Main roads are equipped with higher wattage LED streetlights ranging from 90W to 120W, ensuring relatively adequate illumination; however, secondary streets and inner lanes rely on lower wattage lights between 30W and 90W, resulting in insufficient and inconsistent lighting levels. This disparity is further intensified by variations in pole spacing and height, with main roads maintaining relatively uniform spacing of 25–30 meters and taller poles, while inner lanes exhibit irregular spacing of 12–18 meters and lower mounting heights. The organically evolved nature of the inner market has led to the absence of a structured lighting layout, forcing reliance on wall-mounted fixtures and spillover lighting from shops in several areas. Such dependence on private lighting sources creates an unreliable system, as illumination levels fluctuate based

on shop operating hours, often leaving areas poorly lit at night. Consequently, the overall lighting environment is characterized by uneven illumination, creating dark pockets and patchy visibility that compromise pedestrian comfort and safety. This inconsistency also affects wayfinding and spatial legibility, as the lack of a clear lighting hierarchy makes it difficult for users to identify primary routes and navigate effectively. Furthermore, the limited presence of solar street lighting indicates a lack of integration of sustainable solutions, highlighting missed opportunities for improving energy efficiency and long-term reliability.

Table 10.1:- Gap Analysis

GAP				
Aspect	Existing Condition (Facts)	Required Standard	Gap Identified	Implications
Lighting Distribution	Adequate lighting on main	Uniform lighting across	Uneven distribution; inner	Dark pockets → safety concer

	roads; poor lighting in inner lanes	all street hierarchies	lanes under-lit	ns, reduced usability
Pole Spacing	Irregular spacing (12–30 m depending on street)	Standard spacing (10–15 m in dense markets)	Large gaps in inner streets	Shadow zones; poor visibility
Lighting Intensity (Lux Level)	No defined lux levels; inconsistent brightness	Activity-based lighting (higher in market zones)	No planning based on usage intensity	Unsafe environment; reduced night-time activity

Maintenance System	Some non-functional lights; delayed repairs	Regular maintenance + monitoring system	Lack of periodic checks and quick response	Increase in dark zones over time
Electrical Wiring System	Overhead, tangled, and congested wiring	Organized underground cabling system	Unsafe and unplanned wiring network	Fire hazard; visual clutter
Vendor Electricity Access	Informal vendors use illegal connections	Formal, metered electricity access for all	No provision for informal sector	Unsafe practices; inequitable access

	or battery lights			
Energy Source	Fully dependent on grid electricity	Integration of renewable sources (solar/ hybrid)	Minimal use of solar systems	High energy cost; unsustainable system
Infrastructure Integration	Lighting not integrated with market layout	Lighting aligned with pedestrian & vendor zones	Disconnect between design and infrastructure	Inefficient illumination; blocked light spread
Safety Measures	No proper insula	Standard safety system	High-risk electrical	Fire accidents; risk to

	tion or circuit protection in informal setups	s (insulation, breakers)	practices	life and property

Source:- Computed value, 2026

Fragmented and Unsafe Electrical Infrastructure with Informal Dependency and System Inefficiency

The electrical infrastructure in Jyoti Market reflects a fragmented and unevenly managed system, where formal and informal connections coexist without proper integration or planning. While the area is connected to the Punjab State electricity grid and formal shops benefit from authorized and relatively stable electricity connections, informal vendors largely depend on temporary and unsafe alternatives such as extension wires drawn from nearby shops and portable battery-operated lighting. This has resulted in a highly congested network of overhead wiring, with multiple unregulated

connections running across poles in an unorganized manner. The primary cause of this condition lies in the absence of inclusive infrastructure planning, where informal vendors are not integrated into the formal electricity distribution system, and no provision exists for shared or regulated electrical access. Over time, incremental growth and increasing demand have led to the addition of wires without any systematic design, creating a chaotic and overloaded network. Weak enforcement of electrical safety norms further exacerbates the problem, allowing unsafe practices to continue unchecked. These conditions have serious implications, including a high risk of fire hazards due to exposed and overloaded wires, which is particularly dangerous in a dense built environment. Additionally, the excessive wiring contributes to visual clutter, reducing the aesthetic quality of the area. Voltage fluctuations caused by irregular connections affect the efficiency of lighting systems, while the lack of equitable access forces informal vendors to operate under unsafe and unreliable conditions. Overall, the electrical infrastructure highlights the need for a more inclusive, organized, and safety-oriented approach to urban service provision.



Figure 10.1 Unsafe Electrical Infrastructure

Fragmented and Unsafe Electrical Infrastructure with Informal Dependency and System Inefficiency

The electrical infrastructure in Jyoti Market reflects a fragmented and unevenly managed



Figure 10.2 Unsafe Electrical Infrastructure
Source:- Primary survey, 2026

system, where formal and informal connections coexist without proper integration or planning. While the area is connected to the Punjab State electricity grid and formal shops benefit from authorized and relatively stable electricity connections, informal vendors largely depend on temporary and unsafe alternatives such as extension wires drawn from nearby shops and portable battery-operated lighting. This has resulted in a highly congested network of overhead wiring, with multiple unregulated connections running across poles in an unorganized manner. The primary cause of this condition lies in the absence of inclusive infrastructure planning, where informal vendors are not integrated into the formal electricity distribution system, and no provision exists for shared or regulated electrical access. Over time, incremental growth and increasing demand have led to the addition of wires without any systematic design, creating a chaotic and overloaded network. Weak enforcement of electrical safety norms further exacerbates the problem, allowing unsafe practices to continue unchecked. These conditions have serious implications, including a high risk of fire hazards due to exposed and overloaded wires, which is particularly dangerous in a dense built environment. Additionally, the

excessive wiring contributes to visual clutter, reducing the aesthetic quality of the area. Voltage fluctuations caused by irregular connections affect the efficiency of lighting systems, while the lack of equitable access forces informal vendors to operate under unsafe and unreliable conditions. Overall, the electrical infrastructure highlights the need for a more inclusive, organized, and safety-oriented approach to urban service provision.

Narrow and Irregular Street Network with Poor Functional Hierarchy

The street network of Jyoti Market is highly irregular and lacks a clearly defined functional hierarchy, resulting in inefficient movement patterns and spatial disorganization. Although primary roads such as Jyoti Chowk act as key access points and attract major traffic flows, the internal street network is composed of narrow, winding lanes that have developed organically over time. These streets do not follow a structured classification into arterial, collector, and local roads, leading to confusion in movement patterns and inefficient circulation within the market area.

This lack of hierarchy creates multiple challenges, including congestion, conflict between pedestrians and vehicles, and limited accessibility for emergency and service vehicles. The absence of clear zoning

Table 10.2 Irregular Street

18 M NH- 44	The road is wide (18m) with proper lane segregation and designed for fast-moving traffic. There is minimal encroachment and no street vending, allowing smooth traffic flow.
10.5 m local market road	This road connects the market area and carries both vehicles and pedestrians. On-street parking and partial encroachments reduce effective width, slowing down movement.
9.5 m local road	The width is limited and supports mixed traffic (rickshaws, bikes, pedestrians). Commercial activities along the road increase roadside friction and reduce mobility.
5.5 m local road	This is a narrow road with simultaneous pedestrian and vehicular movement. Encroachments (shop spillovers, vendors) further reduce usable space, causing frequent congestion.
local road	A 2.5 m wide internal street experiences severe congestion due to encroachment by shop owners, who have extended staircases onto the road, significantly reducing the usable carriageway width.[7]

Source:- Computed Value, 2026

and street categorization further intensifies the overlap of activities such as vending, parking, and movement within the same limited space. As a result, the street network struggles to accommodate the high volume of users, highlighting the need for better spatial organization, defined street functions, and improved circulation planning.This absence of hierarchy leads to a collapse of functional differentiation, where all types of movement through traffic, local access, pedestrian circulation, and commercial activities occur simultaneously within the same limited space.

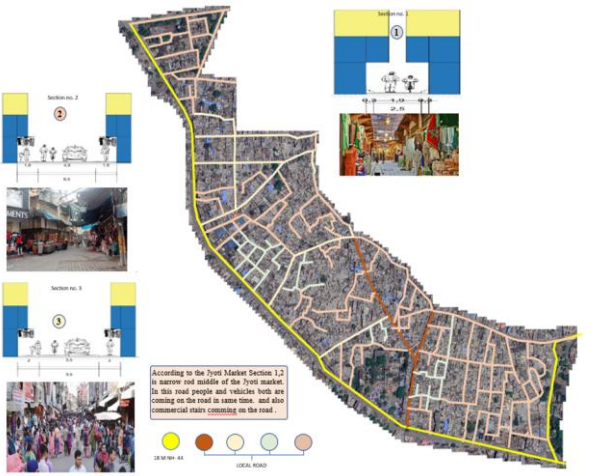


Figure 10.3 Irregular Street network

The narrow width of these streets further reduces their capacity to accommodate multiple uses, leading to congestion and frequent conflicts between users. Additionally, the irregular alignment of streets and lack of proper slope design hinder effective stormwater drainage, resulting in water stagnation during rainfall. The absence of clearly defined street functions also reduces the legibility of the urban environment, making navigation difficult for users. This condition forces people to rely on informal negotiation to move through space, which increases unpredictability and reduces efficiency. The lack of hierarchy not only

affects traffic flow but also limits the implementation of structured urban design and management strategies, making it a critical issue in the overall functioning of the market.

Mixed Land Use with Strong Informal–Formal Economic Interaction

Jyoti Market operates as a highly dynamic mixed-use commercial environment where formal retail establishments and informal vendors coexist in a closely interdependent relationship. Formal shops, including clothing stores, jewellery outlets, and general retail establishments, benefit significantly from the increased footfall generated by informal vendors, who attract a diverse range of customers through their accessibility and affordability. At the same time, informal vendors depend on the commercial appeal and customer base of formal shops to sustain their livelihoods, creating a mutually reinforcing economic system. This interaction results in a vibrant marketplace that caters to a wide spectrum of socio-economic groups, enhancing inclusivity and accessibility. However, this coexistence also creates spatial challenges, as both formal and informal activities compete for limited space within the street. Vendors often occupy footpaths and street edges to maximize visibility, while shopkeepers extend their

displays into public areas, leading to overlapping functions and reduced effective movement space. Despite these challenges, the mixed-use nature of the market is a key strength, as it contributes to economic resilience, diversity, and adaptability.

High Pedestrian Footfall with Inadequate Infrastructure

The analysis clearly indicates that pedestrian movement is the dominant mode of mobility within Jyoti Market, with high footfall observed throughout the day and peak congestion during residents, shoppers, workers, and visitors, resulting in consistently high pedestrian density. However, the infrastructure provided for pedestrian movement is highly inadequate and fails to accommodate this level of demand. Footpaths, where available, are often narrow, discontinuous, or encroached upon by vendors and shop extensions, forcing pedestrians to walk on the carriageway alongside moving vehicles. This creates unsafe and uncomfortable conditions, significantly reducing walking efficiency and increasing travel time. The Level of Service (LOS) analysis indicates moderate to congested conditions in key stretches, highlighting restricted movement and frequent interruptions. Additionally, the absence of essential pedestrian infrastructure

such as shading, seating, proper paving, and wayfinding elements further reduces the quality of the walking environment. The lack of universal accessibility features, including ramps and tactile paving, makes the area difficult to navigate for differently-abled users. This mismatch between high pedestrian demand and inadequate infrastructure provision is a critical issue that affects mobility, safety, and overall user experience.

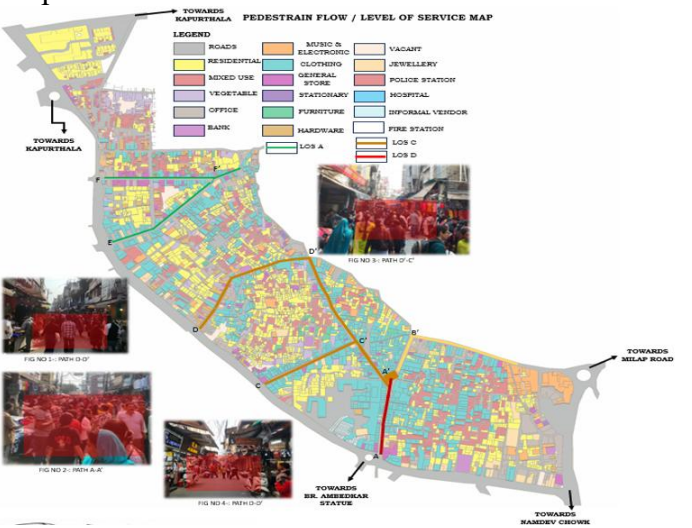


Figure 10.4 Pedestrian Footfall

Severe Encroachment and Loss of Effective Right Of Way (ROW)

Encroachment is one of the most significant issues affecting the spatial efficiency of Jyoti Market, resulting in a substantial reduction of

the effective Right of Way (ROW). The analysis indicates that nearly half of the available street space is occupied by informal vendors, shop spillovers, temporary structures, and on-street parking. These encroachments are primarily concentrated in high footfall areas such as main streets, junctions, and commercial hotspots, where visibility and accessibility are highest. While these activities contribute to the economic vibrancy of the market, their unregulated nature leads to inefficient space utilization and increased congestion. The reduction in effective carriageway width creates bottlenecks for vehicular movement, while the occupation of footpaths forces pedestrians onto the road, increasing conflicts and safety risks. Additionally, encroachments often obstruct drainage systems and reduce environmental quality, contributing to issues such as waterlogging and waste accumulation. The presence of temporary storage and display extensions also adds to visual clutter, reducing the overall aesthetic quality of the space. This condition highlights that the problem is not the presence of informal activities but the lack of structured management and spatial allocation. Proper regulation and organization are essential to restore the

functionality and efficiency of the street network.



Figure 10.5 Encroachment and Loss of Effective

Unorganized Parking and Loading System Causing Congestion

The parking and loading system in Jyoti Market is highly unorganized and represents a major contributor to congestion and inefficiency within the area. The absence of designated parking zones forces users to rely heavily on on-street parking, which occupies a significant portion of the already limited carriageway width. Vehicles are often parked

in an unregulated manner, including parallel and angled parking, without any clear demarcation or control. This reduces the effective width available for movement and creates bottlenecks, particularly in narrow internal streets. In addition to parking, loading and unloading activities associated with commercial operations take place directly on the street, often during peak hours when pedestrian and vehicular movement is at its highest. These activities result in temporary blockages and disrupt the flow of traffic, further intensifying congestion. The frequent stopping and starting of vehicles for loading purposes create unpredictable movement patterns, increasing conflicts with pedestrians. Although some off-street parking facilities exist in the vicinity, their capacity is limited and insufficient to meet the demand, leading to spillover onto surrounding streets. Furthermore, the lack of time-based regulation means that parking and loading activities occur throughout the day without any restriction, exacerbating peak-hour congestion

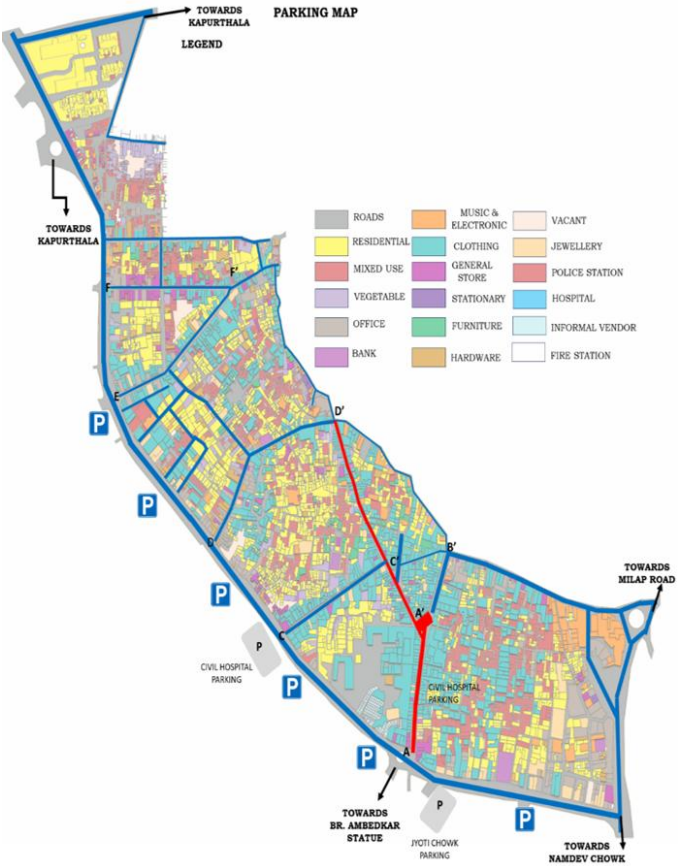


Figure 10.6 Parking and Loading System

CAPACITY ESTIMATION

Parking capacity was calculated in terms of Passenger Car Units (PCU).
•1 Car = 1 PCU
•1 Two-Wheeler = 0.5 PCU
•Average Parking Area Required per PCU (including circulation space) ≈ **30 sq.m**

Jyoti Chowk Parking

$$Capacity = \frac{Total\ Area}{Area\ per\ PCU}$$
$$= \frac{1175}{30}$$
$$\approx 39\ PCU$$

Estimated Capacity ≈ **40 PCU**

Civil Hospital Parking

$$Capacity = \frac{570}{30}$$
$$\approx 19\ PCU$$

Estimated Capacity ≈ **19 PCU**

Location	Area (Sq.M)	Estimated Capacity (PCU)
Jyoti Chowk	1175	39
Civil Hospital	570	19
Total	1745	58 PCU

CAPACITY ESTIMATION

Existing Road Characteristics

•Total Right of Way (ROW) = **18 m**
•Parking Type = **45° Angled Parking**
•Parking provided on both sides
•Total stretch length = **1275 m**

Parking Geometry and Design

As per standard urban parking design practices:
•Length required along kerb per 45° parked vehicle ≈ **3.5 m**
•Parking depth (kerb to outer edge) ≈ **4.5 m**
•Both side parking consumption:

$$4.5 + 4.5 = 9\ m$$

Remaining effective carriageway width:

$$18 - 9 = 9\ m$$

Thus, after accommodating angled parking on both sides, approximately **9 m carriageway width** remains available for vehicular movement.

PARKING CAPACITY CALCULATION

Step 1: Number of Parking Stalls per Side

$$Number\ of\ Stalls = \frac{Total\ Length}{Length\ per\ Stall}$$
$$= \frac{1275}{3.5}$$
$$\approx 364\ stalls\ per\ side$$

Step 2: Total Stalls (Both Sides)

$$364 \times 2 = 728\ stalls$$

Since:

$$1\ Car = 1\ PCU$$

Total On-Street Parking Capacity ≈ 728 PCU

Figure 10.7 Parking Capacity Estimation*Source:- Computed value*

Pedestrian–Vehicular Conflict and Unsafe Mobility Conditions

The interaction between pedestrians and vehicles in Jyoti Market creates a highly complex and unsafe mobility environment due to the absence of physical or functional segregation. Pedestrians, two-wheelers, e-rickshaws, and occasionally four-wheelers share the same limited space, leading to overlapping movement patterns and continuous conflict. The dominance of pedestrian activity, combined with inadequate infrastructure, forces pedestrians to walk on the carriageway, increasing their exposure to moving vehicles. At the same time, vehicles are compelled to navigate through dense pedestrian crowds, resulting in slow speeds and erratic movement. Conflict point analysis indicates a high concentration of interactions at intersections, entry points, and commercial hotspots, where crossing, merging, and diverging movements occur simultaneously. The lack of traffic management measures such as signals, zebra crossings, and signage further aggravates the situation, as movement is governed by informal negotiation rather than structured systems. This creates unpredictability and increases the risk of accidents, particularly for vulnerable users such as children, elderly individuals, and differently-abled persons.

Although vehicle speeds are relatively low due to congestion, the risk of collision remains high because of the chaotic movement patterns. The absence of clear right-of-way rules and enforcement mechanisms further contributes to unsafe conditions. Overall, the lack of segregation and regulation results in an inefficient and hazardous mobility system that requires immediate attention.

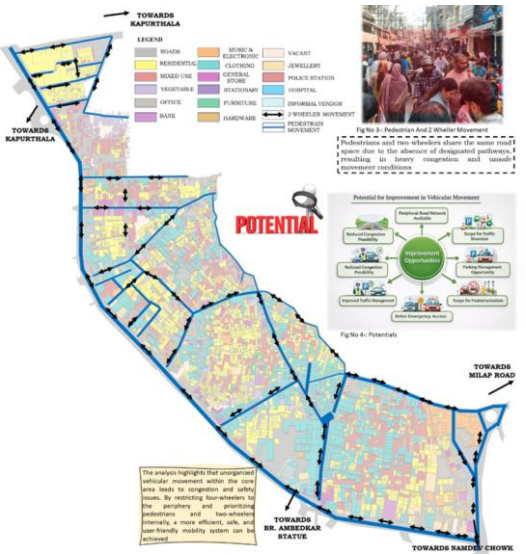


Figure 10.8 Pedestrian & 2-Wheeler Movement

Inefficient Waste Management System and Environmental Degradation

The waste management system in Jyoti Market is largely inefficient and poorly organized, leading to significant environmental and public health concerns. Waste generation in the area is continuous due to high commercial activity, with peak loads observed during evening hours when footfall is at its highest. However, the collection and disposal system is not aligned with these temporal patterns, resulting in the accumulation of waste on streets and public spaces. The absence of proper segregation at the source leads to mixed waste streams, which reduces the potential for recycling and increases the burden on disposal systems. Limited availability and poor placement of waste bins further contribute to the problem, as users are forced to dispose of waste in open areas or along the street. This results in visual pollution and creates unhygienic conditions, attracting pests and contributing to foul odors. Additionally, waste accumulation often blocks drainage channels, exacerbating issues of waterlogging during rainfall. The lack of awareness among users and absence of strict enforcement mechanisms further weaken the effectiveness of the system. The current approach is largely reactive rather than proactive, focusing on cleaning after

accumulation rather than preventing it. This highlights the need for a comprehensive waste management strategy that includes proper bin placement, source segregation, timely collection, and awareness campaigns to improve environmental quality.

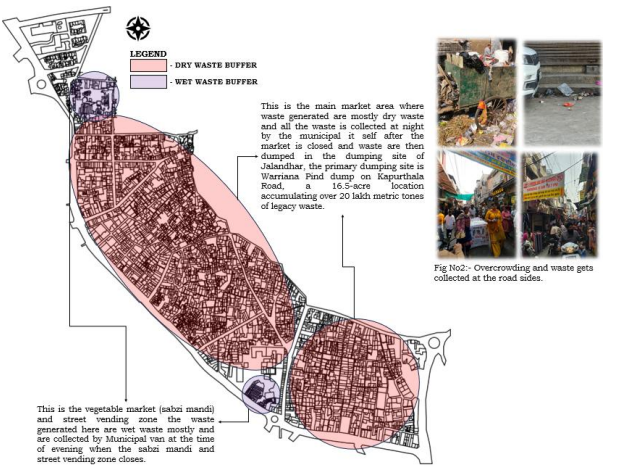


Figure 10.9 Waste Impact Map

Microclimate and Environmental Analysis of Jyoti Chowk Market Area

This sheet presents a comprehensive analysis of the microclimatic conditions and environmental behavior of the Jyoti Chowk market area, integrating climatic data with urban form. The radiation chart indicates that solar radiation is highest between April and June, contributing to intense summer heat,

while reduced radiation in winter supports passive heating. The psychrometric analysis further shows that summer conditions fall outside the thermal comfort zone, making shading, ventilation, and cooling strategies essential, whereas monsoon months demand airflow due to high humidity levels. The wind wheel and temperature charts highlight that prevailing winds during summer come from the west and northwest, bringing hot and dry conditions, while monsoon winds shift direction and carry moisture. The diurnal range chart emphasizes significant day–night temperature variation, especially in pre-monsoon months, indicating the importance of night ventilation and thermal mass in design. Cloud cover analysis suggests that monsoon months reduce solar gain, while most of the year experiences clear skies, intensifying heat exposure.

The sun shading chart demonstrates that high sun angles in summer require horizontal shading devices, while winter sun angles allow for passive solar benefits. The time plot chart further reflects prolonged heat exposure during summer months, indicating thermal discomfort for users in outdoor spaces. The Urban Heat Island (UHI) map reveals that Jyoti Chowk experiences localized heat concentration due to dense built form,

concrete surfaces, limited vegetation, and high human activity. Although not a city-scale heat island, it shows micro-level heat accumulation, particularly in highly commercialized zones. Overall, the analysis highlights that the area faces heat stress, limited ventilation, and thermal discomfort, emphasizing the need for climate-responsive planning strategies such as shading, green infrastructure, improved airflow, and material interventions to enhance thermal comfort and environmental performance.

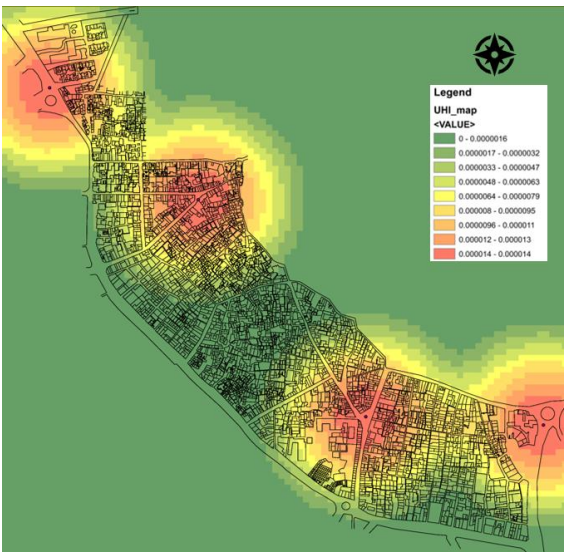


Figure 10.10 Urban heat Island Map

Building Use and Material Pattern

The analysis of building use and material distribution in Jyoti Chowk reveals a predominantly commercial urban fabric, characterized by a dense concentration of retail shops and mixed-use buildings. The map indicates that most structures are constructed using cement concrete, forming the dominant built character of the area. This reflects a trend of permanent, high-density development, supporting intensive commercial activities and high footfall. Alongside this, the presence of brick structures indicates older or semi-permanent constructions, highlighting incremental growth and transformation over time. The limited use of glass façades, mainly in selected commercial shops, suggests a gradual shift towards modern retail typologies, although traditional construction still dominates the area. The clustering of commercial uses along major streets and nodes reinforces the role of Jyoti Chowk as a primary commercial hub, while the integration of informal vending along building edges further intensifies land use. Overall, the building use pattern reflects a highly compact, activity-driven environment, where built form directly responds to economic demand. However, the dense construction, lack of setbacks, and minimal

open spaces contribute to spatial congestion and reduced environmental quality, indicating the need for better integration of building design with circulation and public space planning.

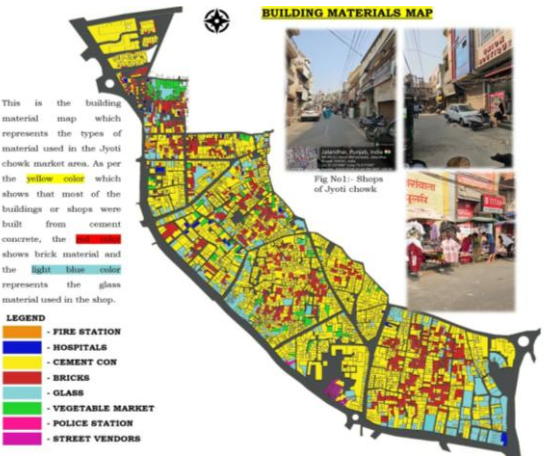


Figure 10.11 Building Use Map

Nightlife Potential

The analysis of Jyoti Chowk highlights that despite being a major commercial hub, the area currently exhibits limited nightlife activity, with most shops and establishments closing between 9:30–10:00 PM. This results in a sharp decline in pedestrian movement and economic activity during late evening hours. The absence of structured night-time uses such as organized markets, cafés, or

public gathering spaces restricts the potential of the area to function as an active urban space beyond daytime. Several factors contribute to this underutilization, including lack of proper lighting, limited pedestrian infrastructure, safety concerns, and absence of designated evening activity zones. The street environment becomes less inviting after dark, reducing user comfort and discouraging prolonged public engagement. Additionally, the absence of a clear policy framework and regulated vending system for nighttime activities further limits economic opportunities during evening hours.

However, the area demonstrates strong potential for nightlife development due to its central location, high connectivity, and established commercial identity. With strategic interventions such as extended business hours, improved lighting, organized night vending zones, and enhanced safety measures, Jyoti Chowk can transform into a vibrant and economically active night-time destination. Overall, the analysis suggests that with proper planning and policy support, the area can achieve a balanced day–night urban cycle, enhancing both economic vitality and urban experience.

Table 10.3 Policy Framework To Support Nightlife – Jyoti Chowk

Policy Category	Proposed Policy	Purpose	Expected Impact
Regulatory Reform	Extended Business Hours Policy	Allow shops, cafés, and restaurants to operate till 11 PM–12 AM	Increased evening footfall and economic activity
Informal Economy	Night Market & Street Vending Zoning Policy	Designate regulated vending zones with fixed timings	Organized evening markets and local employment
Urban Design	Public Space Activation Policy	Improve lighting, seating, streetscape, and pedestrian zones	Safer and more attractive evening environment
Safety & Security	Night Safety Framework (CCTV,	Enhance safety perception and	Increased public confidence at night

	patrols, CPTED principles)	reduce crime risk	
Land Use Planning	Mixed-Use Zoning Policy	Encourage commercial + leisure uses in the same area	Sustained 24-hour activity pattern
Licensing	Simplified Cultural & Entertainment Licensing	Ease permissions for cafés, live music, small events	Diverse and vibrant nightlife options
Mobility	Late-Night Transport Policy	Ensure availability of shared mobility and safe transit	Improved accessibility after dark
Waste & Management	Night-Time Cleanliness & Maintenance Policy	Dedicated cleaning and waste collection during	Hygienic and well-maintained public spaces

		night hours	
PPP Model	Public-Private Partnership Framework	Shared funding for lighting, events, and maintenance	Financial sustainability of night economy
Tourism & Branding	Evening Destination Promotion Policy	Market Jyoti Chowk as a cultural and food destination	City-level recognition and increased visitors

Source:- World Cities Cultural Forum

Inadequate Infrastructure and Service Provision

Jyoti Market suffers from a lack of adequate infrastructure and essential urban services, which significantly affects its functionality and user experience. The drainage system is outdated, poorly maintained, and insufficient to handle the volume of stormwater generated during rainfall, leading to frequent waterlogging and disruption of movement. Lighting infrastructure is unevenly distributed, with main roads relatively well-

lit while internal lanes remain poorly illuminated, creating safety concerns, particularly during evening hours. The electrical network is highly unorganized, with exposed wiring and informal connections posing serious risks of short circuits and fire hazards. The absence of proper maintenance and regular upgrades further reduces the reliability and efficiency of these services. In addition, there is a lack of coordination between different service providers, resulting in fragmented infrastructure development and duplication of efforts. The limited availability of public amenities such as toilets, seating areas, and drinking water facilities further reduces the comfort and usability of the space. These deficiencies highlight a broader issue of inadequate planning and management of urban services, which fails to keep pace with the increasing demand generated by high commercial activity. Improving infrastructure and service provision is essential for enhancing the overall functionality, safety, and livability of the market.

Lack of Accessibility and Inclusive Design

The absence of inclusive design and accessibility features in Jyoti Market represents a significant gap in its urban

design and planning. The existing spatial environment does not accommodate the needs of differently-abled individuals, elderly users, or those with limited mobility. Footpaths, where present, are often discontinuous, uneven, and obstructed by encroachments, making them difficult to navigate. The lack of ramps at entry points and crossings prevents wheelchair users from accessing the space independently. Similarly, the absence of tactile paving makes it challenging for visually impaired individuals to navigate safely. Kerb heights are inconsistent, and there are no designated crossing points, further complicating movement. In addition, the presence of obstacles such as poles, wires, and temporary structures reduces the effective walking space and creates additional barriers. These conditions not only limit accessibility but also reduce the overall usability of the space for all users. Inclusive design is a fundamental aspect of sustainable urban development, and its absence indicates a lack of consideration for diverse user needs. Addressing this issue requires the integration of universal design principles into the planning and redevelopment of the area, ensuring that it becomes accessible, safe, and comfortable for everyone.

Weak Governance and Institutional Fragmentation

The governance structure of Jyoti Market is characterized by institutional fragmentation and lack of coordinated decision-making, which significantly affects the efficiency of urban management and service delivery. Multiple agencies, including the Municipal Corporation, Traffic Police, Electricity Board, and Town Vending Committee, are responsible for different aspects of the area; however, their roles are not well integrated. This results in overlapping responsibilities, gaps in implementation, and lack of accountability. Policies such as the Street Vendors Act exist to regulate informal activities, but weak enforcement mechanisms and limited monitoring lead to their ineffective implementation. As a result, informal practices dominate the functioning of the market, and regulatory frameworks fail to produce desired outcomes. Additionally, the absence of a single governing authority or unified management system makes it difficult to plan and execute integrated interventions. Decision-making often remains reactive, addressing issues only after they become critical rather than adopting a proactive approach. The lack of stakeholder coordination also limits community participation and reduces the effectiveness of

policy implementation. This fragmented governance structure highlights the need for a more integrated and collaborative framework that ensures better coordination among agencies, clear allocation of responsibilities, and stronger enforcement of regulations to improve the overall management of the area.

Strong Economic Vitality and Cultural Significance

Despite the multiple challenges identified in the analysis, Jyoti Market demonstrates strong economic vitality and holds significant cultural importance within the city of Jalandhar. The market functions as a major commercial hub, attracting a large number of visitors daily and supporting a wide range of economic activities. The presence of both formal and informal sectors creates a diverse and inclusive marketplace that caters to different income groups, making it accessible to a broad spectrum of society. Traditional retail practices such as bargaining, street vending, and informal exchanges contribute to the unique identity and character of the market. The area also serves as a social space where people gather, interact, and engage in everyday activities, reinforcing its role as a vibrant public realm. This cultural and economic vibrancy is a key strength that

differentiates Jyoti Market from more formalized commercial spaces such as malls. However, the same intensity of activity also creates pressure on space and infrastructure, leading to congestion and inefficiency.

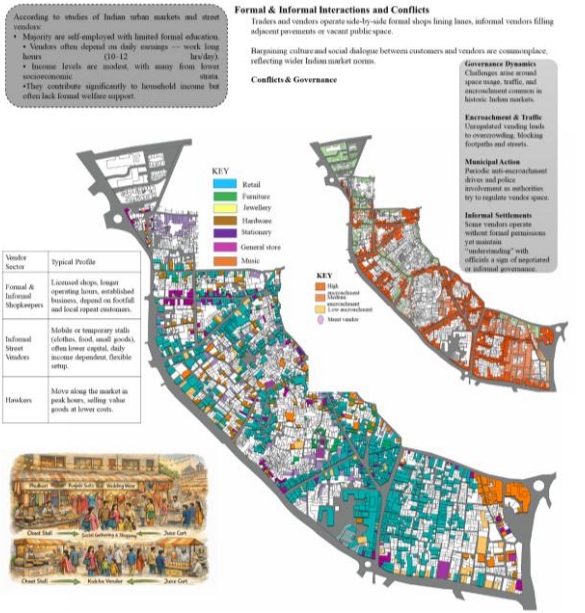


Figure 10.12 Economic Vitality and Cultural Significance

Table 10.4 Types of Vendor Sector

Vendor Sector	Typical Profile
Formal & Informal Shopkeepers	Licensed shops, longer operating hours, established business, depend on footfall and local repeat customers.
Informal Street Vendors	Mobile or temporary stalls (clothes, food, small goods), often lower capital, daily income dependent, flexible setup.
Hawkers	Move along the market in peak hours, selling value goods at lower costs.

Source:- Computed Value

Temporal Variation in Activity Patterns

The activity patterns in Jyoti Market exhibit significant temporal variation, reflecting the dynamic nature of the area and its dependence on time-based economic and social factors. The intensity of pedestrian movement, vehicular traffic, and commercial activities fluctuates throughout the day, with peak congestion typically observed during evening hours and weekends when shopping activity is at its highest. In contrast, early mornings and late nights experience relatively lower levels of activity, resulting in smoother movement conditions. Seasonal variations, particularly during festivals and

special events, further increase footfall and vending density, adding to the complexity of the system. This temporal variability indicates that the usage of space is not constant but changes based on demand, creating opportunities for flexible and adaptive planning strategies. However, the current system does not utilize this variation effectively, as there are no time-based regulations for activities such as vending, parking, or loading. As a result, peak-hour congestion remains unmanaged, and space continues to be used inefficiently. Understanding these temporal patterns is essential for developing strategies that optimize space utilization, such as restricting vehicular access during peak hours or scheduling loading activities during off-peak periods. This highlights the importance of time-based planning in improving the overall efficiency of the market.

Safety Risks Due to Fire, Electrical, Issues fire & emergency access

Minimum Required Fire Tender Width: 6 m

- Existing Clear Width at Bottlenecks: 3.5–4.5 m
- Turning Radius Requirement: 9–12 m
- No Dedicated Emergency Lane

- Risk Identified: Emergency vehicle penetration compromised during peak hours.



Figure 10.13 Risks Due to Fire
source- primary survey, 2026

Jyoti Market faces significant safety risks due to its dense built environment, narrow streets, and inadequate infrastructure, particularly in terms of fire safety and emergency response. The internal streets, which often have a width of only 3.5 to 4.5 meters, are insufficient to accommodate emergency vehicles such as fire tenders, which require a minimum clearance of approximately 6 meters. This limitation severely restricts access during emergencies, increasing the risk of delayed response and potential damage. Additionally, the presence of unorganized electrical infrastructure, including exposed wiring and

informal connections, creates a high risk of short circuits and fire hazards. The dense arrangement of buildings further increases vulnerability, as fire can spread rapidly in such conditions. Encroachments and temporary structures also obstruct access routes, making it difficult for emergency services to reach affected areas. The lack of designated emergency corridors, fire safety equipment, and awareness among users further exacerbates the problem. These risks highlight the urgent need for improving safety infrastructure, ensuring clear access routes, and implementing preventive measures to reduce the likelihood of accidents and enhance emergency preparedness.

Overall System Character: High Activity but Low Organization

The overall synthesis of analysis indicates that Jyoti Market operates as a highly active and economically vibrant urban space but suffers from a lack of organization and structured planning. The area supports a wide range of activities, including retail, vending, movement, and social interaction, all of which contribute to its dynamic character. However, the absence of clear spatial zoning, functional hierarchy, and management systems results in overlapping activities and

inefficient use of space. Movement is largely governed by informal negotiation rather than structured design, leading to congestion, conflicts, and unpredictability. Infrastructure and services are unable to keep pace with the intensity of activity, further reducing the efficiency and quality of the environment. Despite these challenges, the market continues to function due to its adaptability and strong economic base. This indicates that the issue is not the lack of activity but the lack of organization. The existing condition represents a system that has evolved organically but now requires structured intervention to improve its performance. Therefore, the focus of future planning should be on organizing and optimizing the existing system rather than replacing it, ensuring that the vibrancy and economic vitality of the market are preserved while enhancing its functionality and livability.



Figure 10.14 Spatial, Functional
Source:- Primary survey, 2026

Integration of Spatial, Functional and Behavioral Dimensions

The synthesis of the analysis reveals that Jyoti Market operates as a highly integrated system where spatial structure, functional activities, and user behavior are closely interdependent and cannot be understood in isolation. The physical layout of the area, characterized by narrow streets, irregular alignments, and continuous building edges, defines the basic framework within which all activities take place. However, this spatial framework is constantly modified by functional demands, particularly commercial activities and informal vending, which require visibility, accessibility, and proximity to pedestrian flow. As a result, these activities tend to occupy the most strategic locations, such as street edges and intersections, thereby altering the effective use of space. Simultaneously, user behavior plays a crucial role in shaping how the space is utilized, as pedestrians, vendors, and drivers continuously adapt their actions in response to constraints and opportunities. Pedestrians follow flexible movement paths, vendors reposition themselves to attract customers, and vehicles adjust their movement based on congestion levels. This interaction creates a dynamic and constantly evolving spatial environment where formal planning is

replaced by informal negotiation. The integration of these dimensions highlights that any intervention must address not only the physical structure but also the behavioral and functional dynamics that sustain the system.

Demand–Capacity Imbalance and System Stress

One of the most critical outcomes of the analysis is the clear imbalance between the demand for space and the capacity of the existing infrastructure, which creates a condition of continuous stress within the system. The demand is generated by multiple factors, including high pedestrian footfall, vehicular movement, commercial activities, and informal vending, all of which require space to operate effectively. However, the capacity of the street network. However, the capacity of the street network is limited due to narrow widths, encroachment,
and lack of organization. This mismatch results in congestion, delays, and reduced efficiency, particularly during peak hours when the intensity of activity is at its highest. The situation is further complicated by the fact that the demand is not static but fluctuates throughout the day, creating periods of extreme pressure followed by relatively low activity. The absence of



Figure 10.15 Capacity Imbalance
Source:- Primary survey, 2026

adaptive management strategies means that the system is unable to respond effectively to these variations, leading to inefficient use of space. This imbalance highlights the need for interventions that not only increase capacity but also manage demand through better organization, regulation, and temporal planning.

Absence of Spatial Order and Functional Clarity

The lack of spatial order and functional clarity in Jyoti Market creates a highly unstructured environment where users are unable to clearly understand how space is organized or how it should be used. In a well-planned urban system, different functions such as pedestrian movement, vehicular circulation, vending, and parking are clearly defined and spatially separated, allowing for

efficient and predictable movement. However, in this case, the absence of such organization results in overlapping activities, where all users compete for the same limited space. This creates confusion and reduces the efficiency of movement, as users must constantly adjust their behavior based on immediate conditions. The visual environment also reflects this lack of order, with irregular building lines, uncoordinated signage, and scattered activities contributing to a sense of chaos. This not only affects functionality but also impacts the overall user experience, making the space difficult to navigate and less comfortable to use. The absence of clarity also makes it challenging to implement effective management strategies, as there is no defined framework for organizing activities.

Informal Systems as Integral Urban Components

The analysis highlights that informal systems, particularly street vending and temporary commercial activities, are not peripheral elements but integral components of the urban structure in Jyoti Market. These activities play a crucial role in supporting the local economy by providing employment opportunities and affordable goods and services. Their spatial distribution is closely

linked to pedestrian movement patterns, as vendors position themselves in areas with high footfall to maximize visibility and sales. This creates a strong interdependence between movement and economic activity, where each influences the other. However, the lack of formal recognition and regulation means that these activities operate in an unstructured manner, often leading to encroachment and congestion. Despite these challenges, informal systems contribute significantly to the vibrancy and identity of the area, making it more active and engaging. Therefore, any intervention must acknowledge their importance and seek to integrate them into the planning framework rather than attempting to eliminate them.

Major Challenges Identified

Pedestrian Congestion and Reduced Walkability

Pedestrian congestion in Jyoti Market is a result of high footfall combined with inadequate infrastructure and limited effective walking space. The absence of continuous and unobstructed pathways forces pedestrians to navigate through narrow and congested areas, often sharing space with vehicles and vendors. This reduces movement efficiency and creates discomfort, particularly during peak hours when

pedestrian density is at its highest. The lack of proper design elements such as shading, seating, and surface quality further affects the comfort and usability of the space, making walking a challenging experience.

Pedestrian–Vehicular Conflict and Safety Concerns

The absence of segregation between pedestrians and vehicles leads to continuous conflict and unsafe conditions. Both modes operate within the same space, resulting in unpredictable movement patterns and increased risk of accidents. Vehicles often



Figure 10.16 Parking and Loading
Source:- primary survey, 2026

move slowly due to congestion but still pose a threat to pedestrians, who are forced to navigate through traffic. The lack of traffic

control measures further increases the level of risk, particularly for vulnerable users.

Encroachments and Inefficient Space Utilization

Encroachments by vendors, shop spillovers, and parked vehicles reduce the effective width of streets and disrupt movement. While these activities contribute to economic vibrancy, their unregulated nature leads to inefficient use of space and increased congestion. The lack of organization means that space is not used optimally, resulting in reduced capacity and functionality.

Unregulated Parking and Loading Activities

Parking and loading activities are largely unorganized, with vehicles occupying significant portions of the street. This reduces the effective carriageway width and disrupts movement, leading to congestion and delays. The absence of designated zones and management systems further exacerbates the problem.

Lack of Accessibility and Inclusive Design

The absence of inclusive design features such as ramps, tactile paving, and accessible pathways makes it difficult for differently-abled individuals to navigate the area. This

highlights a significant gap in the design and usability of the space.

Opportunities for Intervention

Potential for Pedestrian-Oriented Development

The exceptionally high volume of pedestrian movement in Jyoti Market, which consistently exceeds vehicular presence in many internal stretches, presents a strong and underutilized opportunity to reorient the spatial structure toward a pedestrian-priority environment. At present, pedestrians are compelled to negotiate space with vehicles and encroachments, resulting in discomfort, inefficiency, and safety risks. However, this very dominance of pedestrian activity indicates that the area already functions informally as a pedestrian-oriented space, albeit without the necessary infrastructure or design support. By formally recognizing this pattern, there exists a significant opportunity to reallocate street space in favor of walking, thereby enhancing both functionality and user experience. This could involve widening effective pedestrian zones, ensuring continuity of walking paths, and reducing unnecessary vehicular intrusion, especially in core commercial segments. Furthermore, prioritizing pedestrians would not only improve mobility but also strengthen

economic activity, as walkable environments tend to increase dwell time, visibility of shops, and overall commercial engagement. Therefore, the transformation of Jyoti Market into a pedestrian-oriented zone is not an imposed idea but a logical extension of its existing use patterns, which can be refined and structured through appropriate design interventions.

Organized Integration of Informal Activities



Figure 10.17 Integration of Informal
Source:- Pant, S.(2017, December 4)

The presence of informal vendors in Jyoti Market, although currently perceived as a source of congestion and disorder, represents a significant opportunity for structured integration rather than removal. These activities are deeply embedded in the socio-economic fabric of the area and contribute to

its vibrancy, accessibility, and affordability. Instead of treating vendors as encroachments, there is an opportunity to recognize them as legitimate stakeholders and incorporate them into the spatial framework in a systematic manner. This can be achieved by identifying suitable locations for vending based on pedestrian flow, visibility, and accessibility, and organizing these spaces into clearly defined zones. Such integration would not only reduce random encroachment but also improve spatial clarity and movement efficiency. Additionally, providing basic infrastructure such as uniform vending units, shading, lighting, and waste management facilities can enhance both the functionality and aesthetic quality of these spaces. By formalizing informal activities through design, it is possible to balance economic needs with spatial organization, ensuring that livelihoods are preserved while improving overall urban efficiency.

Efficient Reorganization of Street Space

Despite the apparent limitation in street width, the existing space within Jyoti Market holds significant potential for reorganization and optimization. Currently, the inefficiency in space utilization arises not from absolute scarcity but from the absence of structured allocation and prioritization of functions.

Streets are used simultaneously for movement, vending, parking, and loading without any clear zoning, leading to overlapping activities and reduced efficiency. This creates an opportunity to reorganize the available space by introducing a more rational distribution of functions. For instance, separating pedestrian movement zones from vehicular lanes, defining specific areas for vending, and restricting parking to designated sections can significantly enhance the usability of the street. Even minor adjustments in spatial allocation can lead to substantial improvements in movement efficiency and user comfort. Moreover, the introduction of transitional or buffer zones between different functions can help reduce conflicts and improve safety. Therefore, the focus should not be on expanding physical space but on optimizing its existing use through better design and management.



Figure 10.18 street cross section
Source:- Self-Generated Image

Time-Based and Flexible Use of Space

One of the most important yet often overlooked characteristics of Jyoti Market is the temporal variation in its activity patterns, which presents a strong opportunity for flexible and time-based use of space. The intensity of pedestrian movement, vehicular traffic, and vending activity varies significantly throughout the day, with peak hours experiencing high congestion and off-peak periods showing relatively lower activity levels. This variation indicates that the same space can be used for different purposes at different times, provided that it is managed effectively. For example, certain streets can be designated as pedestrian-only zones during peak hours while allowing limited vehicular access during off-peak periods. Similarly, loading and unloading activities can be restricted to specific time windows to minimize disruption during busy hours. This approach allows for a more efficient utilization of space without requiring major physical changes. By adopting a flexible and adaptive strategy, it is possible to accommodate multiple functions within the same space while reducing conflicts and improving overall efficiency.

Enhancement of Public Realm and User Experience

Jyoti Market, despite its high level of activity, lacks the qualities of a well-designed public space that supports comfort, interaction, and usability. However, this condition also presents an opportunity to enhance the public realm through targeted design interventions that improve the overall user experience. The introduction of elements such as seating, shading, landscaping, lighting, and wayfinding can transform the area from a purely functional space into a more livable and engaging environment. Improving the quality of the public realm not only enhances comfort but also encourages social interaction and increases the attractiveness of the area for visitors. Additionally, a well-designed public space can support economic activity by creating a more pleasant environment for shopping and leisure. Therefore, the enhancement of the public realm should be seen as an essential component of intervention, contributing to both functional efficiency and social value.

Design Directions Emerging from Research Pedestrian Priority and Walkability Enhancement

The research clearly indicates that pedestrian movement is the dominant mode of activity

in Jyoti Market, and therefore, the primary design direction should focus on enhancing walkability and prioritizing pedestrians within the spatial hierarchy.

This involves creating continuous, unobstructed, and sufficiently wide pedestrian pathways that accommodate high volumes of movement while ensuring comfort and safety. The design should also address surface quality, shading, and accessibility features to improve the overall walking experience. By reallocating space from vehicles to pedestrians, it is possible to reduce conflicts and enhance efficiency. Additionally, pedestrian-priority design can support economic activity by increasing footfall and improving visibility for shops and vendors. This approach aligns with the existing use patterns of the area and provides a sustainable solution for improving mobility and user experience.

Spatial Zoning and Functional Organization

A key design direction emerging from the analysis is the need for clear spatial zoning and functional organization within the street. The current condition of overlapping activities can be addressed by defining specific zones for different functions, such as pedestrian movement, vehicular circulation,

vending, and parking. This zoning should be flexible yet structured, allowing for efficient use of space while accommodating the dynamic nature of the area. The introduction of visual and physical markers, such as paving patterns, street furniture, and signage, can help define these zones and guide user behavior. By organizing space in a logical and intuitive manner, it is possible to reduce confusion, improve efficiency, and enhance the overall functionality of the area.

Vendor Integration and Design Modules

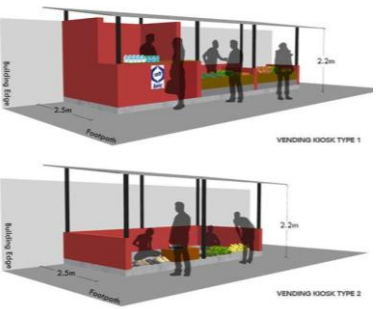


Figure 10.19 Integration and Design Modules
Source:- Self-Generated Image

The integration of vendors into the spatial framework requires a design approach that balances flexibility with organization. One effective strategy is the development of standardized vending modules that define the

size, location, and arrangement of stalls. These modules can be designed to accommodate different types of vending activities while ensuring consistency and visual order. By organizing vendors into clusters or linear arrangements, it is possible to create dedicated vending zones that do not interfere with movement. Additionally, providing infrastructure such as shading, lighting, and waste management can improve the functionality and sustainability of these spaces. This approach ensures that vendors remain an integral part of the system while reducing their negative impact on mobility and spatial efficiency.

Traffic Regulation and Controlled Access



Figure 10.20 Traffic Regulation and Controlled Access
Source- Street Scape

The analysis highlights the need for regulating vehicular movement to reduce congestion and improve safety. One of the key design directions is the introduction of controlled access systems, where the entry of vehicles is restricted based on time, location, or type of vehicle. For example, certain areas can be designated as pedestrian-only zones during peak hours, while allowing limited access for service vehicles during specific time periods. Additionally, implementing traffic calming measures and clear circulation patterns can improve the overall efficiency of movement. By reducing unnecessary vehicular intrusion, it is possible to create a more organized and pedestrian-friendly environment.

Parking and Loading Management Systems

Effective management of parking and loading activities is essential for improving mobility and reducing congestion in Jyoti Market. The design should include clearly defined and strategically located zones for parking and loading, ensuring that these activities do not interfere with pedestrian movement or traffic flow. Time-based regulations can also be introduced to control when these activities take place, minimizing their impact during peak hours. By

organizing parking and loading in a structured manner, it is possible to improve the efficiency of the overall system while supporting commercial operations.

Conclusion

The analysis of key issues and opportunity areas in Jyoti Market highlights a complex urban condition where challenges and potentials coexist within a highly dynamic system. The area suffers from multiple interconnected issues, including pedestrian congestion, lack of spatial organization, unregulated vehicular movement, inefficient parking systems, and absence of inclusive infrastructure. These issues are not isolated but stem from the overlapping use of space and the absence of structured planning and management. At the same time, the study reveals that Jyoti Market possesses significant inherent strengths, such as high pedestrian activity, strong economic base, and vibrant street life, which provide a solid foundation for transformation. The presence of informal activities, although contributing to congestion, also represents an opportunity for structured integration that can enhance both economic and spatial efficiency. The identification of opportunity areas demonstrates that effective intervention does not require large-scale physical expansion

but rather strategic reorganization and optimization of existing space. By prioritizing pedestrian movement, introducing clear spatial zoning, regulating vehicular access, and organizing parking and vending activities, it is possible to significantly improve the functionality and safety of the area.

Furthermore, the adoption of flexible and time-based strategies can help accommodate varying levels of activity throughout the day, ensuring efficient use of space under different conditions. The integration of public realm elements such as seating, shading, and lighting can enhance user experience and transform the area into a more livable and engaging urban space. Overall, the chapter emphasizes that the key to successful intervention lies in understanding the existing dynamics of the area and building upon its strengths rather than imposing rigid solutions. By addressing the identified challenges and leveraging available opportunities, Jyoti Market can be transformed into a well-organized, efficient, and inclusive urban environment that supports both mobility and economic activity.

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CHAPTER 11 – DESIGN STRATEGIES FOR FORMALISING INFORMALITY

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Abstract

Informal activities such as street vending play a crucial role in the urban economy of Indian cities, providing livelihoods to a large section of the population while also offering affordable goods and services to citizens. However, the absence of proper planning and regulation often leads to congestion, inefficient use of space, and conflicts between pedestrians, vehicles, and vendors. This chapter focuses on Jyoti Chowk, one of the busiest commercial nodes in Jalandhar, to explore strategies for formalising informality through inclusive and flexible design approaches. The study highlights the need for vendor-centric planning, integration of formal and informal systems, and the adoption of incremental development strategies. By proposing practical and

context-sensitive design interventions, the chapter aims to create a balanced urban environment that supports economic activity while ensuring accessibility, safety, and efficiency.

1. Introduction

Urban areas in India are characterized by a strong presence of informal activities, particularly street vending, which forms an essential part of the urban economy. These activities are not merely unorganized systems but serve as a source of livelihood for a large number of people while also fulfilling the everyday needs of citizens. Jyoti Chowk in Jalandhar represents a typical example where formal retail establishments and informal vendors coexist within the same space.

Due to its high commercial importance and continuous pedestrian movement, the area experiences several challenges such as congestion, lack of pedestrian space, unorganized vending patterns, and conflicts between different users. The issue is not the presence of informal activities but the absence of a structured system to accommodate them. Therefore, instead of removing vendors, there is a need to integrate them into the planning framework through well-defined design strategies that improve both functionality and spatial efficiency.

2. Principles of Inclusive Design

Inclusive design aims to create urban spaces that are accessible, usable, and comfortable for all users, including pedestrians, vendors, customers, and differently-abled individuals. In the context of Jyoti Chowk, this approach becomes particularly important due to the diverse range of users and activities present within a limited space.

The application of inclusive design in this area involves ensuring continuous and obstruction-free pedestrian pathways so that movement is not interrupted by vending or other activities. At the same time, universal accessibility features such as ramps, proper kerb design, and tactile paving are essential to make the space usable for everyone. Instead of displacing vendors, designated vending zones are introduced so that their activities are organized without affecting pedestrian movement.

By adopting such an approach, informal vendors are no longer treated as encroachments but as legitimate stakeholders in the urban environment. This not only improves the functionality of the space but also creates a more equitable and user-friendly public realm.

3. Flexibility and Incremental Planning

Conventional rigid planning approaches often fail in areas where informal activities

dominate, as these spaces are constantly evolving based on user needs and economic dynamics. Therefore, flexibility becomes a key component in planning interventions at Jyoti Chowk.

The design approach allows spaces to function in a multi-functional manner, where the same area can accommodate different activities at different times of the day. Temporary structures are permitted but within defined limits, ensuring that they do not disrupt movement or safety. Instead of implementing drastic changes that may affect livelihoods, the proposal promotes incremental development, where improvements are introduced gradually over time.

This step-by-step approach allows users to adapt to changes without resistance and ensures that development remains sustainable. It also minimizes disruption to existing economic activities, making the intervention more practical and acceptable for all stakeholders.

4. Vendor-Centric Spatial Strategies

Street vendors are a vital component of the urban economy and significantly contribute to the vibrancy of commercial spaces. Therefore, planning strategies must be

centered around their needs while maintaining overall spatial order.

In the case of Jyoti Chowk, vendors are provided with demarcated spaces of uniform size, ensuring clarity in their placement and reducing random encroachment. Basic infrastructure such as lighting, waste management facilities, and shading elements are incorporated to improve their working conditions. Additionally, time-based zoning can be implemented, allowing certain areas to function as vending zones during specific hours.

The organization of vendors in linear or clustered arrangements helps in improving movement flow and maintaining visual order within the street. This structured approach not only enhances the efficiency of space usage but also improves the overall user experience.

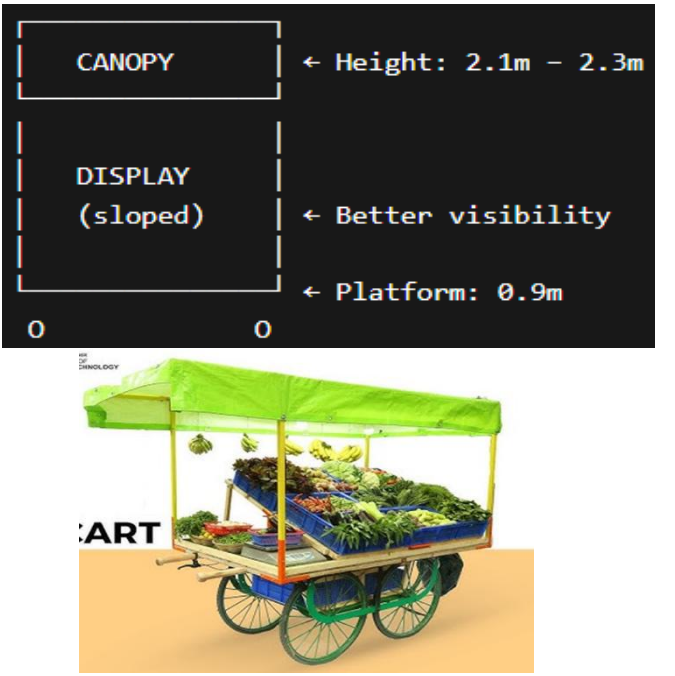


Figure 11.1 vending zone
Source:- Generate Image

5. Integrating Formal and Informal Systems

One of the major challenges in urban commercial areas is the conflict between formal establishments and informal vendors. Instead of treating these systems separately, it is essential to create a framework where both can coexist harmoniously.

This integration is achieved by designing shared spaces where vendors and shopfronts

can function together without obstructing access or movement. Buffer zones are introduced between the carriageway and shopfronts, providing space for vending activities without interfering with pedestrian pathways. Vendors are strategically located near commercial areas to support economic activity while maintaining clear access to shops.

Such integration leads to better space utilization, improved economic interaction, and a more vibrant urban environment. It transforms potential conflict into a mutually beneficial relationship between formal and informal systems.

6. Results and Discussion

The proposed design strategies demonstrate that informal systems can be effectively organized through thoughtful planning and design interventions. By introducing structured vending zones and improving pedestrian infrastructure, the overall movement within the area becomes smoother and more efficient.

The reduction in random encroachment leads to less congestion and improved safety conditions. At the same time, the visual and spatial quality of the area is enhanced, making it more attractive for users. Importantly, the integration of vendors

ensures that their livelihoods are preserved while improving the functionality of the space. These outcomes highlight the importance of inclusive and flexible planning approaches in addressing the challenges of informal urban environments.

7. Conclusion

Formalising informality does not imply the removal of informal activities but rather their systematic organization within the urban framework. Jyoti Chowk, being a high-activity commercial node, requires a balanced approach that combines inclusivity, flexibility, and efficient design.

By adopting vendor-centric and incremental planning strategies, it is possible to transform chaotic and unorganized spaces into well-managed and functional environments. This approach ensures that economic opportunities are preserved while improving accessibility, safety, and overall urban quality. It can serve as a model for similar urban areas across India facing challenges related to informality and congestion.

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CHAPTER 12 – STUDIO DESIGN PROPOSALS

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Abstract

This chapter presents a comprehensive studio-based design proposal for Jyoti Chowk, Jalandhar, focusing on improving mobility, accessibility, and spatial organization. The study identifies key issues such as pedestrian congestion, unregulated vending, inefficient parking, and high traffic conflicts. Based on detailed analysis, the proposal introduces a pedestrian-priority design approach that integrates formal and informal activities, regulates vehicular movement, and enhances safety. The proposed interventions aim to create a balanced, efficient, and user-friendly commercial environment.

1. Introduction

Jyoti Chowk is one of the most active commercial areas in Jalandhar, where a large number of people visit daily for shopping and other activities. The presence of both formal shops and informal vendors makes the area economically vibrant but also creates problems related to congestion and space management. Due to the lack of proper planning, pedestrians, vehicles, and vendors share the same space, leading to conflicts and unsafe movement conditions.

This chapter focuses on developing a design proposal that reorganizes the existing system in a structured way. The aim is to improve movement, enhance safety, and create a more efficient and comfortable public space without affecting the economic activities of the area.

2. Existing Scenario Analysis

The land use pattern of Jyoti Chowk is predominantly commercial, characterized by a mix of formal retail establishments and a large presence of informal street vendors. This combination creates a highly active and vibrant market environment but results in

unorganized spatial distribution. The area experiences continuous pedestrian movement due to its commercial nature and high footfall. However, the absence of designated vending spaces leads to encroachment on footpaths and open areas, reducing effective pedestrian space. This further affects walkability, causing congestion and forcing pedestrians onto the carriageway. Overall, the existing scenario reflects a conflict between movement and activity, highlighting the need for better spatial organization.

Land Use and Activity Pattern

The land use pattern of Jyoti Chowk is predominantly commercial, with a wide variety of retail shops including clothing, electronics, and general stores. Along with these formal establishments, a large number of informal vendors operate along the streets, occupying footpaths and open spaces. This combination creates a highly active commercial environment but also leads to unorganized spatial distribution. Due to this mixed-use nature, the area experiences continuous pedestrian movement throughout the day. However, the lack of defined spaces

for vendors results in encroachment, reducing the effective width available for pedestrian movement and creating congestion.

Walkability and Pedestrian Analysis

The pedestrian analysis indicates that walking conditions vary across different stretches of the study area. Some sections experience moderate to high congestion due to high pedestrian volume and limited effective width. For instance, the A–A' stretch shows significant pedestrian pressure, resulting in restricted movement and discomfort. Other stretches perform better but still face issues due to obstructions caused by vending activities and shop spillovers.

Overall, the absence of continuous and obstruction-free footpaths forces pedestrians to walk on the carriageway. This not only reduces safety but also creates conflicts with vehicular movement, especially during peak hours.

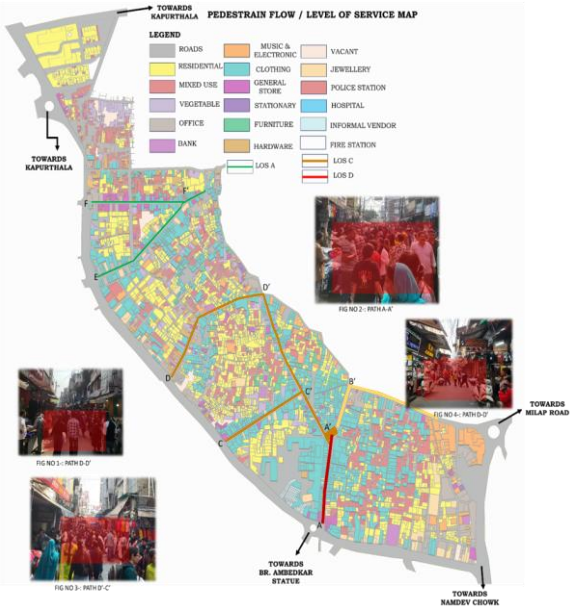


Figure 42.1 Pedestrain Flow
Source:- Generated Map, 2026

Table 12.1 Pedestrain flow

Path	Pedestrian/10 Min	Ped/ Min	Hourly Flow	Effective Width(m)	Flow (Ped /Hr/ M)	Los (IRC)	Condition
A-A’	332	33.2	1992	4.5	443	D	Moderate
A’-B	141	14.1	846	4.5	188	B	Comfortable
C-C’	162	16.2	972	3	324	C	Stable
D-D’	136	13.6	816	3	272	C	Acceptable
A'-D'	174	17.4	1044	3.5	298	C	Moderate
E-F’	24	2.4	144	6	24	A	Free Flow

F-F’	42	4.2	252	6	42	A	Free Flow

Source-: primary survey 2026

Table 12.2 Pedestrain Guidelines

Flow (ped/hr/m)	**LOS**	**Condition**
< 150	A	Free Flow
150 – 300	B	Comfortable
300 – 450	C	Stable
450 – 600	D	Moderate Congestion
600 – 800	E	High Congestion
> 800	F	Severe Congestion

Source-: IRC 2018

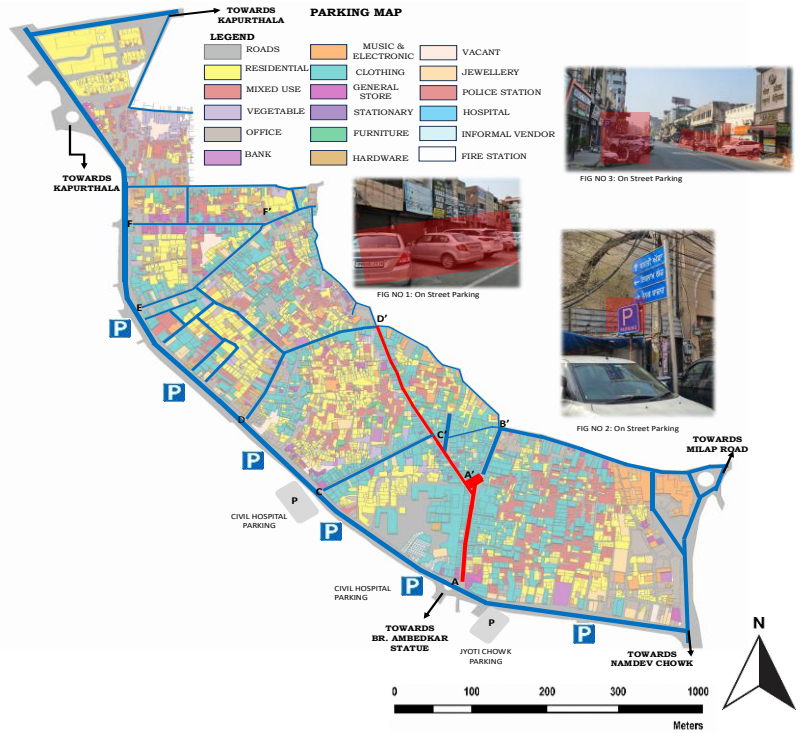


Figure12.2 Parking Analysis
Source-: Self-Generated Map, 2026

Parking Analysis

Parking in the study area is largely dominated by on-street arrangements, particularly 45-degree angled parking. While this system provides a high parking capacity, it creates several operational issues. Vehicles entering and exiting parking spaces often disrupt traffic flow, leading to temporary congestion and delays.

Although off-street parking facilities are available, their limited capacity is not sufficient to accommodate the overall demand. As a result, dependence on on-street parking increases, further reducing the effective carriageway width and increasing pedestrian-vehicle interaction.

Conflict Analysis

Jyoti Chowk is a major intersection where multiple roads converge, leading to a high number of conflict points. These conflicts occur in the form of crossing, merging, and diverging movements between vehicles and pedestrians. The absence of proper segregation between different modes of transport further increases the complexity of movement.

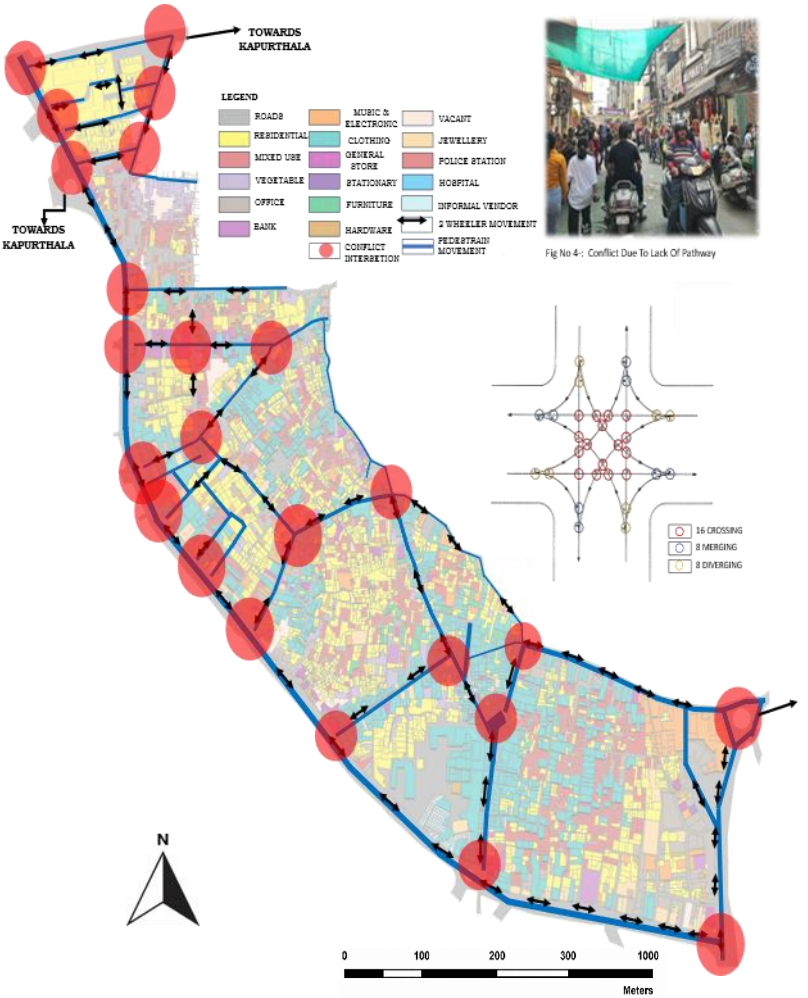


Figure12.3 Conflict Analysis

During peak hours, the high pedestrian volume combined with vehicular traffic creates a highly unsafe environment. This highlights the need for a structured design approach to reduce conflicts and improve overall traffic management.

Safety and Accessibility

The safety conditions in the area are not satisfactory, mainly due to the lack of proper infrastructure. Basic facilities such as zebra crossings, ramps, and tactile paving are missing, making the space inaccessible for differently-abled users. Footpaths are either encroached or discontinuous, which affects pedestrian safety.

In addition, exposed electrical wiring and narrow internal streets increase the risk of hazards, especially in case of emergencies. Although street lighting is present, the absence of proper pedestrian infrastructure



Figure12.4 Open hanging wires cause safety threat
Source-: Primary survey, 2026

makes the area unsafe, particularly during peak hours.

Mobility and Traffic Movement

The movement pattern within the study area is highly unorganized. While the surrounding roads carry significant vehicular traffic, the internal streets accommodate mixed movement, including pedestrians, two-wheelers, and intermediate public transport such as e-rickshaws.

Due to the absence of designated pickup and drop-off points, vehicles tend to stop randomly, causing obstruction and reducing traffic efficiency. This lack of regulation results in frequent interruptions in movement and contributes to overall congestion.

4. Design Proposal

The proposal is based on a pedestrian-priority approach, shifting the focus from vehicle-dominated streets to people-centric design suitable for high-footfall areas like Jyoti Chowk. A clear street hierarchy is introduced with dedicated pedestrian paths, activity zones, and a flexible carriageway to balance movement and activities. Informal vendors

are integrated within designated zones, reducing encroachment and improving spatial organization. Parking and loading are managed through regulated on-street parking and time-based loading zones. Controlled vehicular access and structured last-mile connectivity (IPT zones) further enhance safety and efficiency. Overall, the design creates a safe, organized, and vibrant street environment.

Concept: Pedestrian Priority Street

The design proposal is based on the concept of a pedestrian-priority street, where the overall planning shifts from vehicle-dominated movement to people-centric design. In a commercial area like Jyoti Chowk, where pedestrian activity is significantly higher than vehicular demand, prioritizing walking becomes essential for both safety and functionality.

This approach focuses on reducing unnecessary vehicular intrusion within the core area and creating a comfortable environment for pedestrians. By reallocating street space in favor of walking, the design not only improves accessibility but also

enhances the overall user experience. It allows people to move freely, interact, and engage with commercial activities without the constant interference of traffic, thereby making the street more livable and efficient.

Proposed Street Section

The redesigned street section introduces a clear spatial hierarchy by dividing the available width into well-defined functional zones. Dedicated pedestrian pathways are provided on both sides to ensure continuous, safe, and obstruction-free movement. These pathways are designed to accommodate high pedestrian volumes along with spillover activities from shops.

Between the pedestrian path and the carriageway, a furniture and activity zone is introduced. This zone acts as a transitional buffer that protects pedestrians from vehicular movement while also accommodating essential street elements such as trees, lighting, seating, signage, and organized vending spaces. The inclusion of vendors within this zone ensures that informal activities are structured rather than scattered.



Figure 12.5 proposed ROW
Source:- Primary survey, 2026

The central portion of the street is designed as a flexible carriageway, primarily catering to slow-moving vehicles such as two-wheelers and essential service vehicles. This flexibility allows the street to adapt to different time conditions, reducing conflicts and ensuring smoother coexistence of movement and activity.

Vendor Integration

Street vendors are recognized as an integral part of the urban economy and contribute significantly to the vibrancy of commercial spaces. Instead of treating them as encroachments, the proposal incorporates a vendor-inclusive approach by allocating designated spaces within the activity zone.

By organizing vending in a structured manner, the design reduces random occupation of footpaths and improves spatial clarity. This not only enhances pedestrian movement but also improves the overall visual character of the street. At the same time, it ensures that vendors can continue their livelihood activities without displacement, creating a more inclusive and balanced urban environment.

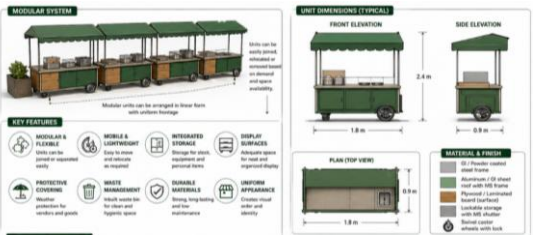


Figure12.6 proposed vendor cart design
Source-: Generated Image, 2026

Parking and Loading Strategy



Figure12.7 proposed parking and loading zones

Source-: Primary survey, 2026

Parking management is restructured to reduce its negative impact on traffic flow and pedestrian movement. While on-street parking is regulated to prevent excessive occupation of carriageway space, the proposal encourages the use of peripheral and off-street parking facilities to accommodate demand more efficiently.

In addition, dedicated loading and unloading zones are introduced to support commercial operations. These zones are strategically designed to allow smooth handling of goods

without interfering with pedestrian pathways. By implementing time-based regulations, loading activities are restricted to non-peak hours, ensuring that they do not disrupt the overall circulation during busy periods.

Controlled Vehicular Access

To further reduce congestion and improve safety, the proposal introduces a controlled vehicular access system within the core commercial area. The entry of four-wheelers is restricted during peak hours and weekends, allowing only essential and smaller vehicles to operate.



Figure12.7 restricted entry
Source-: Primary survey, 2026

This controlled approach helps in significantly reducing traffic volume within the area, minimizing conflicts between pedestrians and vehicles. It also creates a more comfortable and pedestrian-friendly

environment, especially during high activity periods, while still maintaining necessary accessibility for essential services.

Last Mile Connectivity

Efficient last-mile connectivity is ensured by providing designated zones for intermediate public transport such as e-rickshaws. These zones act as organized pick-up and drop-off points, preventing random stopping along the streets.

By structuring IPT movement, the proposal improves overall traffic efficiency and reduces congestion caused by unregulated vehicle behavior. At the same time, it ensures that users have convenient access to transport options, making the area more accessible and well-connected.

5. Results and Discussion

The proposed design interventions lead to a noticeable improvement in the spatial and functional efficiency of the area. By clearly segregating different zones, the design reduces conflicts between pedestrians, vehicles, and vendors. This results in

smoother movement patterns and a safer environment for users.

The pedestrian-priority approach enhances walkability and encourages people to spend more time in the area, thereby supporting commercial activity. At the same time, the structured integration of vendors ensures that informal economic activities continue without creating disorder. Another important outcome is the flexibility of the design, which allows the street to adapt to varying conditions such as weekday and weekend usage. This adaptability makes the proposal more practical and sustainable in the long term.

6. Conclusion

The study highlights the potential of design-based interventions in transforming congested and unorganized commercial areas into efficient and user-friendly urban spaces. By prioritizing pedestrians, organizing informal activities, and regulating vehicular movement, the proposal achieves a balanced approach that supports both functionality and economic activity.

The key strength of the proposal lies in its inclusive and flexible nature, where existing systems are improved rather than replaced. This ensures minimal disruption while maximizing benefits for all users. Such an approach can be effectively applied to similar urban contexts, where managing informality and improving spatial efficiency are critical challenges.

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CHAPTER 13:-PHYSICAL INFRASTRUCTURE

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Abstract

Physical infrastructure and service design play a vital role in improving the functionality, sustainability, and overall quality of urban commercial spaces and informal markets. This chapter focuses on key infrastructure components such as sanitation systems, drainage networks, solid waste management, modular vending units, and climate-responsive design solutions. Properly planned infrastructure helps create clean, organized, and efficient urban environments by improving public hygiene, environmental quality, operational efficiency, and user comfort. The chapter also highlights the importance of sustainable waste management practices, including recycling, composting, and smart waste monitoring systems, which contribute to reducing environmental pollution and supporting sustainable urban development. The chapter

further discusses the role of modular vending units in organizing informal market activities, improving circulation, reducing congestion, and enhancing urban aesthetics while supporting vendor livelihoods. In addition, climate-responsive strategies such as passive cooling, green infrastructure, rainwater harvesting, and renewable energy integration are emphasized as essential solutions for creating environmentally sustainable and thermally comfortable urban spaces. Overall, the chapter presents an integrated approach to infrastructure and service design that promotes cleaner, safer, more resilient, and economically productive urban environments while addressing the challenges faced by rapidly growing commercial areas and informal markets.

1. Infrastructure and Service Design

Infrastructure and service design refers to the planning and development of physical facilities, public services, and operational systems that support the efficient functioning of urban areas. In informal markets and commercial zones, proper infrastructure design is essential for improving sanitation, circulation, safety, economic activities, environmental quality, and public comfort. Well-designed infrastructure creates organized urban spaces that support vendors,

customers, transport systems, and municipal services simultaneously. The major components of infrastructure and service design include sanitation and waste systems, modular vending units, storage and logistics planning, and climate-responsive design solutions.

Sanitation and Waste Systems

Sanitation and waste systems are among the most important components of urban infrastructure because they directly affect public health, environmental quality, and the overall functioning of commercial spaces. In informal markets, poor sanitation often leads to unhygienic conditions, foul odors, blocked drains, waterlogging, disease outbreaks, and environmental pollution. Therefore, a properly planned sanitation and waste management system is essential for maintaining clean and healthy urban environments.

Importance of Sanitation Systems

Sanitation systems help manage wastewater, sewage, and solid waste generated from daily market activities. Markets usually produce large quantities of food waste, plastic materials, paper, packaging waste, and wastewater from cleaning activities. If these wastes are not properly collected and treated, they accumulate in public areas and create

unsafe conditions for both vendors and customers.

Public Hygiene and Health

Public hygiene and health are essential components of urban infrastructure and market planning because they directly affect the well-being of people using public spaces. In commercial areas and informal markets, poor sanitation, unmanaged waste, open drains, and polluted surroundings can lead to the spread of diseases such as cholera, typhoid, dengue, and respiratory infections. Proper hygiene systems, including waste collection, public toilets, clean water supply, drainage systems, and regular cleaning services, help create healthier environments for vendors, customers, and nearby residents. Good public hygiene reduces health risks, improves safety, and promotes better living conditions within urban areas. Hygienic environments also encourage more people to visit markets, improving economic activities and social interactions.

Environmental Quality

Environmental quality refers to the overall condition of the natural and built environment within urban areas. It includes air quality, water quality, cleanliness, greenery, noise levels, and pollution control. In informal markets and commercial spaces,

environmental quality is often affected by solid waste accumulation, wastewater discharge, traffic congestion, and air pollution. Proper infrastructure planning helps improve environmental conditions through waste management systems, green spaces, drainage networks, tree plantation, and pollution control measures. Clean and environmentally friendly urban spaces improve ecological balance, reduce pollution, and support sustainable urban development. Improved environmental quality also creates healthier and more attractive public spaces that enhance the overall urban experience.

Market Attractiveness

Market attractiveness refers to the visual appeal, accessibility, organization, and comfort of commercial areas that encourage customers to visit and spend time in the market. Attractive markets are clean, organized, safe, and visually appealing, with proper infrastructure such as paved walkways, lighting systems, signage, landscaping, and organized vending spaces. In informal markets, proper market design and infrastructure improve customer experience and increase economic activity. Features such as modular vending units, shaded pathways, seating spaces, and decorative elements enhance the aesthetic quality of the market

and create a more welcoming environment. Attractive markets also support tourism, increase business opportunities, and improve the image of the surrounding urban area.

Operational Efficiency

Operational efficiency refers to the smooth and effective functioning of market activities, infrastructure systems, and service operations within urban commercial spaces. Efficient market operations reduce delays, congestion, waste accumulation, and transportation conflicts. Proper infrastructure planning improves operational efficiency through organized circulation systems, designated loading and unloading zones, waste collection systems, storage facilities, and utility management. Efficient logistics and service systems help vendors transport goods easily, reduce traffic problems, and improve overall productivity. Operational efficiency also supports better management of public services such as sanitation, drainage maintenance, security, and transportation, creating more organized and functional urban environments.

User Comfort

User comfort is an important factor in urban design and infrastructure planning because it influences how people experience and use public spaces. In markets and commercial

areas, comfort depends on factors such as thermal conditions, cleanliness, seating availability, accessibility, safety, ventilation, shading, and crowd management. Climate-responsive infrastructure design improves user comfort by reducing heat exposure through shaded pathways, green spaces, and natural ventilation systems. Proper sanitation facilities, organized vending spaces, lighting systems, and pedestrian-friendly circulation also enhance the comfort of visitors and vendors. Comfortable urban spaces encourage longer public interaction, improve social experiences, and increase commercial activity within market areas.

Urban Cleanliness

Urban cleanliness refers to the maintenance of clean, organized, and waste-free public spaces within cities and commercial areas. Clean urban environments improve public health, enhance visual quality, and create positive impressions of urban areas. In informal markets, poor waste disposal, littering, overflowing drains, and unorganized vending activities often reduce urban cleanliness and create unpleasant conditions. Effective waste management systems, regular street cleaning, proper drainage infrastructure, and public awareness campaigns are necessary to maintain

cleanliness in urban spaces. Clean cities not only improve environmental quality and public health but also support tourism, economic development, and overall urban sustainability. Proper urban cleanliness management creates safer, healthier, and more attractive environments for both residents and visitors. Proper sanitation systems also reduce the spread of diseases such as cholera, typhoid, dengue, and other waterborne infections that commonly occur in congested urban areas.

2. Components of Sanitation Infrastructure

Sanitation infrastructure is an essential part of urban planning and market development because it helps maintain hygiene, environmental quality, and public health within commercial and public spaces. In market areas, large numbers of people gather daily for business, shopping, transportation, and social interaction, resulting in the generation of wastewater, solid waste, and other sanitation-related challenges. Proper sanitation infrastructure ensures that these spaces remain clean, safe, functional, and environmentally sustainable. Major components of sanitation infrastructure include public toilets and drainage systems, both of which play a critical role in improving

hygiene conditions and reducing environmental pollution.

Public Toilets

Public toilets are necessary facilities in market areas because vendors, customers, transport workers, and visitors spend long hours in these spaces every day. Without adequate toilet facilities, people are often forced to use open spaces or poorly maintained facilities, leading to unhygienic conditions, foul odors, environmental pollution, and the spread of diseases. Therefore, properly planned public toilets are important for maintaining sanitation, dignity, and public comfort in commercial and urban areas. Public toilets should be easily accessible so that people can conveniently use them without walking long distances. Their locations should be strategically planned near high pedestrian activity zones, parking areas, vending spaces, transport stops, and public gathering points. Accessibility is especially important for elderly people, children, and individuals with disabilities. Toilets should also be gender-sensitive, with separate facilities for men and women to improve privacy, safety, and comfort, especially in crowded market environments. Disabled-friendly infrastructure such as ramps, handrails, wider entrances, and proper

signage should be included to ensure inclusive access for all users.
Proper ventilation is another important aspect of public toilet design because it reduces bad odors, improves air circulation, and creates healthier indoor conditions. Regular cleaning and maintenance are necessary to maintain hygiene standards and ensure that the facilities remain functional and user-friendly. Poorly maintained public toilets often discourage usage and create negative environmental conditions within urban areas.

Modern public toilets may include water-saving fixtures, solar-powered lighting systems, handwashing stations, sensor-based taps, and wastewater recycling technologies to improve sustainability and operational efficiency. Water-saving fixtures help reduce water consumption, while solar-powered lighting reduces electricity costs and supports renewable energy use. Handwashing facilities improve hygiene and help reduce the spread of diseases, especially in high-density public spaces. Some advanced systems also recycle wastewater for flushing and cleaning purposes, helping conserve water resources. Separate facilities for men and women significantly improve safety and comfort, particularly in informal markets and crowded urban areas where women may

otherwise face difficulties accessing sanitation services. Properly designed public toilets not only improve public health and hygiene but also enhance the overall image, functionality, and attractiveness of commercial and public spaces.

Drainage Systems

Drainage systems are another major component of sanitation infrastructure because they help remove stormwater, wastewater, and excess surface runoff from urban and market areas. Effective drainage systems are essential for maintaining clean, safe, and flood-free environments. In commercial areas and informal markets, large amounts of wastewater are generated from cleaning activities, food preparation, washing, and rainfall runoff. Without proper drainage infrastructure, water accumulates in streets and public spaces, causing serious environmental and public health problems.

Poor drainage systems often result in water stagnation, flooding, mosquito breeding, road damage, unpleasant odors, and unsanitary conditions. Water stagnation creates breeding grounds for mosquitoes and insects, increasing the risk of diseases such as dengue and malaria. Flooding damages roads, footpaths, vending areas, and surrounding infrastructure, while blocked drains and

wastewater accumulation create unpleasant smells and poor environmental quality. In addition, overflowing drains often disrupt pedestrian movement and commercial activities within market spaces.

Underground covered drainage systems are generally preferred in urban areas because they improve cleanliness, reduce accidents, prevent waste dumping, and enhance the visual appearance of streets and public spaces. Covered drains reduce direct exposure to wastewater and minimize health risks associated with open drainage channels. They also prevent solid waste from being dumped into drains, reducing blockage and improving the efficiency of water flow.

Drainage systems should be designed according to rainfall intensity, surface runoff conditions, population density, and land use patterns to ensure efficient water management during both normal and extreme weather conditions. Proper slope design and drainage capacity are important for preventing overflow during heavy rainfall events. Regular inspection, desilting, and maintenance of drainage networks are necessary to ensure uninterrupted water flow and prevent blockage caused by waste accumulation and sediment deposition.

Modern drainage systems may also incorporate sustainable urban drainage techniques such as permeable pavements, rainwater harvesting systems, bioswales, and recharge pits to improve groundwater recharge and reduce urban flooding. These environmentally sensitive approaches help manage stormwater naturally while supporting sustainable urban development. Efficient drainage infrastructure not only improves sanitation and environmental quality but also enhances urban resilience, public safety, and the overall functionality of commercial and public spaces.

Solid Waste Management

Solid waste management is an essential part of urban sanitation infrastructure that focuses on the proper collection, segregation, transportation, treatment, and disposal of waste generated in commercial areas, markets, and public spaces. Informal markets and commercial zones produce large amounts of food waste, plastic materials, paper, packaging waste, and other solid waste every day. Without effective waste management systems, these wastes accumulate in streets, drainage channels, and public areas, leading to environmental pollution, foul odors, health hazards, and poor urban conditions. Therefore, proper solid waste management is

necessary to maintain clean, safe, and sustainable urban environments.

Solid waste management involves several stages, including waste collection, waste segregation, waste transportation, waste treatment, and final disposal. Waste collection systems ensure that garbage generated from market activities is regularly removed from public spaces. Waste segregation is important because it separates biodegradable, recyclable, and hazardous waste materials at the source, improving recycling efficiency and reducing environmental pollution. Waste transportation systems help transfer collected waste from markets to treatment or disposal facilities in an organized and hygienic manner. Waste treatment processes such as composting and recycling help reduce the amount of waste sent to landfills, while final disposal systems ensure the safe management of residual waste materials.

Color-coded waste bins should be placed throughout market areas to encourage proper waste segregation and improve sanitation management. Green bins are generally used for biodegradable waste such as food leftovers and vegetable waste, blue bins are used for recyclable materials such as plastic, paper, and glass, while red bins are used for hazardous waste materials. Segregating

waste at the source improves recycling efficiency, reduces landfill pressure, minimizes environmental pollution, and supports sustainable waste management practices. Proper placement of waste bins in high pedestrian and vending areas also improves cleanliness and prevents littering within public spaces.

Sustainable waste management solutions are increasingly important in modern urban planning because they help reduce environmental degradation and improve resource efficiency. Composting is one of the most effective methods for managing organic waste generated from food vendors and vegetable markets. Organic waste can be converted into compost for urban landscaping and agricultural use, reducing landfill waste and transportation costs. Decentralized composting units located near markets further improve waste processing efficiency and support sustainable urban management practices.

Recycling is another important waste management strategy that helps reduce pollution and conserve natural resources. Plastic, glass, cardboard, paper, and metal materials should be collected separately and transported to recycling centers for processing and reuse. Recycling reduces the amount of waste entering landfill sites,

lowers environmental contamination, and supports circular economic systems within urban areas. Modern market infrastructure may also include smart waste monitoring systems such as sensor-based smart bins that notify authorities when waste bins are full. These technologies improve waste collection efficiency, prevent overflow problems, and support better municipal management.

Despite these improvements, many informal markets still face serious sanitation and waste management challenges. Common problems include lack of maintenance, open dumping of waste, inadequate drainage systems, limited municipal resources, irregular waste collection, and public negligence. These issues reduce the quality of urban spaces, create unhygienic conditions, block drainage systems, and negatively affect market operations and public health. Poor sanitation also reduces the visual attractiveness and economic efficiency of commercial areas.

To improve sanitation conditions, urban planners and municipal authorities should install sufficient waste bins, develop underground drainage systems, ensure regular cleaning schedules, promote public awareness campaigns, introduce decentralized waste treatment systems, and improve municipal monitoring systems.

Public participation and awareness are equally important because effective waste management depends on both infrastructure provision and responsible public behavior. A strong sanitation and waste management system creates cleaner, healthier, safer, and more sustainable urban environments while improving environmental quality and supporting efficient market operations.

3. Sustainable Waste Management Solutions

Sustainable waste management solutions are important strategies used in urban planning and market management to reduce environmental pollution, improve sanitation conditions, conserve natural resources, and create healthier urban environments. In commercial areas and informal markets, large amounts of solid waste are generated daily from food stalls, packaging materials, plastic containers, paper products, and other commercial activities. Traditional waste disposal methods such as open dumping and uncontrolled landfill disposal often create serious environmental and public health problems. Therefore, sustainable waste management approaches focus on reducing waste generation, promoting recycling and reuse, improving waste treatment systems, and minimizing the environmental impact of

urban waste. Major sustainable waste management solutions include composting, recycling, and smart waste monitoring systems.

Composting

Composting is one of the most effective and environmentally friendly methods for managing organic waste generated from food vendors, vegetable markets, and restaurants. Organic waste such as fruit peels, leftover food, vegetable waste, and biodegradable materials can be converted into nutrient-rich compost through natural decomposition processes. This compost can then be used for urban landscaping, gardening, agriculture, and green space development. Composting helps reduce the amount of organic waste sent to landfill sites, minimizing environmental pollution and greenhouse gas emissions caused by waste decomposition in open dumping areas.

Decentralized composting units located near markets are particularly beneficial because they reduce transportation costs, improve waste processing efficiency, and support local waste management systems. Instead of transporting large quantities of biodegradable waste to distant disposal sites, organic waste can be treated locally within or near the market area. This reduces fuel consumption,

lowers waste transportation expenses, and minimizes pressure on municipal waste collection systems. Composting also supports sustainable urban development by converting waste into a useful resource, improving soil quality, and encouraging environmentally responsible waste management practices.

Recycling

Recycling is another important sustainable waste management strategy that focuses on collecting, processing, and reusing waste materials such as plastic, glass, cardboard, paper, and metal products. In markets and commercial areas, large amounts of recyclable waste are generated every day from packaging materials, beverage containers, shopping bags, and commercial goods. If these materials are not properly managed, they contribute to environmental pollution, drainage blockage, and excessive landfill accumulation.

Proper recycling systems require waste segregation at the source so that recyclable materials can be collected separately from biodegradable and hazardous waste. Segregated materials are then transported to recycling centers where they are processed and converted into new products. Recycling helps reduce environmental pollution, conserve natural resources, decrease energy

consumption, and minimize the extraction of raw materials from the environment. It also reduces the amount of waste entering landfill sites and supports circular economic systems where materials are reused instead of discarded. In addition, recycling activities can generate employment opportunities in waste collection, sorting, processing, and manufacturing industries, contributing to both environmental and economic sustainability.

Smart Waste Monitoring

Smart waste monitoring is a modern technological approach used to improve the efficiency and management of urban waste collection systems. Traditional waste collection methods often rely on fixed schedules, which may result in overflowing bins in busy market areas or unnecessary collection trips when bins are not full. Smart waste monitoring systems use sensor-based smart bins equipped with digital technologies that notify municipal authorities or waste management agencies when waste bins reach their maximum capacity.

These smart systems improve waste collection efficiency by allowing authorities to optimize collection routes, reduce overflow problems, and improve overall sanitation conditions in commercial and public spaces. Smart bins help maintain cleaner environments because waste is removed before it accumulates excessively in public areas. In addition, these systems reduce fuel consumption, transportation costs, and operational inefficiencies by ensuring that waste collection vehicles are only dispatched when necessary. Smart waste monitoring technologies also support better municipal planning and data collection by providing information about waste

generation patterns, collection frequency, and service requirements within urban areas.

4. Challenges in Market Sanitation

Despite the implementation of sanitation and waste management systems, many informal markets continue to face serious sanitation challenges that negatively affect public health, environmental quality, and market operations. One of the most common problems is the lack of maintenance of public infrastructure such as drains, toilets, waste bins, and cleaning facilities. Poor maintenance often results in overflowing waste, blocked drainage systems, foul odors, and unhygienic conditions within market areas.

Open dumping of waste is another major issue in informal markets where vendors and visitors dispose of garbage in open spaces, roadsides, or drainage channels due to the absence of proper waste collection systems or public awareness. Open dumping not only reduces urban cleanliness but also creates environmental pollution and attracts insects, rodents, and disease-carrying organisms.

Inadequate drainage systems are also common in congested market areas. Poor drainage infrastructure leads to water stagnation, flooding, mosquito breeding, and damage to roads and public spaces, especially

during heavy rainfall. Limited municipal resources further worsen sanitation conditions because local authorities may lack sufficient funding, equipment, manpower, and infrastructure to provide regular cleaning and waste management services.

Irregular waste collection is another significant challenge that causes waste accumulation and unpleasant environmental conditions within markets. Delayed waste removal often blocks circulation spaces, affects business activities, and reduces the overall attractiveness of commercial areas. Public negligence and lack of environmental awareness also contribute to poor sanitation because some users continue to litter public spaces despite the availability of waste bins and sanitation facilities.

These sanitation challenges reduce the quality, safety, and functionality of urban spaces while negatively affecting public health, environmental sustainability, market attractiveness, and economic activities. Therefore, improving sanitation systems, increasing public awareness, strengthening municipal management, and introducing sustainable waste management solutions are essential for creating cleaner, healthier, and more organized urban market environments without compromising its informal character.

5. Planning Recommendations

Effective planning recommendations are essential for improving sanitation infrastructure and waste management systems in urban markets and commercial areas. Urban planners play a major role in designing organized, hygienic, and sustainable public spaces that support both environmental quality and public health. In informal markets, rapid urbanization, population growth, and increased commercial activities often create pressure on existing sanitation systems, resulting in waste accumulation, drainage blockage, pollution, and unhealthy conditions. Therefore, proper planning strategies are necessary to improve sanitation management, maintain urban cleanliness, and create efficient market environments.

One of the most important recommendations is the installation of sufficient waste bins throughout market areas and public spaces. Waste bins should be strategically located near vending zones, pedestrian pathways, transport stops, food stalls, and high-activity commercial areas to encourage proper waste disposal. The use of color-coded bins for biodegradable, recyclable, and hazardous waste improves waste segregation at the source and supports sustainable recycling systems. Proper placement and regular

maintenance of waste bins help reduce littering, improve urban cleanliness, and maintain hygienic conditions within market environments.

Urban planners should also develop underground drainage systems to improve stormwater and wastewater management in commercial areas. Proper drainage infrastructure helps prevent water stagnation, flooding, mosquito breeding, and road damage, especially during heavy rainfall. Underground covered drains are preferred because they improve sanitation conditions, reduce accidents, prevent waste dumping, and enhance the visual appearance of urban spaces. Drainage systems should be designed according to rainfall intensity, population density, and land use patterns to ensure efficient water flow and reduce environmental risks.

Ensuring regular cleaning schedules is another important recommendation for maintaining sanitation standards in markets and public areas. Municipal authorities should implement daily waste collection and street cleaning operations to prevent waste accumulation and maintain clean surroundings. Regular maintenance of public toilets, drainage systems, and waste collection facilities is also necessary to

ensure that sanitation infrastructure remains functional and user-friendly. Efficient cleaning systems improve public hygiene, enhance market attractiveness, and create healthier environments for vendors and visitors.

Public awareness campaigns are equally important because sanitation management depends not only on infrastructure provision but also on responsible public behavior. Awareness programs should educate vendors, customers, and local communities about proper waste disposal, recycling practices, environmental protection, and the importance of maintaining clean public spaces. Posters, community meetings, educational workshops, and digital campaigns can help encourage environmental responsibility and improve public participation in sanitation management activities.

Urban planners should also introduce decentralized waste treatment systems to improve waste processing efficiency and reduce pressure on municipal disposal facilities. Decentralized systems such as local composting units, recycling centers, and small-scale waste treatment facilities allow waste to be managed closer to the source of generation. These systems reduce transportation costs, minimize landfill waste, and support sustainable waste management

practices. Organic waste generated from food vendors can be converted into compost for landscaping and agriculture, while recyclable materials can be processed and reused through local recycling systems.

Improving municipal monitoring systems is another essential recommendation for efficient sanitation management. Municipal authorities should use regular inspections, digital monitoring technologies, smart waste collection systems, and data management tools to monitor sanitation conditions and improve service delivery. Smart bins with sensors, GPS-based waste collection tracking, and digital complaint systems can help authorities respond quickly to sanitation issues and optimize waste collection operations. Strong municipal monitoring systems improve operational efficiency, reduce waste overflow problems, and ensure better maintenance of public infrastructure.

6. Modular Vending Units

Modular vending units are standardized, flexible, and organized structures designed to support street vendors and informal market activities in urban areas. These units are an important component of modern urban planning because they help create systematic, clean, and well-managed vending environments while improving urban

aesthetics, circulation, safety, and functionality. In many cities, informal vending activities develop in an unorganized manner along roadsides, footpaths, transport hubs, and public spaces. Although street vending contributes significantly to the urban economy and provides employment opportunities for a large population, poorly organized vending activities often create several urban management problems. Traditional informal vending commonly results in encroachment on roads and pedestrian pathways, traffic congestion, poor hygiene conditions, visual disorder, and conflicts between pedestrians, vehicles, and vendors. These issues reduce the efficiency, cleanliness, and attractiveness of urban spaces.

Modular vending systems help solve these urban challenges by providing planned and organized spaces for commercial activities. Instead of randomly placed temporary stalls and roadside encroachments, vendors operate from properly designed vending units that maintain order and improve urban functionality. These systems support both economic development and urban management by balancing the needs of vendors, pedestrians, transport systems, and public authorities. Through organized vending infrastructure, cities can improve

circulation, reduce congestion, enhance public safety, and create cleaner and more attractive market environments.

The importance of modular vending units lies in their ability to support vendor livelihood security while promoting organized urban development. Street vendors depend on vending activities as their primary source of income, and modular vending systems provide them with safer, more stable, and legally recognized working environments. These units also improve pedestrian circulation by reducing obstruction on walkways and roads, allowing smoother movement within market areas. Cleaner public spaces are achieved because modular units include organized waste disposal facilities and reduce uncontrolled roadside activities. In addition, modular vending systems support efficient service delivery because utility connections, waste collection systems, lighting, and maintenance services can be planned more effectively within organized vending zones. Overall, these units create a balance between economic activity and urban management, ensuring that commercial activities continue without negatively affecting public infrastructure and urban order.

One of the major features of modular vending units is their flexible design. These units are

generally constructed using lightweight and movable materials that allow easy assembly, relocation, expansion, and modification according to urban requirements. Modular units can be foldable, expandable, relocatable, and easily assembled, making them highly adaptable to changing urban conditions. This flexibility is particularly useful during road widening projects, festivals, emergency situations, infrastructure maintenance, and urban redevelopment activities because vending units can be temporarily shifted without permanently affecting vendor livelihoods. The movable nature of these structures also allows authorities to reorganize market layouts and circulation systems when necessary.

Weather protection is another important feature of modular vending units because vendors often work in outdoor environments exposed to rain, heat, dust, and strong winds. To improve comfort and operational efficiency, modular units are usually equipped with roof canopies, side panels, ventilation openings, and thermal insulation materials. Roof canopies protect vendors and customers from direct sunlight and rainfall, while ventilation systems improve airflow and reduce heat accumulation inside vending spaces. Thermal insulation materials help maintain comfortable indoor temperatures,

especially in hot climatic regions such as Punjab and Rajasthan. These weather-responsive design elements improve working conditions for vendors and create more comfortable shopping environments for customers.

Modern modular vending units may also include utility integration systems that improve the functionality and efficiency of market operations. These units can be equipped with electricity connections, solar lighting systems, water supply facilities, charging points, and waste bins. Electricity connections allow vendors to operate lighting systems, electronic equipment, and cooling devices, while solar lighting reduces energy consumption and supports sustainable infrastructure development. Water supply facilities improve hygiene and support food preparation activities in food vending units. Charging points provide convenience for both vendors and customers, especially in modern urban environments where mobile device usage is common. Waste bins integrated within vending units encourage proper waste disposal and help maintain urban cleanliness.

There are different types of modular vending units designed according to the nature of commercial activities. Food vending units are specifically designed for food preparation

and sale activities and generally include cooking areas, wash basins, waste disposal systems, and ventilation facilities to maintain hygiene and safety standards. Retail vending units are used for selling products such as clothing, handicrafts, electronics, and general merchandise. These units focus more on product display, storage, and customer interaction spaces. Mobile vending units are mounted on wheels or movable platforms, allowing easy movement and temporary commercial activities in different urban locations. Mobile units are especially useful during festivals, public events, and temporary market activities.

The materials used in modular vending units are selected based on durability, flexibility, sustainability, and cost efficiency. Eco-friendly and durable materials such as steel frames, bamboo panels, recycled wood, aluminum sheets, and tensile fabric roofs are commonly used in modular vending structures. Steel frames provide structural strength and durability, while bamboo panels and recycled wood support environmentally sustainable construction practices. Aluminum sheets are lightweight and resistant to corrosion, making them suitable for outdoor market conditions. Tensile fabric roofing systems provide flexible and aesthetically attractive weather protection.

The use of local materials not only reduces construction costs but also supports regional identity and traditional architectural character within urban environments.

Modular vending units provide several urban design benefits that improve the overall quality and functionality of commercial spaces. These units improve the visual appearance of markets by creating uniform and organized commercial layouts. Properly designed vending systems reduce traffic congestion by preventing encroachment on roads and pedestrian pathways. Public safety is improved because organized layouts provide better emergency access, reduce accidents, and support efficient crowd management. Market organization becomes more systematic through planned circulation spaces, designated vending areas, and integrated utility services. Economic efficiency is also enhanced because vendors can operate in safer and more organized environments that attract more customers and improve commercial productivity.

Proper spacing between vending units is essential to ensure emergency access, fire safety, and pedestrian comfort within market areas. Adequate spacing allows emergency vehicles to enter market spaces when necessary and reduces fire risks associated with congested commercial environments.

Wider pedestrian pathways improve public movement and reduce conflicts between customers, vendors, and transport systems. Organized layouts also improve accessibility for elderly people, children, and individuals with disabilities.

Despite their advantages, modular vending systems also face several challenges. High installation costs may create financial difficulties for municipal authorities and vendors during the initial development phase. Some vendors may resist relocation into organized vending units due to concerns about customer visibility, rental charges, or operational restrictions. Maintenance issues such as cleaning, repair, and utility management also require regular municipal support and monitoring. Space limitations in densely populated urban areas can make it difficult to accommodate all vendors within organized vending zones. In addition, managing utility services such as electricity, water supply, and waste collection requires proper coordination between vendors and local authorities.

Despite these challenges, modular vending systems remain an important solution for sustainable market development and urban management. They improve sanitation, circulation, safety, environmental quality,

and economic efficiency while supporting the livelihoods of street vendors and enhancing the overall functionality and attractiveness of urban commercial spaces.

7. Climate-Responsive Design Solutions

Climate-responsive design solutions are important strategies in urban planning and infrastructure development that focus on creating environments that adapt to local climatic conditions while improving environmental sustainability, thermal comfort, and energy efficiency. This approach aims to reduce the negative effects of extreme weather conditions and environmental challenges by using sustainable planning techniques, natural systems, and energy-efficient infrastructure. Climate-responsive design is especially important in hot and semi-arid regions such as Punjab and Rajasthan, where urban areas experience high temperatures, strong solar radiation, dust storms, irregular rainfall, and water scarcity. In commercial areas and informal markets, climate-sensitive infrastructure helps create healthier, safer, and more comfortable environments for vendors, customers, and surrounding communities.

The importance of climate-responsive design has increased significantly due to rapid

urbanization and climate change. Urban markets and commercial areas are highly exposed to environmental challenges such as heat stress, solar radiation, dust storms, heavy rainfall, and urban heat island effects. Heat stress affects public comfort and health, especially during summer seasons when paved surfaces and building materials absorb and retain large amounts of heat. Solar radiation increases indoor and outdoor temperatures, making commercial spaces uncomfortable for both vendors and customers. Dust storms and air pollution reduce environmental quality and create respiratory health problems, while heavy rainfall and poor drainage systems often result in urban flooding and waterlogging. The urban heat island effect, caused by excessive concrete surfaces and limited green spaces, further increases temperatures within cities compared to surrounding rural areas.

Climate-sensitive infrastructure helps reduce energy consumption by minimizing the need for artificial cooling systems and improving natural environmental conditions. It also improves thermal comfort, enhances environmental quality, and increases resilience to climate change by reducing the impacts of extreme weather conditions. Sustainable climate-responsive planning creates urban environments that are more

adaptable, efficient, and environmentally friendly while supporting long-term urban sustainability.

One of the most important climate-responsive strategies is the use of passive cooling techniques. Passive cooling refers to natural methods of reducing heat and improving comfort without relying heavily on mechanical cooling systems such as air conditioners. Shaded pathways are highly effective in improving pedestrian comfort and reducing heat exposure in urban markets and commercial spaces. Trees, pergolas, covered walkways, and shading structures help block direct sunlight and lower surrounding temperatures. These shaded spaces encourage pedestrian movement, improve walkability, and create more comfortable public environments, especially during hot weather conditions.

Natural ventilation is another important passive cooling technique used in climate-responsive design. Buildings and vending structures should be oriented according to prevailing wind directions to improve airflow and reduce heat buildup within indoor and outdoor spaces. Proper ventilation systems allow fresh air circulation, remove trapped heat, and improve thermal comfort without excessive energy use. Openings, ventilation panels, and shaded courtyards further

enhance air movement within market areas and public spaces.

Reflective materials also play a significant role in reducing heat absorption in urban environments. Cool roofing materials, reflective pavements, and light-colored construction surfaces reduce the amount of solar heat absorbed by buildings and streets, helping lower indoor and outdoor temperatures. These materials improve thermal comfort and reduce the energy required for cooling systems, making urban infrastructure more energy-efficient and environmentally sustainable.

Green infrastructure is another major component of climate-responsive design. Urban trees provide several environmental and social benefits, including shade, air purification, temperature reduction, and noise control. Trees reduce heat stress by cooling surrounding environments through shading and evapotranspiration processes. They also improve air quality by absorbing pollutants and producing oxygen, creating healthier urban environments. In commercial areas and informal markets, tree-lined pathways and landscaped public spaces improve both environmental quality and visual attractiveness.

Green buffers are vegetation barriers developed near roads, transport corridors,

and industrial zones to reduce dust, air pollution, and noise levels. These buffers improve environmental conditions and create separation between commercial spaces and pollution-generating activities. Vertical gardens and green walls are also increasingly used in urban areas to improve aesthetics, thermal insulation, and environmental sustainability. Green walls help reduce heat absorption by buildings while enhancing the visual quality of urban spaces.

Water management systems are essential in climate-responsive infrastructure because they help manage rainfall, reduce flooding, and conserve water resources. Rainwater harvesting systems collect and store rainwater from rooftops and paved surfaces for later use in landscaping, cleaning, and other non-potable purposes. These systems help recharge groundwater, reduce surface runoff, and improve water conservation in water-scarce regions. Permeable paving materials are another sustainable solution used in climate-responsive design. Unlike traditional concrete surfaces, permeable pavements allow rainwater to infiltrate into the ground, reducing water accumulation and urban flooding during heavy rainfall. These systems also support groundwater recharge and improve stormwater management within urban areas.

Renewable energy integration is an important aspect of sustainable climate-responsive infrastructure. Solar panels can be installed on market roofs, vending units, parking areas, and public structures to generate renewable electricity for lighting, charging stations, public utilities, and commercial activities. The use of solar energy reduces dependence on conventional energy sources, lowers electricity costs, and decreases carbon emissions. Renewable energy systems support environmentally sustainable urban development while improving the operational efficiency of commercial spaces. Urban markets and commercial areas face several climate-related challenges, including heat waves, flooding, air pollution, and water scarcity. Heat waves create uncomfortable and unsafe conditions for vendors and customers, especially in densely built urban environments with limited shading and vegetation. Flooding caused by poor drainage systems disrupts market operations, damages infrastructure, and creates sanitation problems. Air pollution from traffic congestion, industrial activities, and dust accumulation negatively affects environmental quality and public health. Water scarcity is also a major issue in semi-arid regions where increasing urbanization places pressure on limited water resources.

Climate-responsive design solutions help reduce these environmental risks and improve urban resilience by creating infrastructure systems that are adaptable to changing climatic conditions. These strategies improve public comfort, reduce environmental degradation, and support sustainable urban development. By integrating passive cooling techniques, green infrastructure, water management systems, and renewable energy technologies, cities can create healthier and more sustainable commercial environments.

Urban planners play a major role in implementing climate-responsive infrastructure strategies. Planning recommendations include increasing tree cover throughout urban areas to improve shading and environmental quality, using energy-efficient and reflective construction materials to reduce heat absorption, developing shaded public spaces and pedestrian corridors, promoting renewable energy systems such as solar power, and improving stormwater management infrastructure through rainwater harvesting and permeable paving systems. These planning strategies help create urban environments that are more resilient, energy-efficient, environmentally sustainable, and comfortable for public use.

Overall, climate-responsive infrastructure creates healthier, safer, and more sustainable urban environments by reducing the impacts of climate change, improving environmental quality, and enhancing public comfort. These design solutions are essential for modern urban planning because they support long-term sustainability, resource conservation, and improved quality of life within rapidly growing urban areas and commercial spaces.

8. Conclusion

Infrastructure and service design play a fundamental role in improving the functionality, sustainability, and livability of urban commercial spaces and informal markets. Efficient sanitation and waste systems create cleaner and healthier environments, modular vending units improve market organization and vendor conditions, storage and logistics planning enhanceoperational efficiency and circulation, and climate-responsive design solutions support environmental sustainability and thermal comfort. Together, these infrastructure strategies help create organized, resilient, people-friendly, and economically productive urban environments that support both social well-being and sustainable urban development

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CHAPTER 14 – MOBILITY AND PUBLIC REALM INTEGRATION

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Abstract
This chapter examines the integration of mobility systems with the public realm in Jyoti Chowk, Jalandhar—one of the city's busiest commercial nodes. The study highlights key issues such as pedestrian congestion, inefficient parking, lack of designated transport zones, and high traffic conflicts. Based on detailed field analysis, including pedestrian flow studies and parking assessment, the chapter proposes a pedestrian-priority approach supported by traffic regulation and improved transport integration. The findings demonstrate that combining mobility planning with public space design can significantly enhance accessibility, safety, and overall urban experience.

1. Introduction

Jyoti Chowk serves as a major commercial and mobility hub, connecting multiple important roads and attracting a large volume of pedestrians and vehicles throughout the day. The area experiences intense activity due to retail concentration and informal vending, making it one of the most dynamic yet congested parts of the city.

Despite the high pedestrian presence, the current street design prioritizes vehicles, leading to inefficient space utilization and unsafe conditions. The absence of structured mobility planning results in conflicts between pedestrians, vehicles, and informal activities. This chapter explores how mobility and public realm can be integrated to create a more balanced, efficient, and user-friendly environment.

2. Pedestrian Prioritisation

Pedestrian movement is the dominant mode of activity in Jyoti Chowk, as reflected in the field survey data. The pedestrian flow analysis shows that certain stretches experience very high movement intensity. For example, the A–A' stretch records an hourly pedestrian flow of approximately 1992 pedestrians per hour, with a flow intensity of 443 ped/hr/m, which corresponds to Level of Service (LOS) D, indicating

moderate congestion and restricted movement.

Other stretches such as C–C' and D–D' operate under LOS C (stable conditions), while peripheral stretches like E–F' show LOS A (free flow). This variation highlights the uneven distribution of pedestrian pressure across the area.

Despite high pedestrian demand, the effective footpath width is significantly reduced due to encroachments and vending activities. In many cases, the available walkway is less than 1.5 meters, which is below recommended standards for high pedestrian volume areas. As a result, pedestrians are forced onto the carriageway, increasing the risk of accidents.

The proposal prioritizes pedestrians by reallocating street space and ensuring continuous, obstruction-free pathways. Wider walkways, proper surface design, and universal accessibility features such as ramps and tactile paving are introduced to improve safety and comfort.

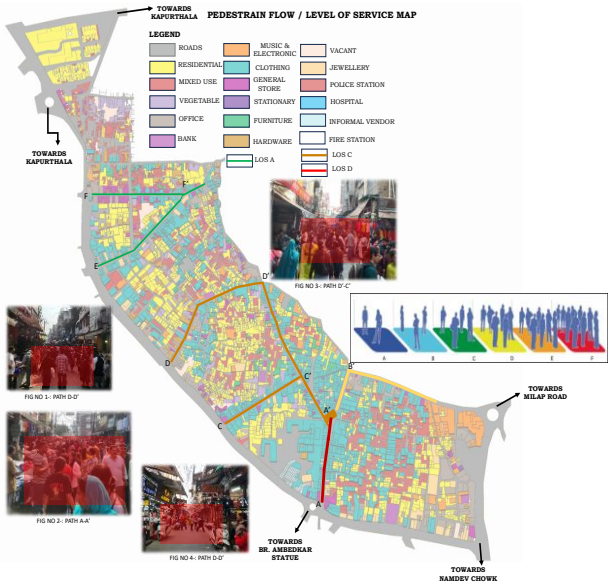


Figure 14.1 Pedestrian Movement / Walkability Map (LOS Map)

3. Traffic Management Strategies

Traffic conditions in Jyoti Chowk are heavily influenced by unregulated vehicular movement and inefficient parking systems. The presence of 45° angled on-street parking provides high parking capacity but reduces the effective carriageway width to approximately 9 meters from the total 18-meter ROW.

The on-street parking capacity is estimated at around 728 PCU, while off-street parking

facilities provide only about 58 PCU, indicating a strong dependence on street-based parking. Frequent vehicle entry and exit from angled parking spaces lead to temporary blockages, reducing traffic speed and increasing congestion.

To address these issues, the proposal introduces controlled vehicular access. Four-wheelers are restricted within the core commercial area during peak hours and weekends, allowing only essential and smaller vehicles. This reduces traffic volume and improves overall movement efficiency.

Additionally, organized parking strategies and designated loading/unloading zones are introduced to minimize disruptions caused by commercial activities.

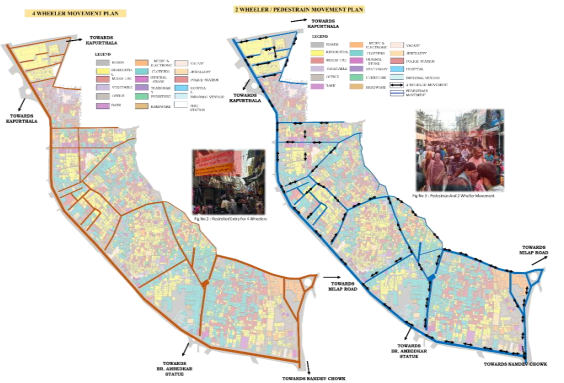


Figure 14.2 Vehicular Movement Plan

4. Integration with Transport Systems

Intermediate Public Transport (IPT), particularly e-rickshaws, plays a crucial role in last-mile connectivity within the study area. Field observations indicate a flow of approximately 120–150 IPT vehicles per hour, highlighting their importance in daily mobility. However, the absence of designated pick-up and drop-off zones results in random stopping along the streets and near junctions, creating congestion and reducing traffic efficiency. IPT vehicles often occupy carriageway space, further intensifying conflicts. The proposal addresses this issue by introducing designated IPT stands and organized stopping points. These zones are strategically located to ensure easy accessibility while preventing obstruction to movement. By integrating IPT within the street design, the proposal improves connectivity and ensures smoother traffic flow.

5. Streets as Public Spaces

In its current condition, Jyoti Chowk functions primarily as a movement corridor, with limited consideration for its role as a public space. However, the high pedestrian presence and commercial activity indicate its potential to function as an active urban space.The proposal redefines the street as a

multifunctional public realm by introducing elements such as seating areas, shaded spaces, landscaping, and organized vending zones. By reducing vehicular dominance and enhancing pedestrian infrastructure, the street becomes more accessible and user-friendly. The flexible design allows the street to adapt to different conditions. During weekdays, controlled vehicular movement is permitted, while on weekends, the street can function as a pedestrian-dominated zone, encouraging social interaction and economic activity.

This transformation not only improves the quality of the public realm but also enhances the overall urban experience.

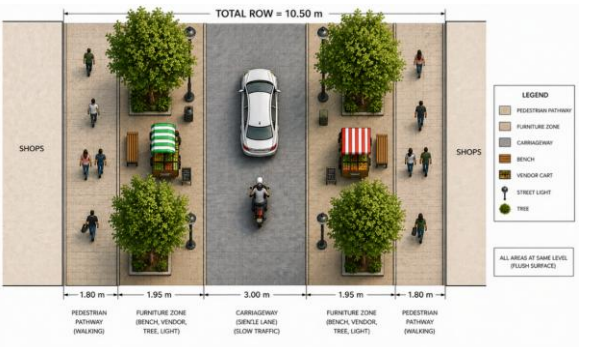


Figure14.3 proposed parking and loading zones

Source:- Generated Map, 2026

6. Results and Discussion

The integration of mobility and public realm strategies results in a significant improvement in the functioning of Jyoti Chowk. Pedestrian prioritisation reduces conflicts and enhances safety, while traffic management strategies improve circulation efficiency. The introduction of structured transport integration ensures better connectivity and reduces congestion caused by unregulated movement. Additionally, the transformation of streets into public spaces increases usability and enhances the overall vibrancy of the area. The use of a flexible and adaptive design approach ensures that the street can accommodate varying levels of activity, making it suitable for both daily use and peak conditions.

7. Conclusion

The study demonstrates that effective integration of mobility and public realm is essential for creating efficient and livable urban spaces. By prioritizing pedestrians, regulating traffic, and improving transport integration, Jyoti Chowk can be transformed into a safer and more organized environment. The concept of streets as public spaces further enhances the social and economic value of the area. This approach provides a sustainable and scalable model that can be

applied to other commercial areas facing similar challenges.

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CHAPTER 15 – IMPLENETATION & PHASING

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Abstract

This chapter presents a structured framework for the implementation of urban interventions through a phased and strategic approach. It outlines how development can be systematically carried out by dividing it into stages such as site preparation, infrastructure development, mobility and operational management, and long-term integration. The chapter emphasizes the importance of balancing short-term improvements with long-term planning, ensuring that immediate issues are addressed while building towards sustainable outcomes. The role of tactical urbanism and pilot projects is highlighted as a means to test and refine interventions before full-scale implementation.

Additionally, the chapter discusses the significance of governance and institutional coordination, where multiple stakeholders collaborate to ensure effective execution and monitoring. Financial feasibility is addressed through models such as public funding, user charges, and partnerships, ensuring long-term sustainability. Overall, the chapter provides a practical roadmap for implementing urban strategies in an efficient, inclusive, and adaptable manner.

1. Introduction

Effective urban implementation requires a phased approach to ensure that interventions are practical, gradual, and adaptable. Phasing helps prioritize immediate actions while aligning them with long-term development goals, allowing smooth transition and efficient resource use. This approach distinguishes between short-term interventions, which focus on quick, low-cost improvements, and long-term interventions, which involve permanent infrastructure and policy integration. Tools like tactical urbanism and pilot projects enable testing of ideas on a small scale before full

implementation. Successful execution also depends on strong governance and institutional coordination, along with viable financial models such as public funding, PPP, and user-based systems to ensure long-term sustainability.

2. Strategic Phasing Framework for Informal Market Development

The phasing of proposals for informal markets ensures a systematic and gradual implementation of interventions, minimizing disruption to existing livelihoods. It begins with site preparation and organization, followed by the development of infrastructure and spatial structuring. Subsequent phases focus on mobility management and regulation to reduce conflicts and improve efficiency. The final stage emphasizes integration, monitoring, and long-term sustainability, creating a balanced and well-functioning market system. This phased approach allows for flexibility, adaptability, and effective implementation over time.

Phase – 1

Stakeholder Identification & Conflict Mapping phase establishes a comprehensive understanding of the social and economic & Policy Framework structure of the market by identifying all key stakeholders. These include formal stakeholders (shop owners, retailers), informal stakeholders (street vendors, hawkers), governance bodies (Municipal Corporation, police, licensing authorities), and users (residents, customers, and transport operators). A power-interest matrix is used to analyze relationships, influence levels, and dependencies among these groups. Simultaneously, conflict zones and encroachment patterns are mapped to identify areas of high tension, particularly between vendors and shopkeepers or pedestrians and vehicles. The study of vendor distribution and peak activity timings further helps in understanding spatial and temporal pressures within the market.

Identification & Clearance phase focuses on developing a clear understanding of the existing on-ground conditions for Formalized Vending Zones & Spatial Organization.

High-footfall corridors such as the Jyoti Chowk spine, along with major vending clusters and encroachment zones, are systematically mapped and analyzed. Based on this assessment, unorganized and scattered vending activities are temporarily reorganized rather than removed, ensuring that livelihoods are not disrupted. Critical circulation spaces such as pedestrian pathways and junctions are cleared to restore basic movement efficiency and reduce congestion.

Site Clearance & Spatial Reorganization focuses on restoring basic street functionality by addressing existing spatial conflicts and encroachments. Different types of encroachments—such as shop spillovers, informal vendors, temporary structures, and on-street parking—are identified and mapped. Instead of complete removal, a selective reorganization approach is adopted to minimize disruption to livelihoods. The Right of Way (ROW) is reallocated to clearly define space for pedestrians, vehicles, and vending activities. Critical areas such as chokepoints near bus stands and busy bazaar

streets are decluttered to improve movement. Additionally, clear pedestrian pathways and fire access corridors (minimum 6m width) are demarcated to ensure safety and accessibility.

Site Preparation & Activity Relocation focuses on reorganizing the spatial structure of the market by clearly distinguishing between core activity zones and peripheral service areas. Heavy and disruptive activities such as loading/unloading, waste collection, and parking are identified and systematically shifted to designated service corridors along the edges of the market. This reduces pressure on the congested core and improves overall accessibility. Simultaneously, an initial cleaning drive and waste removal process is undertaken to improve hygiene and usability of public spaces. Basic traffic regulation measures are introduced to streamline movement within the core, and service and logistics zones are demarcated to guide future operations.

Traffic Control & Site Clearance focuses on restoring basic traffic discipline by

identifying and addressing key problem areas within the circulation network. Conflict zones, bottlenecks, and high congestion points (including 38+ identified conflict locations) are mapped to understand movement patterns and inefficiencies. Based on this, four-wheeler movement is restricted within the core market area, reducing unnecessary vehicular pressure. Carriageways are decluttered by removing on-street parking and random encroachments, allowing smoother flow of pedestrians and essential traffic. Peripheral roads are designated for vehicular movement, and a clear movement hierarchy (core pedestrian zone vs edge vehicular roads) is established.

Site Clearance & Ground Preparation focuses on preparing the site by addressing existing physical and spatial issues. Vending areas, encroachments, and circulation conflicts are carefully identified and mapped to understand the existing condition. Instead of complete removal, a selective clearance approach is adopted to reorganize obstructive elements while safeguarding livelihoods. Key spatial elements such as road edges,

pedestrian pathways, and activity zones are clearly marked to establish order. Basic improvements, including repair of road surfaces and footpaths, removal of debris, and cleaning and unclogging of drainage systems, are undertaken to create a functional base. This phase ensures that the area is physically prepared for further interventions.

Site Preparation & Street Reorganization focuses on organizing the existing street condition by addressing key spatial issues such as encroachment, mixed movement patterns, and visual clutter. A detailed assessment is carried out to identify areas where random vendor placement and edge encroachments disrupt pedestrian and vehicular flow. Instead of complete removal, a reorganization approach is adopted to systematically align activities. The 10m Right of Way (ROW) is clearly demarcated into functional zones, including pedestrian pathways, vendor areas, and carriageways. Shop spillovers and irregular street edges are reorganized to create a more defined and legible street structure, establishing a strong foundation for further design interventions.

Phase – 2

Spatial Planning & Vending Zone Allocation focuses on organizing the physical space based on the insights gained from stakeholder and conflict analysis. A designated vending area of approximately 5000 sq. meters is identified, considering factors such as accessibility, footfall, and proximity to commercial activities. Within this area, organized vending zones are demarcated and structured through cluster-based zoning, grouping similar activities such as food, clothing, and accessories. To minimize conflicts with formal retail, buffer zones (1–1.5m clear frontage) are maintained between shops and vendors. Clear pedestrian pathways and circulation spaces are planned to ensure safe and uninterrupted movement, creating a more organized and user-friendly environment.

Infrastructure & Layout Development, In this phase, designated vending zones are developed with a structured layout. Modular and semi-permanent stalls are introduced to create an organized vending system. Clear pedestrian pathways are defined, and buffer

zones between shops and vendors are established to maintain accessibility and visibility of formal retail. The focus is on creating a balanced spatial arrangement that supports both movement and commercial activity while improving overall street functionality.

Street Design & Infrastructure Development, This phase introduces a structured street design framework based on a dual typology system. Streets are categorized according to width and function—8.5m roads accommodate mixed traffic, while 10.5m roads are designed as pedestrian-priority or shared streets. Continuous pedestrian pathways are developed to ensure safe and uninterrupted movement. Universal accessibility features such as ramps (1:12 slope), tactile paving, and barrier-free pathways are integrated to make the street inclusive for all users. Defined vendor zones are incorporated within the street layout to organize informal activities, while improvements in street edges, shop interfaces, and frontage design enhance spatial order and visual quality.

Infrastructure Development & Service Systems, This phase introduces essential service infrastructure required for efficient market functioning. A decentralized waste management system is established with segregated bins at regular intervals, supported by composting units for organic waste and a Material Recovery Facility (MRF) for recyclable materials. Simultaneously, the electricity infrastructure is upgraded through the provision of metered connections, organized electrical kiosks, and underground cabling to ensure safety and reduce visual clutter. A hierarchical lighting system is also developed, with high-intensity lighting on main roads, moderate street lighting in market corridors, and task lighting at vendor stalls, ensuring safety, visibility, and extended economic activity.

Street Design & Infrastructure Development, This phase introduces a pedestrian-priority street design framework tailored to the high footfall and commercial nature of the area. Streets with a 10–10.5m Right of Way (ROW) are redesigned to balance movement and

activity. Key components include 2.5m wide pedestrian pathways on both sides, ensuring safe and comfortable walking space, along with furniture/activity zones that accommodate trees, vendors, seating, and street elements. A 3.0m flexible carriageway is provided for slow-moving vehicles such as two-wheelers and essential service vehicles. Spaces are clearly segregated to enhance safety, and dedicated loading/unloading zones with ramps (1:10 slope) are introduced to support commercial operations without disrupting pedestrian movement.

Infrastructure Development & Spatial Organization, This phase introduces essential infrastructure and organizes informal activities within a defined spatial framework. Designated vending zones are developed along identified stretches to structure informal markets. Clear pedestrian pathways (2.5–3m width) are provided to ensure safe and uninterrupted movement. Modular kiosks or semi-permanent vending units are installed to create an organized and visually coherent market environment. Improvements in drainage systems, including covered drains

and proper slopes, enhance sanitation and reduce waterlogging. Additionally, a waste management system with bins and designated collection points is established to maintain cleanliness and hygiene.

Streetscape Development & Spatial Design, This phase introduces a comprehensive pedestrian-priority street design aimed at balancing movement and activity. The street is structured with 2.5m wide pedestrian pathways, ensuring safe and comfortable walking conditions, along with a 1.0m furniture and vendor zone that accommodates street elements such as trees, lighting, signage, seating, and organized vending. A 3.0m flexible carriageway is provided for slow-moving traffic, maintaining accessibility without compromising pedestrian priority. Additional elements such as organized shopfront edges, improved lighting, and signage systems enhance both functionality and visual quality. Dedicated loading and unloading zones with ramps are integrated to support commercial activities efficiently without obstructing movement. Clear segregation of spaces ensures improved

safety, accessibility, and overall street performance.

Phase – 3

Regulation & Operational Management, In this phase, a formal system of regulation is introduced to ensure efficient and equitable functioning of the market. A vendor registration system is implemented through ID cards and licensing mechanisms, providing legal recognition and accountability. Rotational and time-based vending systems are introduced to ensure fair access to prime locations and reduce overcrowding. Regulations regarding stall size, location, and encroachment limits are enforced to maintain spatial order. Additionally, vehicle restrictions during peak hours are implemented to prioritize pedestrian movement. Rules related to hygiene, fee collection, and space usage are established to maintain discipline and improve overall market conditions.

Movement Optimization, This phase aims to reduce conflicts by clearly segregating pedestrian, vending, and vehicular spaces.

Movement corridors are streamlined to ensure safe and efficient circulation. Vendors are aligned in linear arrangements to avoid random encroachment, and pedestrian priority is emphasized in high-density areas. This structured organization improves accessibility, enhances safety, and ensures a smoother flow of activities within the market.

Mobility Management & Functional Optimization, In this phase, the focus shifts to improving circulation efficiency and reducing user conflicts. Vehicular movement is regulated, particularly during peak hours, to prioritize pedestrian activity. The shared street concept is implemented, allowing flexible use of space depending on time and demand. On-street parking is controlled or relocated to reduce congestion, and provisions are made to ensure uninterrupted emergency vehicle access, including adequate turning radii and clear movement corridors. By strengthening pedestrian priority in commercial areas, the street becomes safer, more efficient, and user-friendly.

Mobility & Operational Management, In this phase, the focus shifts to improving operational efficiency and circulation management. A controlled circulation system is introduced, restricting vehicular movement within the core area and allowing only essential and time-regulated access. Time-based loading and unloading systems are implemented to avoid peak-hour congestion. Clear movement hierarchies and access patterns are defined to streamline pedestrian and service flows. Additionally, shared storage spaces at the periphery reduce the need for on-street storage, further decluttering the core. Improvements in last-mile connectivity enhance accessibility for users and ensure smooth functioning of market activities.

Mobility Management & Circulation Optimization, In this phase, operational strategies are implemented to improve circulation efficiency and minimize conflicts. A controlled vehicular access system is introduced, allowing limited vehicle entry during weekdays while transforming streets into pedestrian-dominant spaces during weekends. Heavy vehicles are restricted, and

only small and essential vehicles are permitted within the core. To improve accessibility, Intermediate Public Transport (IPT) nodes such as auto-rickshaw and e-rickshaw parking points are developed at strategic locations, ensuring effective last-mile connectivity. Clear zoning and movement patterns significantly reduce pedestrian–vehicle conflicts, creating a safer and more organized mobility system.

Mobility & Management Systems, In this phase, the focus shifts to improving circulation and managing interactions between different users of space. A pedestrian-friendly street design is implemented through the use of bollards, signage, and paving, ensuring clear and safe movement paths. Traffic and parking management systems are introduced, including no-parking zones, designated parking areas, and organized loading/unloading spaces, to reduce congestion. Vehicular movement is regulated, particularly during peak hours, to prioritize pedestrian activity. At the same time, a vendor registration and smart management

system is introduced to formalize operations and ensure efficient allocation of space.

Vendor System & Functional Optimization, In this phase, the focus shifts to organizing informal vending through a structured and design-oriented approach. Uniform vendor cart designs—including fixed, semi-permanent, and mobile units—are introduced to create visual consistency and reduce clutter. Vendors are allocated defined linear zones, ensuring orderly placement and preventing random encroachment. A flexible, time-based vending system is implemented to allow adaptability based on demand and peak hours. Care is taken to ensure that vending activities do not obstruct pedestrian pathways, maintaining clear and continuous movement. Improved cart design also enhances display efficiency, storage, and usability, supporting both vendors and customers.

Phase – 4

Policy Integration, Monitoring & Social Balance, The final phase focuses on integrating the system within a strong legal and institutional framework. The proposed

interventions are aligned with the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014, along with Punjab State Rules (2015/16), ensuring legal backing and policy support. Continuous monitoring by municipal authorities and local bodies helps maintain compliance and address emerging issues. Mechanisms for conflict resolution between vendors and shopkeepers are established to promote cooperation and reduce disputes. At the same time, efforts are made to improve livelihood security, economic opportunities, and social inclusion, creating a balanced and equitable market environment.

Management & Sustainability, The final phase focuses on long-term functioning and governance of the system. A vendor allocation and registration mechanism is implemented to formalize operations. Regular monitoring, maintenance, and enforcement ensure that encroachments do not reoccur. Institutional mechanisms are strengthened to manage the vending zones effectively, ensuring that the system remains

organized, inclusive, and sustainable over time.

Activation, Integration & Management phase focuses on activating the street as a vibrant public and commercial space. During peak hours and weekends, streets are transformed into pedestrian-dominated market environments, enhancing the overall shopping and social experience. Increased footfall supports local businesses and informal vendors, strengthening the local economy. Regular monitoring systems are established to manage encroachments and maintain spatial order. A flexible, time-based management approach ensures that the street can adapt to varying levels of activity, making it both functional and dynamic in the long term.

Policy Integration, Monitoring & Smart Management, phase focuses on establishing a robust governance and management framework. A zoning system is implemented, categorizing areas into free vending, restricted vending, and no-vending zones to regulate spatial distribution. A digital vendor

licensing system is introduced to formalize vendors and improve accountability. Control and management points are established at key entry locations to monitor activities and enforce regulations. Continuous monitoring, maintenance, and enforcement mechanisms ensure long-term efficiency. All service systems are integrated under a unified governance framework, enabling coordinated management and sustainable operation of the market.

Integration, Activation & Long-Term Management, The final phase focuses on transforming the streets into vibrant public spaces that support both mobility and economic activity. During peak hours and weekends, the area evolves into a pedestrian-centric environment, enhancing shopping experience, social interaction, and street life. Continuous monitoring mechanisms are established to regulate traffic, manage pedestrian zones, and maintain order. The integration of last-mile connectivity systems ensures seamless access to the area. Over time, this approach creates a balanced and sustainable mobility system, where

movement efficiency and economic vibrancy coexist.

Integration, Monitoring & Enhancement phase focuses on long-term sustainability and seamless integration of informal markets within the broader urban system. Informal vending activities are fully integrated with formal commercial areas, creating a cohesive and balanced environment. Regular maintenance of waste systems, drainage, and public spaces ensures continued functionality. Monitoring is carried out by local authorities and vendor committees, promoting shared responsibility and accountability. Awareness programs are conducted to encourage cleanliness, discipline, and compliance with regulations. The system is designed to be flexible, allowing future upgrades and expansion based on changing needs and demand.

Activation, Flexibility & Long-Term Management, The final phase focuses on activating the street as a dynamic and vibrant public space. A flexible street use system is introduced, where streets function as mixed-

traffic corridors during weekdays and transform into pedestrian-dominated spaces during weekends or peak periods. This adaptability enhances both mobility and economic activity. The public realm is improved through better user experience, increased footfall, and opportunities for social interaction. Continuous monitoring systems ensure that vending activities and spatial organization remain regulated. Regular maintenance preserves the visual character, cleanliness, and functionality of the street. Over time, this approach supports long-term adaptability, economic vibrancy, and sustainable street management.

3. Implementation Strategy

The successful execution of urban interventions requires a well-structured implementation framework that ensures phased, efficient, and context-sensitive development. The strategy integrates immediate improvements with long-term planning, supported by adaptive tools, institutional coordination, and sustainable financial mechanisms. This approach ensures that changes are introduced gradually,

minimizing disruption while enhancing functionality, inclusivity, and overall urban quality.

Short-Term Interventions

Short-term interventions focus on immediate and low-cost actions aimed at addressing urgent issues and improving the existing condition of the area. These measures are designed to produce visible improvements within a short time frame, helping in building user acceptance and demonstrating the effectiveness of proposed changes. Key actions include site cleaning, removal of debris, temporary marking of vending and pedestrian zones, painted stall demarcations, installation of bollards and signage, and basic traffic regulation measures. Vendor identification and registration are also initiated during this phase to establish a foundation for formal management. These interventions help in quickly reducing congestion, improving spatial clarity, and organizing activities without requiring heavy investment.

Long-Term Interventions

Long-term interventions focus on the development of permanent infrastructure and institutional systems to ensure durability, efficiency, and sustainability. This includes the construction of modular vending units, improved pedestrian pathways, structured street layouts, upgraded drainage systems, underground utility networks, and integrated service infrastructure. In addition to physical development, long-term strategies involve establishing formal governance mechanisms, including continuous monitoring systems, policy enforcement frameworks, and data management systems for tracking vendor activities and spatial usage. These interventions aim to create a well-organized, resilient, and future-ready urban environment.

Tactical Urbanism / Pilot Projects

Tactical urbanism serves as a critical tool for bridging the gap between planning and implementation by introducing temporary, flexible, and low-cost interventions. These include pop-up vending zones, temporary kiosks, pilot pedestrianization (such as car-free days or weekend pedestrian streets),

temporary street furniture, and trial service systems. Such pilot projects allow planners and authorities to test design concepts, assess user behavior, and gather feedback before committing to large-scale investments. This iterative approach reduces risk, improves design efficiency, and ensures that final interventions are better suited to on-ground realities.

Governance & Institutional Roles

Effective implementation depends on strong governance structures and institutional coordination. The Municipal Corporation (MC) plays a central role in planning, infrastructure development, and maintenance, while the Town Vending Committee (TVC) is responsible for vendor identification, allocation, and regulation. The Traffic Police manage circulation systems and enforce traffic-related regulations. Utility agencies handle essential services such as electricity, waste management, and drainage. In addition, vendor associations and local stakeholders play an important role in participatory governance, ensuring that the needs and concerns of different user groups are addressed. Clear definition of roles, coordination between agencies, and continuous monitoring are essential for smooth implementation and long-term success.

Financial Models & Feasibility

Financial feasibility is a key component of successful implementation. A diversified funding approach is adopted to ensure

economic sustainability and reduce dependency on a single source. This includes municipal funding, government schemes, Public-Private Partnerships (PPP), and user-based revenue systems. Revenue can be generated through vendor licensing fees, user charges, and service fees, while larger infrastructure investments can be supported through Smart City programs, urban mobility funds, and schemes such as the National Urban Livelihoods Mission (NULM). PPP models can be used for developing vending infrastructure, street furniture, and service systems. This balanced financial framework ensures that interventions are both affordable and sustainable in the long term.

4. Conclusion

This chapter establishes that effective urban transformation depends not only on well-designed interventions but on a clear, phased implementation strategy that is practical, inclusive, and adaptable. By structuring actions into sequential phases ranging from site preparation and spatial organization to regulation, management, and long-term integration the approach ensures that

immediate challenges such as congestion, conflict, and lack of infrastructure are addressed without disrupting existing livelihoods. The distinction between short-term improvements and long-term development allows for gradual change, while tools like tactical urbanism and pilot projects provide flexibility to test and refine solutions before full-scale execution.

Equally important is the role of governance, institutional coordination, and financial feasibility in ensuring sustained outcomes. The involvement of local authorities, regulatory bodies, and stakeholder groups creates a collaborative framework for implementation, monitoring, and conflict resolution. Financial strategies based on public funding, user charges, and partnerships further support the viability of interventions. Overall, the chapter highlights that a well-coordinated and phased approach can successfully balance mobility, spatial efficiency, and livelihood protection, leading to a more organized, inclusive, and sustainable urban environment.

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CHAPTER 16 – STUDIO REFLECTIONS

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Abstract

This chapter presents a comprehensive reflection on the studio focused on understanding and planning for informal markets in an urban context. The study adopts a field-based and mixed-method approach, combining spatial analysis, stakeholder interactions, and policy review to examine the dynamics of informality in areas such as Jyoti Chowk, Jalandhar. It highlights how informal activities are deeply integrated within the urban fabric, contributing to livelihoods, economic vibrancy, and everyday functioning of the city. The chapter discusses key learning outcomes, including the development of analytical, mapping, and design skills, along with a deeper understanding of the relationship between

formal and informal systems. It also reflects on the challenges faced during the studio, such as data limitations, dynamic activity patterns, and stakeholder conflicts, emphasizing the complexity of informal urban environments. Faculty insights reinforced the importance of inclusive and context-sensitive planning approaches, encouraging the integration of informal systems rather than their exclusion. Overall, the study demonstrates that effective planning requires a balanced approach combining spatial organization, policy support, and participatory governance. It concludes that informal markets should be recognized as essential components of urban systems, and future interventions must focus on integration, adaptability, and sustainability to create more inclusive and resilient cities.

1. Introduction

The studio on informal markets provided an opportunity to explore the complex relationship between urban planning and informality within a real-world context. Focusing on areas like Jyoti Chowk, the

study aimed to understand how informal activities operate within dense commercial environments and how they interact with formal systems, movement networks, and public spaces. Through field-based learning, the studio emphasized the importance of observing ground realities, engaging with stakeholders, and analyzing spatial patterns to develop a more practical understanding of urban dynamics.

This chapter presents a reflection on the overall studio process, highlighting key learning outcomes, challenges, and insights gained during the study. It also evaluates what strategies worked effectively and where limitations were encountered. By combining experiential learning with theoretical understanding, the studio reinforces the need for inclusive, flexible, and context-sensitive planning approaches that recognize informality as an integral part of the urban system rather than a problem to be eliminated.

2. Student Learning Outcomes

The studio served as a comprehensive learning platform that enabled students to engage deeply with the complex realities of

urban informal systems. Unlike conventional classroom-based learning, this studio emphasized experiential and field-based understanding, allowing students to directly observe, document, and analyze informal activities within the urban context of Jyoti Chowk, Jalandhar. Through this process, students developed a strong foundation in spatial analysis, mapping techniques, and data interpretation, which are essential skills in urban planning practice. The integration of theoretical knowledge with practical exposure helped students understand the interdependence between formal and informal systems, and how everyday urban spaces are shaped by multiple overlapping activities. Interaction with vendors, shopkeepers, and users further enhanced their ability to interpret socio-economic dimensions, going beyond purely spatial analysis.

Additionally, the studio strengthened key competencies such as critical thinking, problem-solving, teamwork, and design-based decision-making. Students learned to translate on-ground observations into

context-sensitive planning proposals, ensuring that their interventions were not only technically sound but also socially inclusive. Overall, the studio contributed significantly to building a holistic and practice-oriented understanding of urban planning.

3. Challenges Faced During the Studio

Despite its enriching learning experience, the studio also presented several challenges that highlighted the complexity of working with informal systems. One of the primary difficulties was the dynamic and fluid nature of informal activities, which vary significantly across different times of the day, days of the week, and seasons. This made it challenging to capture consistent data and required repeated observations to understand patterns accurately. Another major challenge was the lack of reliable and updated data on informal sector activities. Since much of the information is not formally recorded, students had to rely heavily on primary surveys and visual documentation, which can be time-consuming and sometimes limited in scope. Fieldwork itself posed practical

difficulties such as high congestion, limited accessibility, and safety concerns, especially in densely populated market areas like Jyoti Chowk.

In addition, understanding and resolving conflicts between stakeholders—including vendors, shopkeepers, pedestrians, and authorities—proved to be complex. Translating these layered issues into structured planning solutions required continuous iteration and refinement. These challenges, however, became an integral part of the learning process, helping students develop resilience and adaptability in dealing with real-world urban problems.

4. Faculty Insights

Faculty guidance played a critical role in shaping the direction and depth of the studio. The teaching approach emphasized the need to move beyond conventional planning perspectives, encouraging students to view informality not as a problem, but as a legitimate and functional component of the urban system. This shift in perspective helped students develop a more inclusive and realistic understanding of urban

environments. Continuous feedback and discussions allowed students to refine their analytical methods and strengthen their conceptual frameworks. Faculty members guided the process of linking theoretical foundations with empirical observations, ensuring that the analysis remained grounded in both academic and practical contexts.

The iterative nature of the studio, supported by faculty inputs, encouraged students to revisit their assumptions, improve their proposals, and enhance the quality of their outputs. This mentorship not only improved the technical aspects of the work but also instilled a deeper understanding of ethical and inclusive planning practices.

5. Assessment of Studio Outcomes

This section presents a comprehensive evaluation of the studio by examining both its key achievements and inherent limitations. It highlights how the studio's field-based and experiential approach contributed to developing a strong understanding of informal market systems, spatial dynamics, and planning practices. At the same time, it critically reflects on the constraints faced

during the study, including time limitations, data gaps, and challenges in stakeholder coordination. The assessment is structured into two main components Achievements, which focus on learning outcomes, analytical methods, and successful aspects of the studio process; and Limitations, which address practical constraints, methodological challenges, and issues related to implementation. Together, these aspects provide a balanced and critical understanding of the studio's effectiveness, helping identify both strengths and areas for improvement in future planning exercises.

Achievements

The most effective aspect of the studio was its hands-on, field-based learning approach, which allowed students to directly engage with the complexities of informal markets. By moving beyond theoretical understanding and immersing themselves in real urban conditions, students were able to observe how informal systems actually function within dense commercial environments. This direct exposure helped in building a grounded and realistic understanding of

spatial dynamics, including how vendors occupy space, how movement patterns evolve, and how different activities interact within limited urban areas. Methods such as mapping, on-site observation, and stakeholder interaction proved highly valuable in capturing these dynamics, enabling students to identify patterns that are often not visible through secondary data alone. The integration of analytical mapping and visual representation tools further strengthened the study by transforming raw observations into structured and interpretable outputs. Techniques such as activity mapping, conflict mapping, and circulation analysis helped in clearly illustrating complex relationships between land use, movement, and informal activities. These tools not only improved the clarity of analysis but also enhanced the ability to communicate findings effectively, which is a crucial aspect of planning practice.

Moreover, the studio's emphasis on collaborative learning significantly contributed to the depth and quality of outcomes. Working in groups allowed

students to combine diverse perspectives, share observations, and critically evaluate each other's ideas. This collective approach led to more comprehensive and well-rounded analyses, as multiple viewpoints were considered while developing solutions. Overall, these processes enabled the formulation of context-responsive and practical planning strategies, ensuring that proposals were not only theoretically sound but also aligned with on-ground realities. The studio successfully demonstrated that experiential learning, combined with analytical tools and collaboration, is essential for understanding and planning complex urban systems like informal markets.

Limitations

Despite the overall effectiveness of the studio, several limitations influenced the depth and scope of the study. One of the primary constraints was limited time, which restricted the extent of fieldwork and detailed analysis. Informal markets are highly dynamic systems that change across different times of the day, days of the week, and seasons. Due to these variations, it was challenging to capture long-term patterns, peak variations, and temporal shifts comprehensively within the given timeframe. This limitation affected the ability to develop a fully exhaustive understanding of activity cycles and user behavior. Another significant challenge was the lack of reliable and comprehensive data related to the informal sector. Since much of the informal economy operates outside formal systems, there is minimal documented information available. As a result, the study relied heavily on primary surveys and observations, which, although insightful, have limitations in terms of accuracy and consistency. This made it difficult to validate findings quantitatively and establish precise correlations across different datasets.

In addition, stakeholder coordination emerged as a complex issue. The study involved multiple stakeholders vendors, shopkeepers, pedestrians, and authorities each with different priorities, interests, and perspectives. Understanding these varied viewpoints and addressing conflicts between them proved challenging, particularly in a limited timeframe. The absence of structured communication channels further complicated the process of achieving a balanced and consensus-based understanding. The inherent complexity of urban systems also limited the extent to which proposed solutions could be tested or validated in real conditions. Informal markets are influenced by multiple interrelated factors such as mobility, economy, social behavior, and policy frameworks. Translating this complexity into structured planning proposals required simplification, which may not fully capture real-world variability.

While the studio explored tactical and flexible planning strategies, their practical implementation depends heavily on institutional capacity, governance efficiency,

and effective policy enforcement. In many cases, these factors remain weak or inconsistent, posing challenges for real-world execution. Therefore, although the proposed solutions are conceptually strong and contextually relevant, their success in practice would require robust governance mechanisms and sustained administrative support.

6. Conclusion

The assessment of studio outcomes highlights the effectiveness of a field-based, experiential learning approach in understanding complex urban systems such as informal markets. The studio successfully enabled students to bridge the gap between theory and practice by engaging directly with on-ground realities, using tools like mapping, observation, and stakeholder interaction. These methods helped in developing context-sensitive, practical, and inclusive planning strategies that respond to the spatial, social, and economic dimensions of informality. At the same time, the study acknowledges the limitations that influenced the depth and applicability of the outcomes. Constraints

such as limited time, lack of reliable data, stakeholder conflicts, and implementation challenges reflect the inherent complexity of informal urban systems. These limitations emphasize that while design and planning strategies can be conceptually strong, their real-world success depends on effective governance, institutional capacity, and policy enforcement. Overall, the chapter reinforces that understanding and planning for informality requires a balanced, adaptive, and inclusive approach, where learning from ground realities is as important as theoretical knowledge. It highlights the need for continuous refinement, collaborative processes, and stronger institutional support to translate planning ideas into sustainable and implementable urban solutions.

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CHAPTER 17 – LESSONS FOR PRACTICE AND POLICY

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Abstract

Urban development in contemporary cities increasingly reflects a complex negotiation between formal regulatory systems and deeply embedded informal practices. Drawing extensively from planning proposals, informal market redevelopment studies, and policy-oriented documents, this chapter develops a comprehensive and practice-oriented framework for improving urban planning and governance. It argues that the limitations of traditional planning lie not in technical inadequacy but in the failure to engage meaningfully with socio-economic realities, institutional constraints, and community dynamics.

This chapter significantly expands on lessons for planners, designers, and policymakers by offering in-depth theoretical explanations,

applied insights, and structured policy frameworks. It emphasizes that informality must be understood as a dynamic and productive system rather than a deviation from order. Through detailed discussion of contextual planning, participatory design, governance reforms, financial mechanisms, and academic-practice linkages, the chapter proposes a holistic approach to urban development. The integration of analytical tables further strengthens its practical applicability. Ultimately, the chapter aims to bridge the persistent gap between planning theory and implementation by promoting inclusive, adaptive, and evidence-based strategies.

1. Introduction

Urbanization today is not merely a process of physical expansion but a transformation of social, economic, and spatial relationships. In rapidly developing regions, cities function as hybrid systems where formal planning structures coexist with informal economies that operate outside regulatory frameworks yet remain indispensable to urban life. Informal markets, street vendors, and small-scale enterprises are not peripheral; they are central to sustaining livelihoods, ensuring accessibility to goods and services, and maintaining the vibrancy of public spaces.

However, planning systems have historically struggled to accommodate this reality. Conventional approaches often rely on rigid zoning regulations, standardized infrastructure models, and top-down decision-making processes. These approaches, while theoretically sound, frequently fail in practice because they do not align with the lived experiences of urban populations. The result is a recurring pattern of underutilized infrastructure, displacement of vulnerable groups, and conflicts between authorities and communities. The documents analysed in this chapter reveal that successful planning interventions are those that move beyond abstraction and engage deeply with ground realities. They highlight the importance of understanding spatial behaviour, economic interdependencies, and social dynamics. Moreover, they demonstrate that planning is not a one-time exercise but an ongoing process that requires continuous adaptation and learning. This chapter builds upon these insights to develop a comprehensive framework for practice and policy. It expands on key themes such as contextual intelligence, integration of informality, micro-level design, governance reforms, and academic collaboration. By doing so, it aims to provide a detailed and

actionable guide for creating inclusive, efficient, and sustainable urban environments.

2. Lessons for Planners and Designers

The study emphasizes the importance of contextual and grounded planning, where design decisions are based on real on-ground conditions, user behavior, and spatial patterns. Informality is recognized as an asset rather than a problem, highlighting its adaptability and role in supporting livelihoods. The approach focuses on micro-level design interventions such as efficient circulation, stall design, infrastructure placement, and safety. Flexibility and adaptability are key principles, promoting modular, incremental, and multi-functional design solutions. Additionally, a human-centric approach ensures accessibility, inclusivity, and improved user experience. Overall, the framework supports resilient, efficient, and inclusive informal market development.

Contextual Intelligence and Grounded Planning

Contextual intelligence is perhaps the most critical yet often overlooked aspect of urban planning. It refers to the ability to understand and respond to the unique characteristics of a specific place, including its social structure, economic activities, cultural practices, and spatial constraints. The documents analysed

in this chapter consistently demonstrate that planning interventions that lack contextual grounding tend to fail, regardless of their technical sophistication. In informal market settings, spatial organization is rarely random. Vendors cluster based on product categories, customer demand, and proximity to transportation nodes. These patterns are shaped by years of adaptation and optimization. For instance, food vendors often position themselves near high-footfall areas, while service providers cluster in locations that offer visibility and accessibility. Temporal variations further complicate this dynamic—markets may expand during peak hours and contract during off-peak periods. A planner who ignores these patterns risks disrupting a finely balanced system. Therefore, contextual intelligence must be developed through rigorous fieldwork, including observational studies, stakeholder interviews, and participatory mapping exercises. Such methods allow planners to capture the nuances of spatial usage and incorporate them into design solutions.

Moreover, contextual planning must also consider environmental factors such as climate, topography, and infrastructure availability. For example, the provision of shaded areas and proper drainage systems

can significantly improve the usability of informal market spaces. By integrating these considerations, planners can create interventions that are both functional and resilient.

Reconceptualizing Informality as an Asset
A major shift in planning philosophy is required to move from viewing informality as a problem to recognizing it as an asset. Informal systems are characterized by flexibility, low entry barriers, and strong social networks. These features enable them to adapt quickly to changing economic conditions and provide opportunities for marginalized groups. The documents reveal that attempts to eliminate or relocate informal markets often lead to unintended consequences, such as loss of livelihoods, reduced accessibility for consumers, and the emergence of new informal clusters elsewhere. In contrast, integrative approaches that build upon existing systems tend to produce more sustainable outcomes.

For example, providing basic infrastructure such as water supply, waste management, and designated vending spaces can significantly enhance the efficiency of informal markets without disrupting their core functioning. Legal recognition further strengthens these systems by providing security and

encouraging investment in better practices. This reconceptualization also has broader implications for urban planning. It challenges the notion of a “perfectly ordered” city and instead promotes a more inclusive and dynamic vision of urban development. By embracing informality, planners can create cities that are not only efficient but also socially equitable.

Micro-Level Design and Spatial Efficiency

While macro-level planning sets the overall direction, it is the micro-level design that determines the success or failure of an intervention. The documents highlight that even minor design elements can have a significant impact on functionality and user experience.



Figure17.1 Streetscape Design

Source:- Generated Map, 2026

- Circulation and Movement: Efficient circulation is essential in informal markets, where high footfall and limited space can lead to congestion. Designing clear pathways, separating pedestrian and vehicular movement, and ensuring accessibility for emergency services are critical considerations.
- Stall Design and Ergonomics: Stalls must be designed to accommodate the specific needs of vendors, including space for display, storage, and customer interaction. Poorly designed stalls can reduce productivity and create discomfort for both vendors and customers.
- Infrastructure Placement: The strategic placement of infrastructure such as waste bins, water points, and sanitation facilities is crucial for maintaining hygiene and usability. These elements must be easily accessible yet unobtrusive.
- Safety and Security: Lighting, surveillance, and clear visibility are essential for creating safe environments, particularly in markets that operate during evening hours. Safety considerations also include fire prevention measures and emergency access routes.
- Environmental Design: Incorporating elements such as shading, ventilation, and

green spaces can improve the overall experience of market spaces. These features not only enhance comfort but also contribute to environmental sustainability.

Flexibility, Adaptability, and Incremental Design

Flexibility is not merely a design feature but a fundamental principle that underpins successful planning in dynamic environments. Informal markets are constantly evolving, influenced by factors such as economic trends, population growth, and seasonal variations. Static designs that fail to accommodate these changes often become obsolete.



Figure17.2 Flexible & Incremental Design of Market

Source:- Generated Map, 2026

- Modular Design Systems: Modular components allow for easy reconfiguration of spaces based on changing needs. For example, stalls can be expanded or reduced depending on demand, and open spaces can be repurposed for different activities.
- Multi-Functional Spaces: Spaces that serve multiple purposes—such as markets that transform into community gathering areas in the evening—maximize resource utilization and enhance social interaction.
- Incremental Development: Implementing projects in phases allows for continuous evaluation and adjustment. This approach reduces risks and ensures that interventions remain aligned with evolving needs.
- Resilience and Sustainability: Flexible designs are inherently more resilient, as they can adapt to unforeseen challenges such as economic disruptions or environmental changes.

Human-Centric and Inclusive Design

Human-centric design places the needs and experiences of users at the forefront of planning. This approach is particularly important in informal settings, where users often face challenging working conditions.



Figure17.3 Inclusive & Human Centric Design of the Market

Source:- Generated Map, 2026

- Accessibility: Designs must ensure that spaces are accessible to all, including persons with disabilities, elderly individuals, and children. This includes providing ramps, clear pathways, and appropriate signage. Gender Sensitivity: Women often face unique challenges in public spaces, including safety concerns and lack of facilities. Providing well-lit areas, secure environments, and access to sanitation facilities can significantly improve their participation.
- Dignity and Well-Being: Informal workers often operate in conditions that lack basic amenities. Improving these conditions is not only a matter of efficiency but also of dignity and social

justice. Community Identity: Designs should reflect local culture and identity, fostering a sense of belonging and pride among users.

3. Policy Recommendations

The study highlights the need for an inclusive legal and regulatory framework that recognizes and supports informal workers instead of excluding them. Simplified licensing, legal protection, and flexible spatial planning help ensure security and organized development. Strong institutional coordination and governance reforms are essential to improve efficiency, accountability, and decision-making. Financial sustainability is addressed through diversified models such as PPP, microfinance, and smart funding mechanisms. Bridging the gap between theory and practice through collaboration, pilot projects, and applied research further strengthens implementation. Overall, the framework promotes inclusive, efficient, and sustainable urban development.

Inclusive Legal and Regulatory Systems

An inclusive legal and regulatory framework forms the backbone of equitable urban development, particularly in contexts where informal economic activities dominate. In many cities, informal workers operate without formal recognition, which exposes

them to legal uncertainties, economic insecurity, and administrative exploitation. The absence of structured legal support not only affects their livelihoods but also limits the effectiveness of urban planning interventions. Therefore, policy frameworks must transition from exclusionary and control-oriented approaches to systems that recognize, regulate, and support informal activities in a balanced manner. This requires simplifying legal procedures, ensuring protection against arbitrary actions, and integrating informal activities into spatial planning mechanisms.

Table 17.1:- Comprehensive Inclusive Policy Framework

Policy Area	Detailed Challenges	Expanded Policy Measures	Implementation Strategy	Outcomes
Legal Recognition	Informal workers invisible in policy	National vendor registry, ID cards	Local authority coordination	Security & inclusion

Licensing	Corruption and delays	Single-window digital systems	E-governance platforms	Transparency
Protection	Forced evictions	Legal tribunals & grievance cells	Judicial oversight	Stability
Spatial Planning	Encroachment conflicts	Zoning with flexibility	GIS-based planning	Organized growth

Source:- Computed Value 2026

The table above illustrates that inclusive legal systems must operate across multiple dimensions, each addressing a specific gap in the current framework. Legal recognition provides a foundation for integrating informal workers into the formal economy, while simplified licensing systems reduce bureaucratic barriers and encourage compliance. Protection mechanisms are equally critical, as they safeguard vulnerable

groups from arbitrary enforcement actions. Spatial regulation, when designed with flexibility, ensures that informal activities can coexist with formal planning structures without causing conflict. Together, these measures create a balanced regulatory environment that promotes both economic inclusion and urban order.

Institutional Reforms and Governance Mechanisms

The implementation of urban policies is deeply influenced by the efficiency and coordination of institutional structures. In practice, governance systems often suffer from fragmentation, with multiple agencies operating independently and lacking clear communication channels. This results in duplication of efforts, administrative delays, and inconsistent policy outcomes. Strengthening institutional frameworks is therefore essential to ensure that planning interventions are effectively executed. Reforms must focus on improving coordination, enhancing accountability, building capacity, and empowering local governance systems to respond to context-specific challenges.

Table 17.2:- Governance and Institutional Reform

Dimension	Problem Depth	Advanced Policy Tool	Execution Mechanism	Impact
Coordination	Multi-agency conflict	Unified Urban Councils	Legislative reform	Efficiency
Accountability	Weak enforcement	KPI-based monitoring	Digital dashboards	Transparency
Capacity	Skill gaps	Continuous training	Institutional partnerships	Better governance
Decentralization	Slow decisions	Local autonomy	Fiscal devolution	Responsiveness

Source:- Computed Value 2026

The table highlights that governance reforms must address both structural and functional challenges within institutions. Improved coordination reduces fragmentation and ensures that different agencies work towards shared objectives. Accountability mechanisms, supported by digital tools,

enhance transparency and build public trust. Capacity-building initiatives equip officials with the skills required to manage complex urban systems, while decentralization enables quicker and more context-sensitive decision-making. Together, these reforms create a governance environment that is more responsive, efficient, and capable of implementing policy interventions effectively.

Economic and Financial Policy Tools

Financial sustainability is a critical determinant of the success of urban planning initiatives. Many projects fail not due to conceptual limitations but because of inadequate funding or inefficient resource allocation. This challenge is particularly pronounced in projects involving informal sectors, were limited financial access and institutional support hinder implementation. Policymakers must therefore develop comprehensive economic strategies that ensure both resource mobilization and equitable distribution. This includes exploring innovative financing models, improving access to credit for informal workers, and adopting efficient budgeting practices that align expenditure with outcomes.

Table 17.3:- Financial, Economic, and Technological Framework

Sector	Challenges	Detailed Intervention	Mechanism	Result
Finance	Budget shortages	PPP + microfinance	Incentive schemes	Investment growth
Technology	Low adoption	Smart city integration	IoT, GIS tools	Efficiency
Data	Lack of reliability	Real-time data systems	Surveys + AI tools	Accuracy
Innovation	Resistance	Innovation labs	Pilot funding	Better solutions

Source:- Computed Value 2026

The financial framework outlined above demonstrates the importance of diversified and sustainable funding strategies. Public-private partnerships can significantly enhance resource availability and bring in technical expertise, while microfinance and subsidy programs support the economic stability of informal workers. Efficient resource allocation ensures that funds are used effectively and aligned with project

goals. Encouraging private investment further strengthens infrastructure development and reduces the burden on public finances. Collectively, these measures create a robust financial ecosystem that supports long-term urban development.

Bridging Academia and Practice

The gap between academic theory and real-world implementation remains one of the most persistent challenges in urban planning. Academic research often prioritizes conceptual clarity and theoretical rigor, while practical implementation requires adaptability, negotiation, and resource management. To bridge this gap, a multi-pronged approach is required. Academic institutions must shift towards applied research models that focus on solving real-world problems. This includes incorporating fieldwork, live projects, and stakeholder engagement into academic curricula. At the same time, practitioners must engage with academic research to benefit from new ideas and methodologies. Collaborative platforms that bring together universities, government agencies, private sector actors, and communities can play a crucial role in this process. Such platforms facilitate knowledge exchange, innovation, and capacity building. Pilot projects and incremental

implementation strategies further strengthen this bridge by providing opportunities to test theoretical concepts in real-world settings. These initiatives allow for iterative learning and continuous improvement, ensuring that planning interventions are both effective and sustainable.

4. Conclusion

The lessons presented in this chapter underscore the need for a fundamental rethinking of urban planning and policy-making. The challenges of contemporary urbanization cannot be addressed through traditional approaches that prioritize rigidity and exclusion. Instead, there is a need for flexible, inclusive, and context-sensitive frameworks that recognize the value of informal systems and community participation. For planners and designers, this involves embracing adaptability, engaging with local contexts, and focusing on human-centric design. For policymakers, it requires creating enabling environments through inclusive regulations, coordinated governance, and sustainable financing mechanisms. Bridging the gap between academia and practice remains a critical priority. Through collaboration, innovation, and continuous learning, it is possible to develop planning strategies that are both

theoretically robust and practically effective. Ultimately, the success of urban development lies in its ability to respond to the complexities of real life. By adopting the lessons outlined in this chapter, cities can move towards a future that is not only efficient and functional but also equitable, inclusive, and resilient.

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CHAPTER 18 – CONCLUSION

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This study establishes the necessity of viewing informal bazaars not as marginal and transient elements of the urban system but rather as essential elements. It is evident that in rapidly developing cities of India, informal economies are a permanent aspect of city planning. At Jyoti Chowk, for example, the informal economies operate according to economic logic that responds to demands and opportunities within the urban system. The informal economic systems are strategically located in areas of pedestrian density and access and generate a significant employment opportunity for disadvantaged and migrant populations while providing affordable products and services. On top of this, they contribute to the development of the city's

vibrancy by promoting active street life. Moreover, they are dependent on the formal economy and vice versa, where informal vendors draw on the formal economy's supply chain and bring customers to formal businesses. However, informality does not seem to be properly recognized or integrated into the planning processes in India. This study shows that problems such as congestion, encroachment, pedestrian-vehicle conflicts, and poor infrastructure do not arise from informality. Rather, they occur as a result of inadequate planning methods that fail to consider informality when developing the city plan. Consequently, traditional approaches based on evictions and restrictions often prove to be temporary, as vendors always return to the most demanded areas of the city due to lack of proper understanding of the underlying logic of informality. Therefore, it becomes clear that in order to achieve the co-existence of informal and formal aspects of a city, it is necessary to revise the city-planning perspective. Specifically, the planning approach must focus on incorporating the informal aspects by addressing the

underlying logic of the system using design-based solutions. This includes identifying areas for designated vendors' zones, constructing infrastructure that facilitates movement of pedestrians, allocating areas of the city according to time and type of activities, improving service systems such as waste disposal and storage. Furthermore, the role of legislation cannot be overemphasized when discussing the co-existence of formal and informal aspects, since policies such as Street Vendors Act can provide needed legitimacy and regulation. Overall, this study suggests that the key to planning for cities in India is in achieving a symbiotic relationship between the two sides. Such an approach ensures that urban planning advances simultaneously in mobility and spatial efficiency while preserving people's livelihoods.

CHAPTER 19 – APPENDIX

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Abstract

The appendix of this study serves as a comprehensive repository of supporting materials that underpin the analysis and proposals for the Jyoti Informal Market. It includes survey formats, primary data sheets, and additional drawings and maps that were instrumental in understanding the spatial, infrastructural, and socio-economic conditions of the study area. These materials provide transparency to the research methodology and validate the findings presented in the main report. The survey formats were designed to capture both qualitative and quantitative information related to vendor activities, waste generation, infrastructure usage, and service gaps. Data sheets compiled from field observations and stakeholder interactions offer structured insights into patterns of waste management, mobility, lighting conditions, and service accessibility. Additional maps and drawings

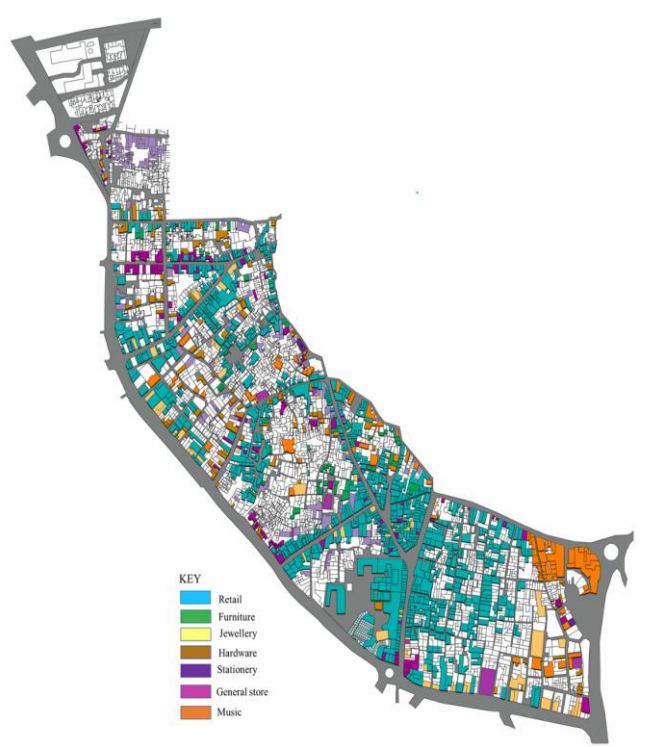
further illustrate spatial distribution, zoning patterns, and infrastructure layouts, enabling a visual understanding of complex urban systems. This appendix enhances the reliability and depth of the study by presenting raw and processed data in an organized manner. It also serves as a reference for future research, planning interventions, and policy formulation related to informal markets. By documenting the research process in detail, the appendix ensures that the study remains reproducible, transparent, and grounded in empirical evidence.

Introduction

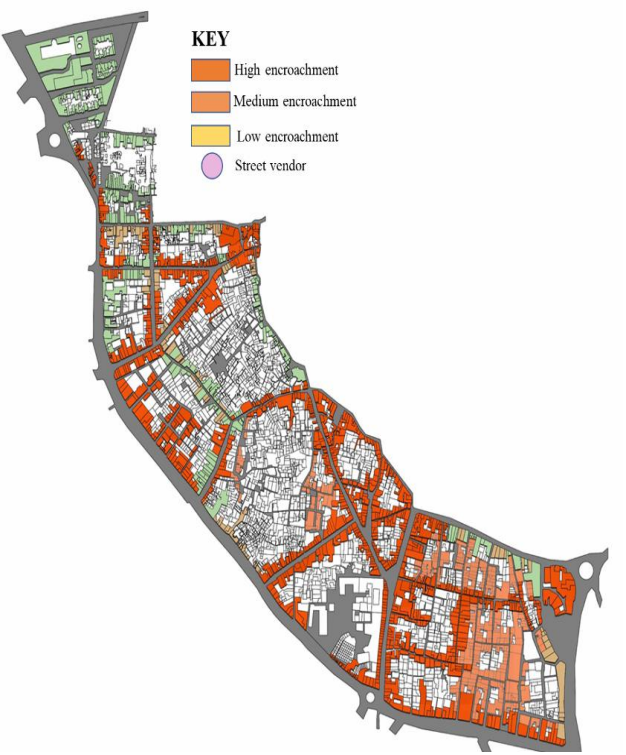
The appendix forms an integral part of this study, providing detailed documentation of the methods, data, and supplementary materials used in analyzing the Jyoti Informal Market. While the main report presents the synthesized findings and proposals, the appendix offers a deeper insight into the research process, ensuring clarity, transparency, and academic rigor. A key component of the appendix is the inclusion of survey formats used during fieldwork. These formats were carefully structured to collect data on vendor characteristics, waste

generation patterns, infrastructure availability, and service usage. They facilitated systematic data collection and ensured consistency across different survey locations and respondents. The data sheets derived from these surveys present organized and categorized information, enabling detailed analysis of trends and patterns within the market. In addition to textual data, the appendix includes a range of supporting drawings and maps. These visual materials illustrate land use distribution, waste generation zones, bin locations, lighting infrastructure, and service networks. They play a crucial role in translating complex spatial information into easily interpretable formats, supporting both analysis and proposal development.

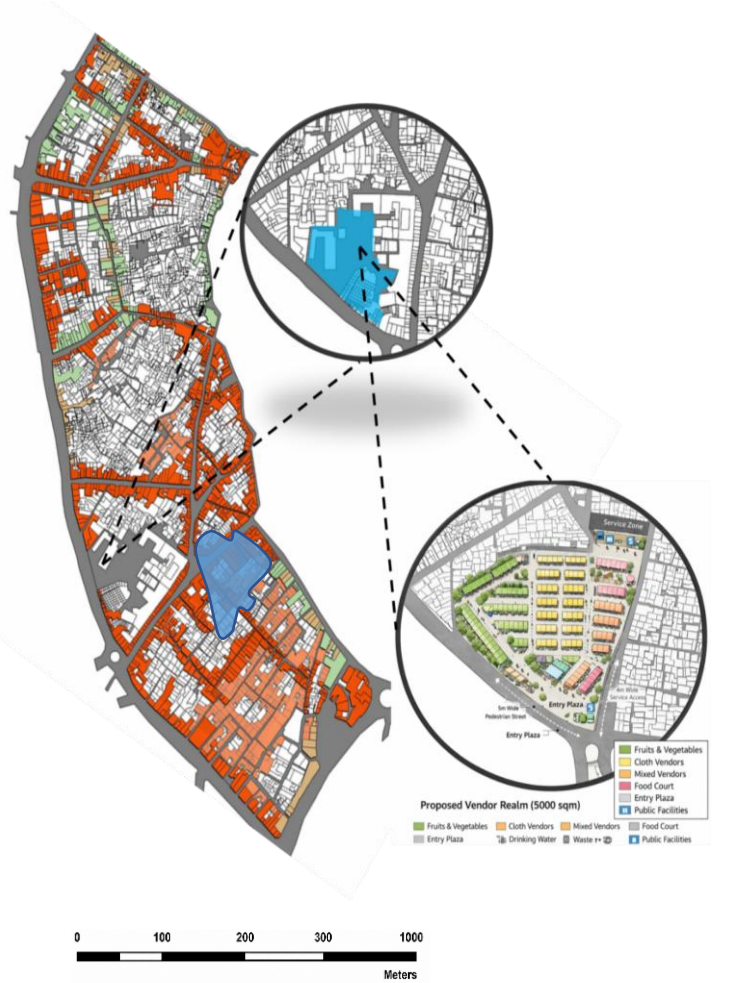
Appendix-1


KEY
Retail
Furniture
Jewellery
Hardware
Stationery
General store
Music

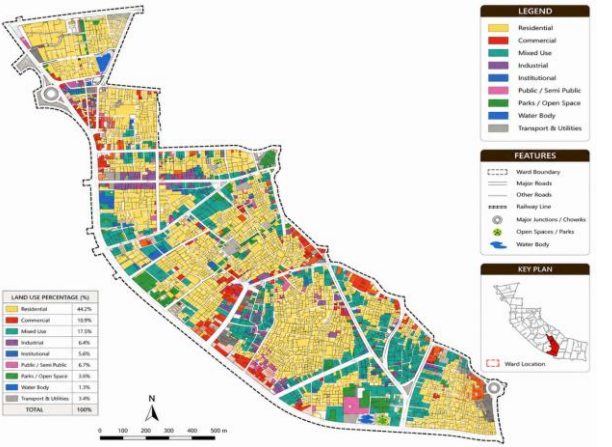
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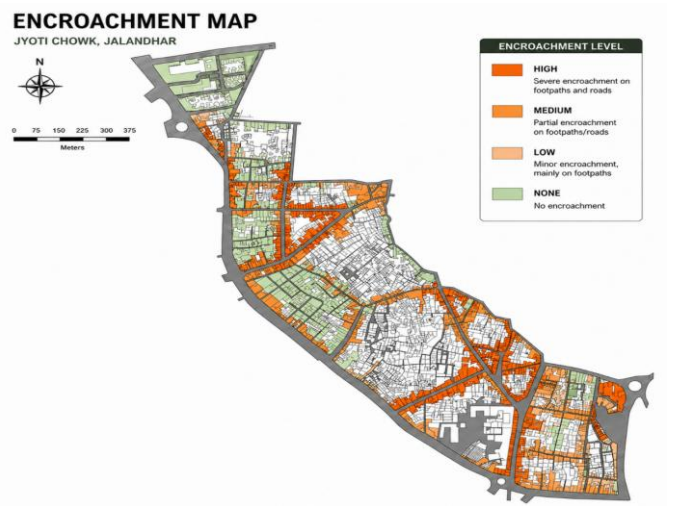

KEY
High encroachment
Medium encroachment
Low encroachment
Street vendor

Appendix-3


Service Zone
Entry Plaza
Entry Plaza
Fruits & Vegetables
Cloth Vendors
Mixed Vendors
Food Court
Entry Plaza
Public Facilities
Proposed Vendor Realm (5000 sqm)
Fruits & Vegetables
Cloth Vendors
Mixed Vendors
Food Court
Entry Plaza
Drinking Water
Public Facilities
0
100
200
300
1000
Meters

Appendix-4


LEGEND
Residential
Commercial
Mixed Use
Industrial
Institutional
Public / Semi Public
Parks / Open Space
Water Body
Transport & Utilities
FEATURES
Ward Boundary
Major Roads
Other Roads
Railway Line
Major Junctions / Chowks
Open Spaces / Parks
Water Body
KEY PLAN
Ward Location
LAND USE PERCENTAGE (%)
Residential 44.2%
Commercial 10.9%
Mixed Use 17.5%
Industrial 6.4%
Institutional 5.6%
Public / Semi Public 6.7%
Parks / Open Space 3.6%
Water Body 1.3%
Transport & Utilities 3.4%
TOTAL 100%
N
0 100 200 300 400 500 m


ENCROACHMENT MAP
JYOTI CHOWK, JALANDHAR
N
0 75 150 225 300 375
Meters
ENCROACHMENT LEVEL
HIGH
Severe encroachment on footpaths and roads
MEDIUM
Partial encroachment on footpaths/roads
LOW
Minor encroachment, mainly on footpaths
NONE
No encroachment

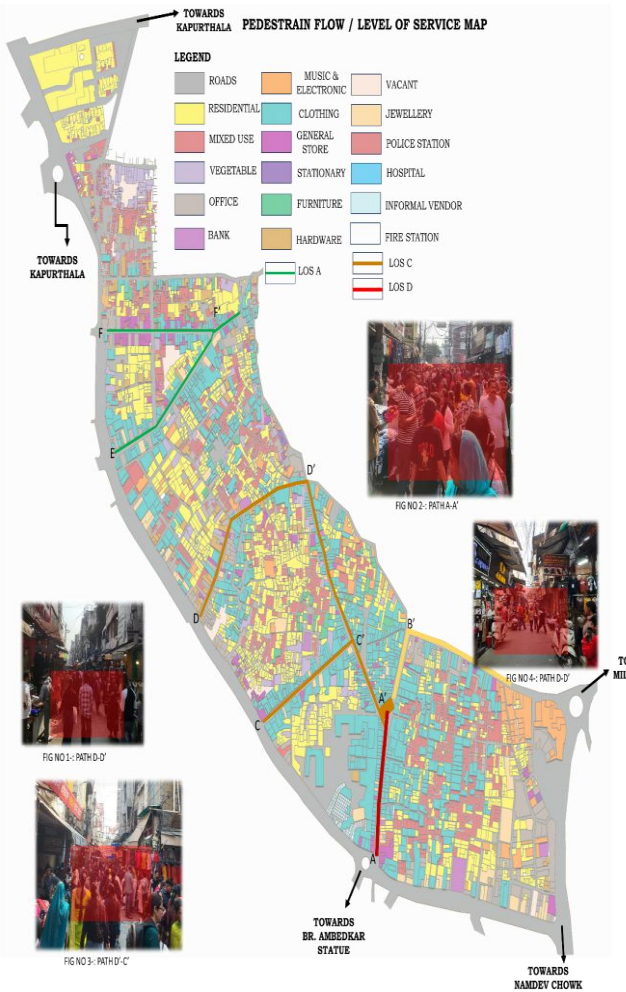
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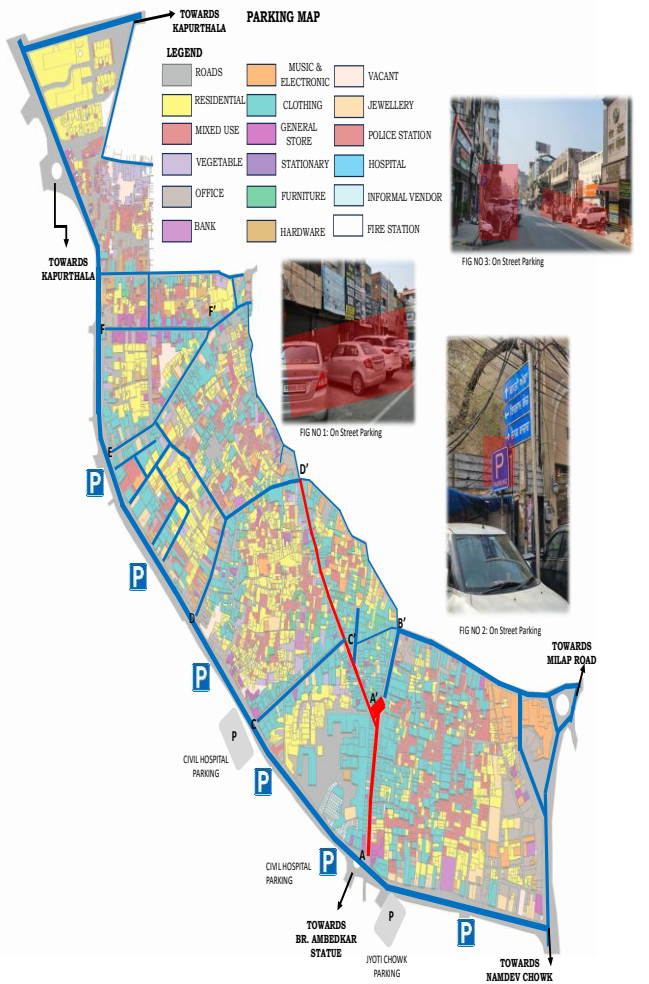
Appendix-6


JYOTI CHOWK MARKET AREA, JALANDHAR
(formal market proposal area highlighted)
ABOUT AREA
• Dense market fabric
• High pedestrian movement
• Mixed traffic conditions
• Encroachment & narrow streets
• Need of organized formal market
LEGEND
Formal Market Proposal Area
NH-44 GT Road (18m)
Local Market Road (10.5m)
Local Road (9.5m)
Narrow Local Road (5.5m)
Internal Street (2.5m)
KEY MAP
N
NH-44 GT ROAD
FORMAL MARKET PROPOSAL
NH-44 GT ROAD
(18m wide)

Appendix-7


TOWARDS KAPURTHALA
PEDESTRAIN FLOW / LEVEL OF SERVICE MAP
LEGEND
ROADS
RESIDENTIAL
MIXED USE
VEGETABLE
OFFICE
BANK
MUSIC & ELECTRONIC
CLOTHING
GENERAL STORE
STATIONARY
FURNITURE
HARDWARE
VACANT
JEWELLERY
POLICE STATION
HOSPITAL
INFORMAL VENDOR
FIRE STATION
LOS A
LOS C
LOS D
TOWARDS KAPURTHALA
F
F'
E
D'
D
C'
C
B'
A'
A
FIG NO 1:- PATH D-D'
FIG NO 2:- PATH A-A'
FIG NO 3:- PATH D'-C'
FIG NO 4:- PATH D-D'
TOWARDS MILAP ROAD
TOWARDS BR. AMBEDKAR STATUE
TOWARDS NAMDEV CHOWK

Appendix-8


PARKING MAP
TOWARDS KAPURTHALA
LEGEND
ROADS
RESIDENTIAL
MIXED USE
VEGETABLE
OFFICE
BANK
MUSIC & ELECTRONIC
CLOTHING
GENERAL STORE
STATIONARY
FURNITURE
HARDWARE
VACANT
JEWELLERY
POLICE STATION
HOSPITAL
INFORMAL VENDOR
FIRE STATION
TOWARDS KAPURTHALA
FIG NO 3: On Street Parking
FIG NO 1: On Street Parking
FIG NO 2: On Street Parking
TOWARDS MILAP ROAD
CIVIL HOSPITAL PARKING
CIVIL HOSPITAL PARKING
TOWARDS BR. AMBEDKAR STATUE
JYOTI CHOWK PARKING
TOWARDS NAMDEV CHOWK

Appendix-9

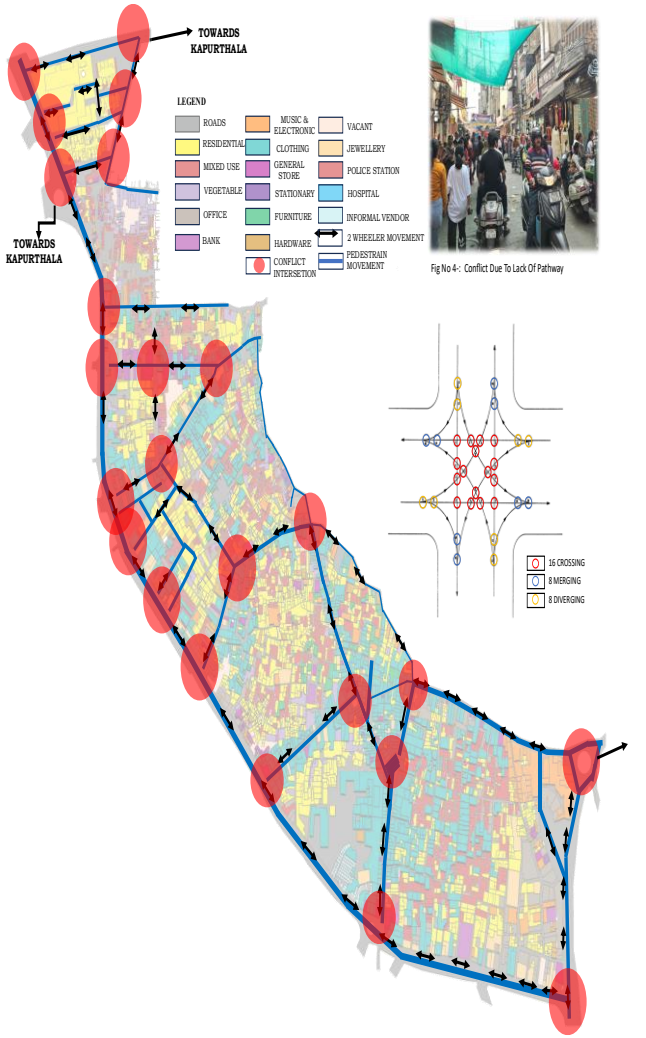


Fig No 4-: Conflict Due To Lack Of Pathway

Appendix-10

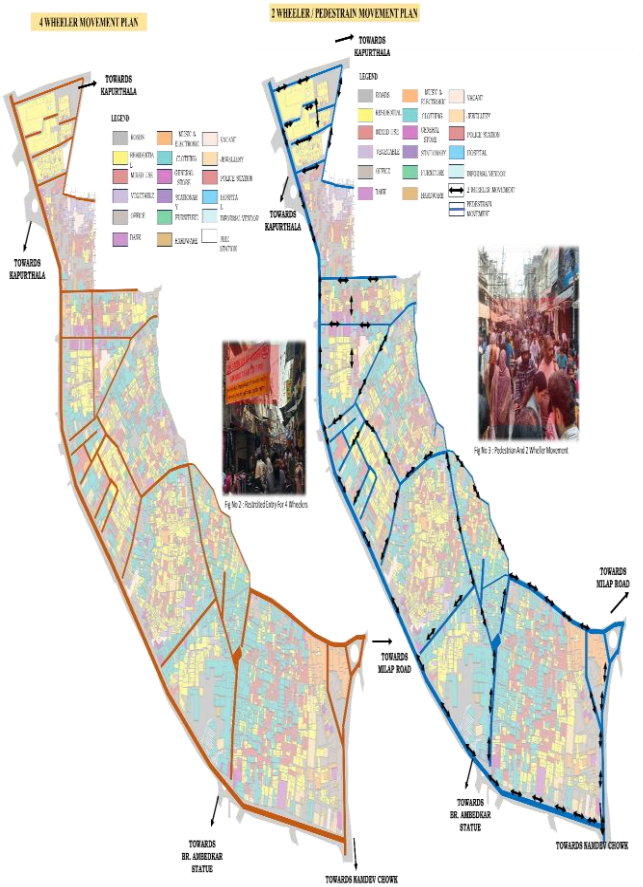

4 WHEELER MOVEMENT PLAN
TOWARDS KAPURTHALA
LEGEND
TOWARDS KAPURTHALA
TOWARDS BR. AMBEDKAR STATUE
TOWARDS RANIDEV CHOWK
2 WHEELER / PEDESTRAIN MOVEMENT PLAN
TOWARDS KAPURTHALA
LEGEND
TOWARDS KAPURTHALA
TOWARDS MILAP ROAD
TOWARDS MILAP ROAD
TOWARDS BR. AMBEDKAR STATUE
TOWARDS RANIDEV CHOWK

Table 1. Footfall and daily flows

Time Period	Activity Pattern
Morning	Lower but steady activity, mainly involving early shoppers and traders
Afternoon	Gradual increase in footfall as more shoppers and workers enter the market
Evening	Peak activity period (7 PM – 9 PM), driven by leisure shopping and food-related activities
Weekends	Significant increase in footfall due to family outings, shopping, and recreational visits

Source:- Computed Value, 2026

Table 2. Types of shop keepers and their timings

S. No	Type of Shop keeper	Goods Sold	Opening Time	Closing Time	Peak Activity Time
1	Garment	Suits, sarees, bridal wear	10:00 AM	8:30 PM	2 PM – 8 PM

2	Footwear	Shoes, sandals, bags	10:30 AM	8:30 PM	3 PM – 8 PM
3	Jewellery	Artificial + gold/ silver jewellery	10:30 AM	8:30 PM	4 PM – 9 PM
4	Electronics	Mobiles, accessories	10:30 AM	8:00 PM	2 PM – 7 PM
5	Book & Stationery	Books, notebooks, exam material	10:00 AM	8:00 PM	12 PM – 6 PM
6	General Retail Shops	Cosmetics, household items	10:00 AM	8:30 PM	3 PM – 8 PM

Source:- Computed Value, 2026

Table 3. Types of vendors and their timings

S. No	Type of Vendor	Goods Sold	Setup Time	Closing Time	Peak Activity Time
1	Street Food Vendors	Chaat, golgappa, snacks	11:30 AM	10:00 PM	5 PM – 9 PM
2	Fruit Vendors	Fruits (seasonal)	9:30 AM	10:30 PM	6 PM – 10 PM
3	Hawkers (Clothes)	Clothes on racks	12:00 PM	9:30 PM	5 PM – 9 PM
4	Accessories Vendors	Sunglasses, belts, jewellery	12:00 PM	9:30 PM	5 PM – 9 PM
5	Toy Vendors	Toys, small items	1:00	9:00 PM	6 PM

			P M		– 9 PM
6	Tea & Juice Stalls	Tea, juice, refres hment s	10: 30 A M	10: 30 PM	5 PM – 9 PM

Source:- Computed Value, 2026

Table 4. Conflict Resolution Strategies

Issue / Confl ict	**Cause**	**Solutio n Strate gy**	**Imple mentat ion Metho d**	**Expe cted Outc ome**
Encro achm ent on walki ng space	No fixed vendin g areas	Demar cated vendin g zones	Mark stalls (paint / modula r units) + clear pedestr ian path	Organ ized move ment, reduc ed conge stion
Shop visibil ity	Vendo rs in front	Buffer zone in front of shops	Mainta in 1–1.5m clear	Better shop acces s &

blocked	of shops		frontage	display
Competition for prime locations	High footfall areas limited	Rotational vending system	Allocate time/weekly shifts	Fair distribution of space
Peak hour congestion	Vendors + customers + vehicles	Pedestrianization	Restrict vehicles during peak hours	Smooth movement, safer streets
Uncontrolled vendor growth	No licensing system	Vendor registration	ID cards + fixed spots	Reduced overcrowding
Conflict with authorities	Informal/illegal setup	Policy-based inclusion	Legal vending zones + guidelines	Reduced eviction conflicts

Mixed activity chaos	Random vendor placement	Cluster-based zoning	Group vendors by type (food, clothes, etc.)	Better organization & user experience
Timing conflicts with shops	Same-time operation	Time-based zoning	Allow vending in specific hours	Reduced direct competition

Source:- Computed Value, 2026

Table 5 Types of Encroachment

Encroachment Type	Short Description	Typical Locations / Evidence	Source(s)	Impact / Notes
Street vendors / hawker stalls (temporary)	Pushcarts, temporary stalls set up on footpaths or carriageway	Shops /weekly market at Jyoti Chowk; sidewalks and road-edge	Visual Survey	Blocks pedestrian flow; reduces carriageway width, causes congestion
Displayed goods / stock on footpath	Merchants place boxes, racks or display racks on the footpath in	Footpaths outside shops along the marke	Visual Survey	Forces pedestrians onto road; accessibilit

	front of shops	t stretch		y & safety issues
Illegal parking / parked vehicles	Two/three-wheeler or car parking on carriageway/kerb causing narrowing	Roadside around Jyoti Chowk, near markets and sweet shops	Visual Survey	Slows traffic, increases congestion and accident risk
Weekly shoe/boot market (organized on encroached land)	Large periodic market occupying public land, often labelled “illegal” by M.C.	Shoe market / boot market near Red Cross Market / Jyoti Chowk	Visual Survey	Large, predictable congestion; removal drives face resistance

		(week end)		
Storage of wholesale goods / inventory	Shopkeepers store excess stock on pavement (boxes, crates)	Front of shops, lanes off main market	Visual Survey	Blocks access, creates tripping hazards, fire risk
Waste/ garbage & dumping	Piles of waste or bulky items kept on road edges or footpaths	Near market exits / side lanes	Visual Survey	Health hazard, attracts vermin, worsens hygiene
Handcarts / mobile sellers	Unregulated hand-pulled carts selling footwear/food/household items	Moving through market rows;	Visual Survey	Interrupts circulation; hard to regul

		parked between stalls		ate without alternatives

Source:- Computed Value, 2026

Table 6. peak our and off-Peak hour

Time Scale	Activity Pattern	Observation
Time	Situation	Encroachment Level
Morning (9–11 AM)	Setup time, moderate buyers	Medium
Afternoon (1–4 PM)	Stable activity	Medium
Evening (5–8 PM)	Heavy buyer movement	High
Late Night	Vendors closing	Low
Daily	Vendors active from 9 AM – 9 PM	Peak congestion in evening

Source:- Computed Value, 2026

Table Comprehensive Inclusive Policy Framework

Policy Area	Detailed Challenges	Expanded Policy Measures	Implementation Strategy	Outcomes
Legal Recognition	Informal workers invisible in policy	National vendor registry, ID cards	Local authority coordination	Security & inclusion
Licensing	Corruption and delays	Single-window digital systems	E-governance platforms	Transparency
Protection	Forced evictions	Legal tribunals & griev	Judicial oversight	Stability

		ance cells		
Spatial Planning	Encroachment conflicts	Zoning with flexibility	GIS-based planning	Organized growth

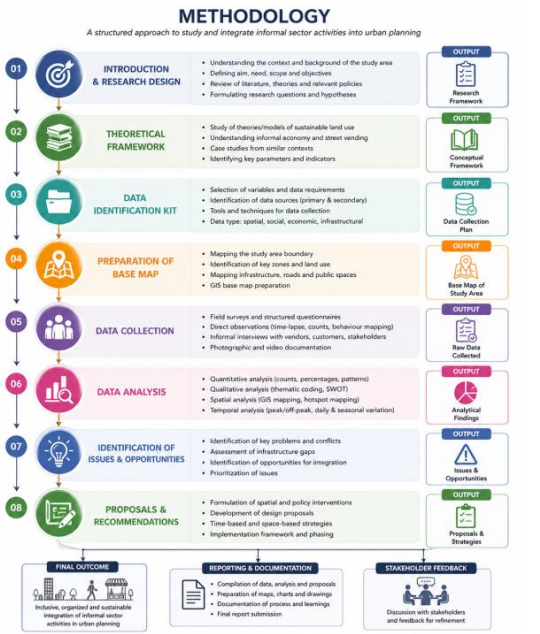
Source:- Computed Value, 2026

Research Questions

The study is guided by the following key research questions specific to the Jyoti Chowk area:

1. What are the different types and spatial patterns of informal sector activities in the study area? (e.g., food vendors, stationary stalls, mobile hawkers, time-based vending).
2. How do informal bazaars interact with formal land use, circulation networks, and public spaces? (impact on footpaths, roads, shop frontages, and pedestrian movement).
3. What are the socio-economic characteristics of informal sector workers? (income levels, dependency on vending, migration background, working conditions).

4. What conflicts and synergies exist between formal and informal systems? (competition vs. support between shops and vendors, shared customer base).
5. How can planning interventions support livelihood protection while improving urban functionality? (designated vending zones, street design improvements, policy implementation).



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