



## Creative Urban Public Spaces as Sites of Informal Learning: A Mind Mapping Approach

Elizaveta Molostvova (Fainshtein)<sup>1</sup>, Valentina Chkoniya<sup>2\*</sup>

<sup>1</sup>Laboratory for Management in Culture and Tourism, HSE University,  
St. Petersburg, Russian Federation [e.feinshtein@gmail.com](mailto:e.feinshtein@gmail.com)

<sup>2</sup>GOVCOPP, University of Aveiro, Portugal \* [valentina.chkoniya@ua.pt](mailto:valentina.chkoniya@ua.pt)

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### Abstract

This paper develops a conceptual and analytical model for understanding visitor attitudes toward public space as a process of social perception and meaning-making. Using semantic analysis and mind mapping techniques, the study examines Sevkabel Port, a regenerated waterfront public space, as a site of informal social interaction and experiential learning. Drawing on qualitative data from open-ended survey responses collected in August 2024 (N = 283), the research identifies dominant semantic clusters through which visitors articulate their perceptions and experiences. The analysis reveals five interrelated dimensions shaping visitor attitudes: infrastructure, activities, accessibility, social interaction, and mental imagery. These dimensions are integrated into a mind map that represents the cognitive and affective structure of how individuals interpret and engage with public space. While infrastructure and activity-related themes accounted for the largest share of references, mental imagery, such as atmosphere, visual openness, and proximity to water, played a central integrative role, connecting functional and social perceptions. The findings demonstrate that visitor attitudes emerge from the interaction of multiple perception dimensions rather than isolated spatial attributes, highlighting public space as a socially constructed environment embedded with symbolic and collective meanings. The proposed model offers a transferable analytical framework for examining how public spaces support informal learning, social interaction, and civic experience in hybrid cultural and

leisure environments. By foregrounding visitor discourse, the study contributes to social science research on public space education and supports more inclusive, socially responsive approaches to urban design and policy.

**Keywords:** semantic analysis, mind mapping, visitor attitudes, place meaning, public spaces perception, experiential value, experiential learning

## 1. Introduction

In recent decades, public spaces have increasingly been understood not only as functional components of urban infrastructure but also as environments where informal learning, social interaction, and meaning-making occur. Within social science, public spaces are conceptualised as arenas where individuals engage in shared experiences, negotiate social norms, and construct symbolic understandings of place (Yu et al., 2019; Cao et al., 2024). These spaces facilitate processes of social learning by enabling everyday encounters, collective practices, and affective engagement with the urban environment. This perspective reflects broader transformations in contemporary urban life, in which experiential and relational dimensions shape how individuals interpret, use, and attribute meaning to public spaces. Rather than viewing experience solely through a consumption-oriented lens, recent research emphasises the educational and civic role of public spaces as sites where knowledge, values, and social identities are informally produced and reproduced through interaction and participation.

Creative waterfront developments represent a particularly salient category of contemporary public spaces. Typically emerging from the regeneration of former industrial territories, these environments integrate cultural production, leisure activities, and economic exchange, while simultaneously functioning as social and symbolic arenas (Littman, 2022; Chen et al., 2024). Their success depends on balancing functional accessibility with experiential richness and place identity formation. However, assessing visitor attitudes toward such spaces remains methodologically challenging due to the multidimensional, context-dependent nature of the visitor experience.

Traditional performance indicators, such as visitor numbers, satisfaction scores, or standardised survey-based evaluations, continue to dominate managerial assessments of public spaces. While these metrics offer comparability and analytical clarity, they are frequently insufficient for capturing the meaning-laden perceptions, emotions, and narratives that visitors develop through interaction with complex public environments. As a result, critical cognitive and affective dimensions of visitor attitudes toward creative public spaces remain underexplored.

Sevkabel Port, a former industrial site transformed into a multifunctional creative waterfront in Saint Petersburg, exemplifies this complexity. Beyond its architectural

and infrastructural characteristics, the space operates as a symbolic and social environment where visitors engage in leisure practices, cultural consumption, and informal socialisation. Visitor perceptions of Sevkabel Port, therefore, extend beyond rational evaluations and incorporate emotional responses, identity-related interpretations, and experiential narratives. Understanding such perceptions requires analytical approaches capable of systematically interpreting visitor-generated discourse.

To address this challenge, the present study proposes an integrative analytical framework grounded in the semantic analysis of visitor-generated textual data. By combining semantic clustering with mind-mapping techniques, the study constructs a holistic model of visitors' attitudes toward a creative waterfront public space. In doing so, it contributes to social science education, contemporary research in place management, experiential marketing, and urban regeneration by addressing a critical methodological gap in the analysis of third places. The proposed framework offers a transferable tool for examining how creative urban spaces support social interaction, experiential learning, and civic engagement within contemporary cities.

## **2. Literature Review**

### **2.1 Third Places and Experiential Public Spaces**

Public spaces and third places are increasingly viewed as experiential environments in which value is co-created through interaction, symbolism, and social engagement rather than mere functional use (Yu et al., 2019; Cao et al., 2024). Within this perspective, places function simultaneously as economic assets, social arenas, and symbolic systems. Creative districts and regenerated waterfronts are particularly dependent on experiential value creation, as their appeal is rooted in symbolic differentiation, cultural meaning, and emotional engagement (Littman, 2022; Chen et al., 2024).

Empirical research on urban regeneration highlights that redeveloped industrial and waterfront areas often generate hybrid visitor perceptions that combine authenticity, creativity, and commercialisation (Carmona, 2021; Richards & Duif, 2022; Stevens et al., 2022). These perceptions are rarely fully articulated in official branding narratives and are more accurately reflected in visitor discourse and experiential evaluations.

### **2.2 Place Branding and Visitor-Centred Perspectives**

Place marketing and place branding research have progressively shifted from promotional, image-oriented approaches to relational and experiential perspectives. Recent studies emphasise that places are dynamic socio-spatial systems co-created by multiple stakeholders, including visitors, residents, and cultural producers (Kavaratzis et al., 2017; Rinaldi et al., 2021; Shao & Chung, 2024). From this standpoint, visitor perceptions are not passive outcomes but active elements in the ongoing construction of place value.

Research demonstrates that visitors' attitudes toward public spaces are influenced by both functional attributes, such as infrastructure quality, accessibility, service availability, and experiential dimensions, including atmosphere, social inclusivity, and place identity (Zenker & Braun, 2017). Studies outlets further confirm that affective and symbolic impressions often exert a stronger influence on place attachment and revisit intentions than purely functional evaluations (Helkkula et al., 2018; Chkoniya, 2020; Becker et al., 2023; Fainshtein et al., 2024).

### **2.3 Analytical Approaches to Studying Visitor Perceptions of Third Places**

Existing research on third places and public spaces can be grouped into four dominant analytical approaches: (1) quantitative scale-based analysis, (2) qualitative interpretive analysis, (3) sentiment-oriented text analytics, and (4) semantic and machine-learning-based text analysis.

1. **Quantitative Scale-Based Approaches.** Quantitative studies rely primarily on structured surveys and predefined measurement scales to assess visitor satisfaction, accessibility, service quality, and place attachment (Zenker & Braun, 2017; Richards & Duif, 2022). These approaches provide reliable, comparable results but are constrained by researcher-defined constructs, limiting their ability to capture emergent meanings and affective nuances embedded in the visitor experience.

2. **Qualitative Interpretive Approaches.** Qualitative methods such as interviews, ethnography, and participant observation allow for in-depth exploration of meaning-making processes and identity construction in public spaces (Kavaratzis et al., 2017; Rinaldi et al., 2021). While these approaches offer rich contextual insights, they are challenging to scale and often lack systematic comparability across large visitor populations.

3. **Sentiment Analysis and Topic Modelling.** Advances in computational methods have enabled large-scale analysis of visitor-generated textual data. Sentiment analysis and topic modelling are widely applied to online reviews and open-ended feedback to identify general evaluative tendencies and dominant themes (Humphreys et al., 2023). Although these methods extend beyond numeric indicators, they frequently reduce complex experiences to isolated sentiment scores or fragmented thematic clusters.

4. **Semantic Analysis of Visitor Discourse.** More recent studies employ semantic and machine-learning-assisted techniques to uncover latent cognitive and affective structures in visitor narratives (Netzer et al., 2012). In visitor and tourism research, semantic analysis has proven particularly effective, as visitor discourse integrates functional evaluations with symbolic and emotional meanings (Vermeer et al., 2019). However, existing semantic studies often stop identifying themes or clusters and rarely translate these insights into integrative conceptual models suitable for managerial interpretation.

Table 1 summarises and compares the dominant analytical approaches used in research on third places and visitor perceptions.

**Table 1.** Comparative Matrix of Analytical Approaches in Third-Place Research

Analytical Approach	Data Source	Key Focus	Strengths	Limitations	Representative Studies
Quantitative scale-based analysis	Structured surveys	Functional evaluation, satisfaction	High reliability, comparability	Predefined constructs, limited affective depth	Zenker & Braun (2017); Richards & Duif (2022)
Qualitative interpretive analysis	Interviews, observations	Meaning-making, identity	Rich contextual insight	Limited scalability	Kavaratzis et al. (2017); Rinaldi et al. (2021)
Sentiment analysis	Online reviews	Polarity of attitudes	Scalable, efficient	Oversimplification of experience	Humphreys et al. (2023)
Semantic text analysis	Visitor-generated texts	Latent experiential dimensions	Captures complexity	Fragmented conceptualization	Netzer et al. (2012); Vermeer et al. (2019)
Semantic analysis + mind mapping	Visitor-generated texts	Integrated cognitive, affective, and functional perceptions	Holistic, managerially interpretable	Methodologically underexplored	Present study

Source: Own elaboration (2025).

## 2.4 Informal Learning and Social Learning in Urban Public Spaces

Urban public spaces are increasingly understood as sites of informal learning that operate beyond formal education (O’Farrell & Liu, 2020). Informal learning involves the acquisition of knowledge, skills, values, and social competencies through everyday experience, observation, and interaction rather than structured instruction (Soto-González et al., 2025). Public spaces support these processes by enabling repeated exposure to social diversity, shared practices, and symbolic

representations of collective life. From a social learning perspective, learning emerges through interaction, co-presence, and the observation of others, allowing individuals to negotiate social boundaries and internalise civic meanings (Gutwill et al., 2022; Salih et al., 2024; Symeonidou et al., 2025). This learning is largely implicit, shaped by spatial design and social encounters, and intensified in creative and regenerated spaces through events and shared leisure practices. Beyond cognitive outcomes, sensory and affective engagement mediates how experiences are internalised and translated into social practice (Franza & Pratesi, 2024).

Despite growing recognition of public spaces as sites of informal learning, empirical research often depends on predefined indicators or behavioural proxies, offering limited insight into how individuals themselves construct learning-related meanings. Visitor-generated discourse offers an alternative lens, capturing how people describe, evaluate, and emotionally engage with urban environments, thereby revealing the implicit learning processes embedded in everyday spatial experience. Building on this approach, the present study employs semantic analysis and mind mapping to conceptualise informal learning as a socially constructed, meaning-driven process emerging from the interaction of spatial, social, and affective dimensions.

### **3. Methodology**

#### **3.1 Research design and case selection**

This study employs a qualitative, exploratory research design to uncover the semantic structure of visitors' attitudes toward a creative urban public space. Given the study's objective of capturing affective, symbolic, and experiential dimensions of visitor perception, a qualitative approach based on open-ended textual data was deemed most appropriate. Unlike standardised survey instruments, which impose predefined categories on respondents, open-ended methods allow visitors to articulate their experiences, evaluations, and emotions in their own terms. This design choice aligns with recent methodological developments in marketing and urban research that emphasise the value of visitor-generated discourse for understanding complex experiential phenomena.

The research design is cross-sectional and case-based, focusing on Sevkabel Port as an example of a regenerated waterfront public space. While the study is grounded in a single empirical context, the analytical approach is intended to be transferable to other creative urban environments.

**Sevkabel Port:** Sevkabel Port is located in Saint Petersburg and occupies the site of a former industrial cable manufacturing complex situated along the city's waterfront. Since its redevelopment, the area has been transformed into a multifunctional public space hosting cultural events, exhibitions, food and beverage establishments, creative workspaces, and informal leisure areas. The site attracts a

heterogeneous visitor population, including residents, tourists, families, creative professionals, and students.

The spatial configuration of Sevkabel Port combines preserved industrial architecture with contemporary design interventions, creating a distinctive environment characterised by strong visual identity and symbolic references to industrial heritage. The site's waterfront location further enhances its experiential appeal, making it an appropriate case for examining visitors' attitudes toward creative urban public spaces.

### 3.2 Participant selection and data collection

Empirical data were collected through an on-site visitor survey conducted between 8 and 31 August 2024. Data collection took place on both weekdays and weekends to capture variations in visitor profiles and usage patterns. Participants were selected using a non-probability, purposive intercept sampling strategy. Respondents were approached in situ in different zones of the public space, including waterfront areas, event spaces, and food courts, to ensure spatial diversity and usage patterns in the sample. Eligibility criteria for participation included: (1) being at least 18 years of age, (2) currently visiting Sevkabel Port for leisure, cultural, or recreational purposes, and (3) willingness to provide informed consent for participation in the academic study. No additional exclusion criteria were applied. The purposive sampling approach was selected to capture a heterogeneous range of visitor perspectives rather than to achieve statistical representativeness. This approach is consistent with exploratory qualitative research designs that prioritise experiential diversity and meaning-making processes over population generalisation. A total of 283 valid responses were collected and included in the final analysis (Table 2).

**Table 2.** Composite visitor profile

Variables, measure type	Response categories	N (283)	%
Demographics, gender	Female	209	74.0
	Male	74	26.0
Demographics, age	18–25	95	33.6
	26–35	111	39.2
	36–45	45	15.9
	46–55	20	7.1

	56+	12	4.2
Visit Frequency, ordinal categories	Monthly or more	88	31.0
	Several times per year	142	50.0
	First-time visitor	53	19.0
Purpose of Visit, nominal categories	Recreational walking	143	50.5
	Dining	40	14.1
	Events	30	10.6
	Other	70	24.8
Stay Duration, hours (h)	<1	70	24.7
	1-3	132	46.6
	Half-day	54	19.1
	Full-day	27	9.6
Spending, Russian rubles (RUB)	0	86	30.4
	<1000	67	24.0
	1000-3000	67	24.0
	3000-5000	40	14.0
	>5000	23	8.0

Source: Own elaboration (2024).

Participation in the survey was voluntary, and respondents were informed of the study's academic purpose. Only visitors aged 18 years and older were included. The survey instrument consisted of two main components: a short set of closed-ended questions capturing basic demographic information, consumer behaviour (visit frequency, purpose of visit, stay duration, spending) and a series of open-ended questions inviting respondents to describe their impressions, preferences, and perceived shortcomings of Sevkabel Port:

- “Please describe your overall impressions of Sevkabel Port.”
- “What do you like most about this place?”

- “What do you dislike or find inconvenient here?”
- “Are there any elements of this space that you associate with particular feelings, images, or moods?”

Participants were instructed to respond freely, without word limits, and were informed that there were no right or wrong answers. The prompts were intentionally broad to avoid directing respondents toward predefined evaluative categories and to allow individual cognitive and affective associations to emerge naturally.

The qualitative component formed the primary data source for this study. In total, 283 valid responses were obtained and included in the analysis. Responses varied in length and depth, ranging from short evaluative statements to more detailed narratives.

Mind mapping was not used as a data collection method, nor did participants perform it. Instead, the researchers developed mind maps as an analytical and visual modelling tool for the written, open-ended survey responses collected on site at Sevkabel Port. The mapping was conducted during the post-collection analytical phase in an academic research setting and served to synthesise the results of semantic coding by visually representing the structure of visitor discourse and the interrelationships among the identified perception dimensions.

### **3.3 Data preparation and semantic coding**

Prior to analysis, all textual responses were transcribed and consolidated into a single dataset. Data pre-processing was conducted to ensure consistency and analytical reliability. This process involved correcting obvious spelling errors, standardising word forms, and removing non-informative elements such as conjunctions and filler words. Care was taken to preserve the original meaning and tone of respondents' statements.

Synonymous terms and expressions were identified and harmonised to avoid artificial fragmentation of semantic categories. For example, different lexical forms referring to similar concepts (e.g., “atmosphere,” “ambience,” “mood”) were examined contextually before being grouped. This step was essential for ensuring that semantic frequency counts reflected meaningful conceptual patterns rather than linguistic variation.

Semantic analysis was conducted in several sequential stages, combining quantitative frequency analysis with qualitative interpretative coding. In the first stage, keyword extraction was performed to identify recurrent terms and expressions across the dataset. Frequency counts were used to establish the relative prominence of specific semantic units within visitor discourse. The result of the semantic analysis was a list of keywords. Table 3 presents the top 20 keywords in positive and negative comments, ranked by frequency of mention. Typing keywords

allows us to identify different groups of public space characteristics that are perceived positively or negatively.

**Table 3.** Keyword Samples of Positive and Negative Comments from Sevkabel Port Visitors, 2024

№	Positive comments			Negative comments		
	Keywords	Number of mentions, units	Mentions in % of the sample	Keywords	Number of mentions, units	Mentions in % of the sample
1	Water, sea	193	68.93	People	174	62.14
2	Dog	186	66.43	Ramp	99	35.36
3	Embankment	184	65.71	Sign, navigation, plan	69	24.64
4	Exhibition	122	43.57	Bench	66	23.57
5	Event	113	40.36	Transportation, metro, bus stop	66	23.57
6	Venue	106	37.86	Toilet	65	23.21
7	Concert	103	36.79	Parking	65	23.21
8	Food	92	32.86	Bag	54	19.29
9	Bar	78	27.86	Road	50	17.86
10	Skating rink	74	26.43	Animal	39	13.93
11	Market, fair	72	25.71	Shop, bookstore	38	13.57
12	View	66	23.57	Canopy, roof	32	11.43
13	Music	63	22.50	Stairs	30	10.71
14	Child	58	20.71	Car	25	8.93

15	Restaurant	56	20.00	Path	21	7.50
16	Activity	49	17.50	Trash can, trash bin, ashtray	20	7.14
17	Workshop	41	14.64	Noise	17	6.07
18	Walk	39	13.93	Queue	17	6.07
19	Atmosphere	36	12.86	Price	8	2.86
20	Club	19	6.79	Pharmacy, first aid	3	1.07

Source: Own elaboration (2024).

In the second stage, extracted keywords were examined within their textual context to determine their evaluative orientation. Keywords were classified into positive or negative semantic fields based on whether they reflected favourable or unfavourable visitor evaluations. This contextual classification was necessary to avoid misinterpretation of polysemous terms whose evaluative meaning depends on usage.

The third stage involved grouping keywords into higher-order conceptual categories through inductive thematic analysis. Categories were not predefined but emerged from repeated patterns observed in the data. This inductive approach ensured that the resulting conceptual structure reflected visitor perspectives rather than researcher-imposed frameworks. To enhance analytical rigour, category definitions were refined iteratively, and ambiguous cases were revisited until conceptual clarity was achieved. Aggregating the resulting keywords allows us to identify distinct groups of key characteristics of Sevkabel Port areas that visitors perceive positively and negatively. In both cases, five groups were analytically identified that have meaning and content in accordance with the "place formation" approach: (1) infrastructure (comfort and identity); (2) activities (content); (3) transportation (accessibility); (4) social groups (sociability); (5) mental characteristics (comfort and image) of public space.

Some keywords are used in both positive and negative comments. To understand the semantic difference, it's necessary to consider these keywords directly in the context of Sevkabel Port visitors' comments. By analysing the comments, you can discover the keywords (characteristics) that visitors prioritise for different areas of Sevkabel Port (Figure 1).

The final stage of analysis involved synthesising the identified conceptual categories into a mind map that represented the structure of visitors' attitudes toward

Sevkabel Port. Mind mapping was used as a visual modelling technique to illustrate relationships among perception dimensions and to integrate cognitive and affective components of the visitor experience (Nurrizqi et al., 2025).

The mind map was constructed around five central perception dimensions: infrastructure, activities, accessibility, social interaction, and mental imagery. These dimensions were positioned as interconnected nodes, reflecting the interdependence observed in visitor discourse. Sub-nodes representing specific semantic elements were attached to each main dimension, with positive and negative evaluations visually differentiated.

The construction of the mind map was informed by principles of cognitive mapping as articulated in the urban studies literature, particularly Lynch's work on mental representations of urban environments. By combining semantic analysis with cognitive mapping principles, the model provides both analytical structure and intuitive interpretability.

Several measures were taken to enhance the reliability and validity of the analysis. First, the use of frequency analysis alongside qualitative interpretation helped balance objectivity and contextual sensitivity. Second, the inductive coding process involved repeated comparison between raw data and emerging categories to ensure consistency.

While the study relies on qualitative data from a single case, the methodological transparency and systematic analytical procedure support the credibility of the findings. The focus on visitor-generated meanings enhances construct validity by ensuring that analytical categories are grounded in actual visitor discourse.

### **3.4 Analytical procedure: semantic coding and mind map construction**

The analytical procedure consisted of four sequential stages combining semantic analysis and inductive qualitative coding.

Stage 1: Data preparation and preprocessing. All open-ended responses were consolidated into a single textual dataset. Preprocessing included correction of obvious spelling errors, standardisation of lexical forms, and removal of non-informative elements (e.g., conjunctions and filler words). Semantic meaning was preserved throughout this process.

Stage 2: Keyword extraction and frequency analysis. Recurrent words and expressions were identified across the dataset. Frequency counts were calculated to determine the relative prominence of semantic units within visitor discourse. Keywords were examined within their immediate textual context to avoid decontextualised interpretation.

Stage 3: Inductive semantic coding and category formation. Extracted keywords were grouped into higher-order conceptual categories using an inductive thematic approach. Categories were not predefined but emerged through repeated

comparison between raw data and developing codes. Keywords were classified as positive or negative based on contextual evaluative meaning. Ambiguous cases were re-examined iteratively until conceptual consistency was achieved. This process resulted in five dominant perception dimensions: infrastructure, activities, accessibility, social interaction, and mental imagery.

Stage 4: Mind map construction and interpretation. The final stage involved synthesising the identified perception dimensions into a mind map. Each dimension was represented as a central node with subordinate semantic elements visualised as interconnected sub-nodes. Relationships among dimensions were established based on co-occurrence patterns and contextual linkage within visitor responses. Positive and negative evaluations were visually differentiated to enhance interpretability.

The mind map thus functions as an integrative analytical model, translating dispersed textual data into a coherent cognitive–affective representation of visitor attitudes toward the public space.

#### **4. Overview of the Semantic Analysis Results**

Following the analytical procedure described in Section 3.4, a set of recurrent semantic units was identified, clustering into five higher-order perception dimensions: infrastructure, activities, accessibility, social interaction, and mental imagery. These dimensions emerged inductively from the data and collectively represent the dominant structure of visitor attitudes.

Across the dataset, visitor discourse combined descriptive references to physical and functional attributes with evaluative and affective expressions. While individual responses varied in length and emphasis, the overall semantic structure exhibited a high degree of convergence, indicating shared perception patterns among visitors.

##### **4.1 Infrastructure-Related Perceptions**

Infrastructure constituted one of the most frequently referenced perception dimensions. Keywords in this category relate to physical comfort, spatial organisation, architectural identity, and service amenities. Frequently occurring positive terms included references to waterfront facilities, industrial architecture, open spaces, restaurants, and seating areas. Visitors often described these elements using evaluative language indicating comfort, aesthetic appeal, and suitability for leisure activities.

Negative infrastructure-related references were primarily associated with navigation difficulties, insufficient seating during peak periods, and limitations in service infrastructure. Some visitors noted challenges related to signage, internal orientation, or overcrowding in specific zones. These negative references were less frequent than positive ones but appeared consistently across the dataset.

Overall, infrastructure-related semantics reflected visitors' attention to both functional usability and spatial identity, suggesting that physical attributes play a foundational role in shaping overall attitudes toward the space.

## **4.2 Activity-Related Perceptions**

Activity-related semantics formed a second central cluster, accounting for a substantial proportion of total keyword occurrences. Visitors frequently referred to events, concerts, exhibitions, markets, food festivals, and informal leisure practices such as walking, meeting friends, and spending time by the water.

Positive activity-related references emphasised diversity, vibrancy, and the availability of cultural programming. Visitors highlighted the role of events in creating atmosphere and encouraging repeated visits. Gastronomy-related activities, including cafés and food courts, were also frequently mentioned as integral components of the visitor experience.

Negative activity-related semantics were comparatively limited and primarily related to overcrowding during major events or perceived commercialisation. These references did not dominate the dataset but indicate points of tension between experiential richness and visitor comfort.

The prominence of activity-related semantics underscores the importance of both programmed and spontaneous activities in shaping experiential value at Sevkabel Port.

## **4.3 Accessibility-Related Perceptions**

Accessibility emerged as a distinct semantic dimension encompassing references to transport connections, wayfinding, and mobility within and around the public space. Keywords in this category included public transport access, parking availability, pedestrian routes, and internal navigation.

Positive accessibility-related references highlighted convenient transport links and walkability, particularly for visitors arriving by public transport or on foot. Some visitors explicitly mentioned the ease of reaching the waterfront areas and moving between different functional zones.

Negative references focused on parking limitations, congestion during peak periods, and challenges related to internal navigation. These comments suggest that accessibility is a salient evaluative criterion, particularly for visitors with specific mobility needs or time constraints.

Overall, accessibility-related semantics reflect the role of spatial connectivity and ease of movement in shaping visitor attitudes, functioning as a mediating factor between infrastructure and experiential dimensions.

#### **4.4 Social Interaction and Social Composition**

Social interaction emerged as an independent semantic cluster characterised by references to families, children, pets, groups of friends, and crowd composition. Visitors frequently mentioned the presence of diverse social groups, often describing the space as inclusive and socially vibrant.

Positive social interaction-related semantics emphasised a friendly atmosphere, opportunities for socialising, and suitability for different visitor groups. References to families with children and visitors with pets were common and often associated with perceptions of openness and accessibility.

At the same time, negative references related to social composition primarily concerned overcrowding and noise during peak times. These comments suggest ambivalent evaluations: social diversity is valued but may also generate discomfort under certain conditions.

The emergence of social interaction as a distinct perceptual dimension underscores the importance of social context in visitors' evaluations of public spaces.

#### **4.5 Mental Imagery and Affective Perceptions**

Mental imagery constituted a central affective and symbolic dimension within the semantic structure. Keywords in this category included atmosphere, view, waterfront, air, openness, and emotional descriptors related to mood and feelings.

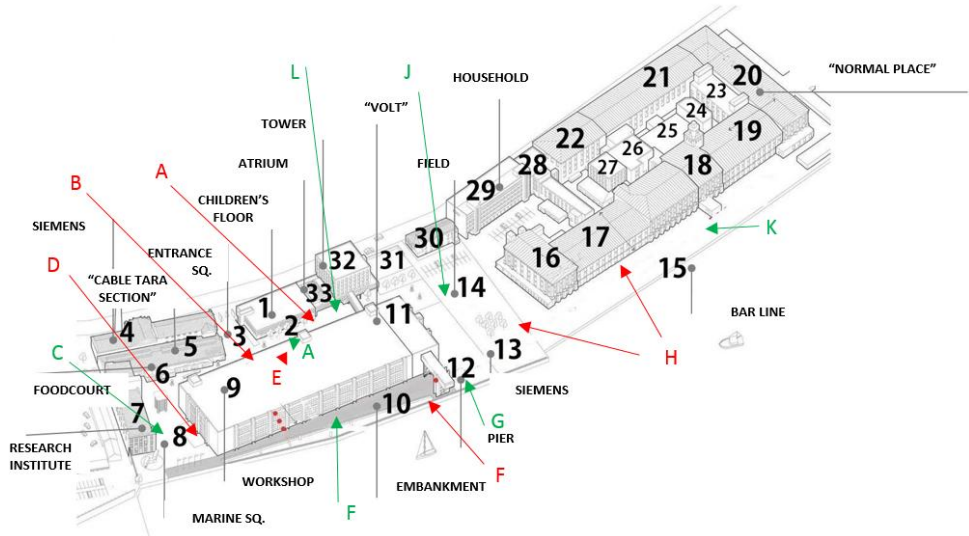
Visitors frequently associated Sevkabel Port with positive emotional states, such as relaxation, inspiration, and enjoyment. The waterfront location was repeatedly referenced as a key contributor to these affective responses, often linked to visual impressions and sensory experiences.

Negative affective references were relatively rare and typically associated with overcrowding or unfavourable weather conditions rather than with the space's intrinsic characteristics. The overall dominance of positive mental imagery indicates that affective and symbolic perceptions play a crucial role in shaping visitor attitudes.

Mental imagery also appeared to function as an integrative dimension, connecting functional evaluations with emotional responses.

These five dimensions were integrated into a holistic mind map model that represents the cognitive and emotional structure of visitors' attitudes toward Sevkabel Port. The mind map of visitor attitudes to Sevkabel Port public spaces based on semantic analysis is presented in Figure 1 and Table 4.

**Figure 1.** Mind Map of Visitor Attitudes to Sevkabel Port Public Spaces based on semantic analysis



Source: Own elaboration based on practical research (2024).

The five identified perception dimensions were integrated into a holistic mind map model that represents the cognitive and affective structure of visitors' attitudes toward Sevkabel Port. Rather than operating independently, the dimensions were interconnected, with multiple semantic units appearing in relation to more than one category.

For example, infrastructure-related references often co-occurred with mental imagery terms, indicating that physical attributes contributed to affective impressions. Similarly, activity-related semantics were frequently linked to social interaction, reflecting the role of events and leisure practices in facilitating social engagement.

The mind map visualisation illustrates these interconnections by positioning the five dimensions as interconnected nodes with sub-elements representing specific semantic units. Positive and negative evaluations are visually differentiated, allowing for a clear representation of perception structure.

**Table 4.** Key characteristics for different areas of public space Sevkabel Port, 2024

№	№ Zone	Public Space Zone	Keywords based on the type of visitor comments	
			Positive	Negative
A	1,2	Children's floor	Market/ fair, exhibition	Ramp, car, price (restaurants)

				queue (at restrooms), Noise, parking (for strollers), restroom (few)
B	3	Entrance Square	-	Ramp, sign / navigation, restroom, parking, transportation / metro / stop (shuttle), animal
C	7	Foodcourt	Restaurant (PioAlPorto), playground (children's, for dogs, Monte-Sori)	-
D	8	Marine Square	-	Child (children's room), pharmacy/first aid parking (expensive, for strollers, bicycles)
E	9	Workshop	-	Stairs, elevator, restroom, doors
F	10	Embankment	Club (dog, bookstore, playroom), playground (for dogs), exhibition, dog, walks (dog areas), activities (for children, dogs, sports), music (live music, guitar work)	Ramp, sign/wayfinding (for toilets), benches, tea bag, store, trash can/ashtray, canopy/roof, stairs
G	12	Pier	Walks (by the sea)	-
H	13, 17	Siemens, Bar line	-	Path, people, trash can/ashtray, benches, ramp, sign/wayfinding, tea bag, pharmacy/first aid, price (restaurants), noise, walk (sup)
J	14	Field	Event/occasion (cultural), music, food, concert, playground ( for dogs)	-
K	15	Bar line	Atmosphere (film festival, like in Spain), view, water/sea, walks, activities for children), music (bar, music by the sea, live music),	-

			food (Leila), event/occasion, club (sports, Mast), restaurant (Ossu, Media Personalities), bar (Mast, Cyber Cobra, Leila, Rhythms, Manneken Pis, Goja)	
L	33	Tower	Child (mother-and-child rooms), club (sports, cinema club), restaurant (Crispy Pizza)	-

In addition to thematic content, visitor responses included references to specific locations within Sevkabel Port. Semantic analysis of place-related keywords revealed a concentration of comments associated with waterfront areas, event spaces, and food zones. These spatial references were incorporated into the mind map using principles of cognitive mapping.

The visualisation draws on Lynch’s concept of cognitive maps to represent how visitors mentally structure and navigate the space. Positive comments are highlighted in green, while negative comments are indicated in red, allowing for a spatially informed interpretation of visitor perceptions.

The resulting map illustrates areas of high experiential value and zones associated with perceived shortcomings, providing a spatial dimension to semantic analysis. The results of the semantic analysis demonstrate that visitor attitudes toward Sevkabel Port are structured around five dominant perception dimensions: infrastructure, activities, accessibility, social interaction, and mental imagery. These dimensions collectively form a coherent cognitive–affective model of public space perception.

The findings are presented visually in Figure 1, which depicts the mind map of visitor attitudes toward Sevkabel Port public spaces based on semantic analysis.

## 5. Discussion

The proposed mind map model demonstrates that isolated factors do not determine visitors' attitudes toward Sevkabel Port; rather, these attitudes emerge from the interaction among functional, social, and symbolic dimensions. The results provide empirical evidence that visitor attitudes toward Sevkabel Port are shaped by the interaction of multiple perception dimensions rather than by isolated attributes:

### 5.1 Holistic Structure of Visitor Attitudes

One of the central findings of the study is that visitor attitudes toward Sevkabel Port emerge from a holistic configuration of functional, social, and symbolic dimensions. The identification of five interconnected perception dimensions (infrastructure,

activities, accessibility, social interaction, and mental imagery) supports the view that visitor evaluations are formed through integrative perception processes rather than linear, attribute-based assessments.

This finding aligns with the experience economy framework, which conceptualises value as arising from multisensory and emotionally charged interactions between individuals and environments. As demonstrated by Stevens et al. (2022), visitor experience in creative urban spaces is not confined to discrete service encounters but develops through continuous engagement with spatial, social, and symbolic elements. The present study extends this perspective by empirically demonstrating how these elements are reflected in visitor discourse and organised into a coherent perception structure.

The prominence of mental imagery as an integrative dimension is particularly noteworthy. While infrastructure and activities constitute necessary functional and experiential conditions, affective impressions related to atmosphere, views, and waterfront proximity appear to play a central role in synthesising visitor evaluations. This supports recent findings suggesting that symbolic and emotional dimensions act as mediators between physical attributes and overall attitude formation in place perception (Zenker & Braun, 2017). From a social science education perspective, this holistic structure aligns with theories of situated and experiential learning, which conceptualise learning as embedded in context, interaction, and meaning-making. Visitor attitudes reflect not only evaluation but also processes of interpretation and informal learning that unfold through engagement with space.

## **5.2 Infrastructure and Accessibility as Enabling Conditions**

The results indicate that infrastructure and accessibility primarily serve as enabling conditions for the visitor experience rather than as direct sources of experiential value. Positive evaluations of physical comfort, amenities, and spatial organisation suggest that visitors perceive these elements as foundational prerequisites for engaging with the space. Negative references related to navigation or congestion, while less frequent, underscore the potential for infrastructural shortcomings to disrupt experiential flow.

This pattern is consistent with service ecosystem perspectives, which emphasise that value co-creation is contingent upon the reliability and usability of supporting infrastructure (Helkkula et al., 2018). In the context of creative urban public spaces, infrastructure does not necessarily generate positive affect on its own but creates the conditions under which experiential and social value can emerge. Accessibility similarly mediates the relationship between spatial design and visitor engagement, influencing who can access the space and how comfortably they can move within it.

For urban planners and policymakers, these findings underscore the importance of evaluating infrastructure not only in technical or economic terms but also in relation

to its impact on experiential continuity and inclusivity. Ensuring accessibility, legibility, and spatial comfort is essential for supporting both social interaction and informal learning processes within public spaces.

### **5.3 Activities and Social Interaction as Drivers of Experiential Value**

Activity-related and social interaction-related semantics emerged as key drivers of experiential value at Sevkabel Port. Visitors frequently emphasised cultural programming, events, gastronomy, and informal leisure practices as central components of their experience. These findings resonate with recent research on creative districts, which emphasises the role of curated and spontaneous activities in generating vibrancy and attracting diverse visitor groups (Richards & Duif, 2022).

Social interaction emerged as a distinct and salient perception dimension, highlighting the role of public spaces as social arenas. Positive references to diversity, inclusivity, and social atmosphere suggest that visitors value opportunities for observation, interaction, and co-presence. At the same time, ambivalent evaluations of overcrowding reveal inherent tensions in popular public spaces between social vibrancy and personal comfort.

This duality reflects broader debates in urban studies regarding the management of successful public spaces. While high visitor density can signal attractiveness and economic success, it may also generate negative externalities that undermine experiential quality. The semantic analysis captures this tension directly through visitor discourse, illustrating the value of qualitative methods for identifying experiential trade-offs. From an educational standpoint, these findings support conceptualisations of public spaces as environments of social learning, where norms, behaviours, and forms of participation are acquired through observation and interaction.

### **5.4 Contribution of Semantic-Mind-Map Modelling**

From a methodological perspective, the study contributes to ongoing discussions regarding the use of semantic analysis in marketing and urban research. While previous studies have employed text analytics to identify sentiment or thematic categories, integrating semantic analysis with mind mapping represents a novel approach to modelling visitor attitudes.

The mind map serves as a visual and conceptual synthesis of visitor-generated meanings, translating dispersed textual data into an interpretable structure. This approach addresses a key limitation of qualitative research, namely, the difficulty of communicating complex findings to both academic and practitioner audiences. By visualising the relationships between perception dimensions, the model enhances analytical transparency and practical relevance.

Moreover, incorporating cognitive mapping principles connects marketing research with urban studies traditions, particularly Lynch's work on mental representations

of space. This interdisciplinary integration strengthens the analytical framework and broadens its applicability across fields concerned with spatial experience and perception. For policymakers and educators, the model offers a diagnostic and reflective tool that can inform planning, evaluation, and place-based learning initiatives. By visualising how visitors organise meaning, the mind map supports more responsive and participant-centred approaches to public space governance and education research.

## 6. Conclusion

This study demonstrates the applicability of semantic analysis combined with mind-mapping techniques as a robust approach for examining how public spaces are perceived, interpreted, and experienced as sites of informal learning. By translating visitor-generated textual data into a structured analytical model, the research shows how everyday discourse can be systematically transformed into a coherent representation of public space perception that captures both cognitive and affective dimensions. Using visitor-generated textual data from Sevkael Port, a regenerated industrial waterfront in Saint Petersburg, the study illustrates how qualitative expressions of experience reflect broader processes of meaning-making in creative urban environments. The findings confirm that visitor attitudes do not arise from isolated spatial attributes but emerge through the interaction of multiple perception dimensions. Five dominant dimensions, namely, infrastructure, activities, accessibility, social interaction, and mental imagery, were identified as constitutive elements of visitor evaluation. Among these, mental imagery played a central integrative role, connecting functional and social perceptions with emotional and symbolic interpretations of space. This underscores the importance of sensory, atmospheric, and affective impressions in shaping how individuals learn from and relate to public environments. From a theoretical perspective, the study contributes to social science education and urban studies by advancing an understanding of public spaces as environments of informal learning and socialisation. The findings demonstrate that experiential meanings are embedded in visitor discourse and emerge through interaction, rather than being reducible to predefined evaluative indicators. By integrating semantic analysis with mind mapping, the research offers a methodological contribution that bridges qualitative depth with analytical structure, responding to calls for more empirically grounded and participant-centred approaches in public space and education research. Methodologically, the study illustrates how visitor-generated text can be operationalised as a source of structured analytical insight without losing contextual richness. The semantic mind-map model enables the simultaneous examination of cognitive, affective, and social dimensions of perception, while principles of cognitive mapping link the approach to established traditions in urban studies and social learning research. This enhances the framework's interdisciplinary relevance and supports its transferability to other contexts. From a practical perspective, the findings hold implications for urban planners, policymakers, educators, and cultural institutions

involved in the design and governance of creative public spaces. The mind map serves as a diagnostic tool to identify which perception dimensions most strongly influence experiences of inclusion, engagement, and comfort. Interventions aimed at improving accessibility, moderating activity intensity, or enhancing spatial atmosphere may have cascading effects on social interaction and informal learning opportunities, supporting more inclusive and responsive public space development. Several limitations point to directions for future research. The study is based on a single case and a cross-sectional dataset, which limits generalisability. Future studies could apply the proposed framework across multiple sites, cultural contexts, or longitudinal designs to examine how perceptions and learning processes evolve over time. Further integration of semantic perception models with behavioural or observational data could also deepen understanding of how meanings translate into patterns of participation and civic engagement. In conclusion, this research demonstrates that combining semantic analysis with mind mapping provides a powerful and transferable framework for understanding visitor attitudes in complex public spaces. By revealing the cognitive, emotional, and social structures underlying visitor discourse, the study contributes to social science education research and supports the development of public spaces as inclusive environments for informal learning, social interaction, and collective meaning-making.

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### References

- [1] Becker, L., Jaakkola, E., & Halinen, A. (2023). Toward a goal-oriented view of customer journeys. *Journal of Service Management*, 34(2), 1–25. <https://doi.org/10.1108/JOSM-11-2019-0329>
- [2] Cao, H., & Kang, C. I. (2024). A citizen participation model for co-creation of public value in a smart city. *Journal of Urban Affairs*, 46(5), 905–924. <https://doi.org/10.1080/07352166.2022.2094799>
- [3] Carmona, M. (2021). Public places, urban spaces: The dimensions of urban design in the COVID-19 pandemic. *Urban Design International*, 26(1), 1–7. <https://doi.org/10.4324/9781315158457>
- [4] Chen, D., Su, W., Wu, P., & Hua, B. (2023). Joint multimodal sentiment analysis based on information relevance. *Information Processing & Management*, 60(2), 103193. <https://doi.org/10.1016/j.ipm.2022.103193>
- [5] Chkoniya, V. (2020). Challenges in decoding consumer behavior with data science. *European Journal of Economics and Business Studies*, 6(3), 77–87. <https://doi.org/10.26417/897ovg79t>
- [6] Fainshtein, E., Chkoniya, V., Fiore, M., & Serova, E. (2024). An innovation potential and organizational performance: An integrative role of company's

- dynamic capabilities. *Agricultural and Food Economics*, 12(1), 41. <https://doi.org/10.1186/s40100-024-00334-6>
- [7] Franza, A., & Pratesi, G. (2024). Learning sciences from the past: Recovery, study, and cataloging of a historical natural history school museum. *Education Sciences*, 14(1), 80. <https://doi.org/10.3390/educsci14010080>
- [8] Gutwill, J. P., Chien, H., Lani, S., Winterheld, H., Miller, L., & Garibay, C. (2022). Creating middle ground: Transforming outdoor informal learning landscapes. *Curator (New York, N.Y.)*, 65(4), 869–886. <https://doi.org/10.1111/cura.12493>
- [9] Helkkula, A., Kowalkowski, C., & Tronvoll, B. (2018). Archetypes of service innovation: implications for value cocreation. *Journal of service research*, 21(3), 284-301.
- [10] Humphreys, A., Wang, R. J.-H., & Wu, X. (2023). Automated text analysis in marketing research: Progress, challenges, and opportunities. *Journal of Marketing*, 87(1), 1–20. <https://doi.org/10.1177/1094670517746776>
- [11] Kavaratzis, M., Giovanardi, M., & Lichrou, M. (2017). Inclusive place branding. *Critical perspectives on theory and practice*. <https://doi.org/10.1057/s41254-018-0108-8>
- [12] Littman, D. M. (2022). Third places, social capital, and a sense of community as mechanisms of adaptive response for young people who experience social marginalisation. *American Journal of Community Psychology*, 69(3–4), 436–450. <https://doi.org/10.1002/ajcp.12531>Digital
- [13] Netzer, O., Feldman, R., Goldenberg, J., & Fresko, M. (2012). Mine your own business: Market-structure surveillance through text mining. *Marketing Science*, 31(3), 521-543.
- [14] Nurriqzi, A. E. F., Mahardiani, L., Probosari, R. M., Indriyanti, N. Y., Hudha, M. N., & Gunawan, K. D. H. (2025). Mapping the architecture of misconceptions: Network analysis and confidence calibration in three-tier diagnostic assessment with implications for targeted instruction. *European Journal of Social Science Education and Research*, 12(4), 285–314. <https://doi.org/10.26417/dwr70028>
- [15] O'Farrell, P., & Liu, H.-L. (Stella). (2020). Gateway to outdoors: Partnership and programming of outdoor education centres in urban areas. *Education Sciences*, 10(11), 340. <https://doi.org/10.3390/educsci10110340>
- [16] Richards, G., & Duif, L. (2022). Small cities with big dreams: Creative placemaking and visitor experience. *Journal of Urban Affairs*, 44(5), 725–742.
- [17] Rinaldi, C., Giovanardi, M., & Lucarelli, A. (2021). Keeping a foot in both camps: Sustainability, city branding and boundary spanners. *Cities*, 115, 103236. <https://doi.org/10.1016/j.cities.2021.103236>
- [18] Salih, S. A., Alzamil, W., Ajlan, A., Azmi, A., & Ismail, S. (2024). Typology of informal learning spaces (ILS) in sustainable academic education: A

- systematic literature review in architecture and urban planning. *Sustainability*, 16(13), 5623. <https://doi.org/10.3390/su16135623>
- [19] Soto-González, M., Huerta, R., & Rodríguez-López, R. (2025). Educational connections: Museums, universities, and schools as places of supplementary learning. *Education Sciences*, 15(5), 543. <https://doi.org/10.3390/educsci15050543>
- [20] Shao, C., & Chung, W. (2024). The impact of park environmental characteristics and visitor perceptions on visitor emotions from a cross-cultural perspective. *Urban Forestry & Urban Greening*, 102, 128575. <https://doi.org/10.1016/j.ufug.2024.128575>
- [21] Symeonidou, A., Fiore, M., Audiello, D., Colantuono, F., & Burnard, P. (2025). Enacting possibility thinking in academic curricula: Fostering higher education students' green skills for a sustainable future. *International Journal of Agricultural Resources, Governance and Ecology*, 20(6), 4–18. <https://doi.org/10.1504/IJARGE.2025.150507>
- [22] Vermeer, S. A., Araujo, T., Bernritter, S. F., & van Noort, G. (2019). Seeing the wood for the trees: How machine learning can help firms in identifying relevant electronic word-of-mouth in social media. *International Journal of Research in Marketing*, 36(3), 492-508. <https://doi.org/10.1016/j.ijresmar.2019.01.010>
- [23] Yu, J., Wen, Y., Jin, J., & Zhang, Y. (2019). Towards a service-dominant platform for public value co-creation in a smart city: Evidence from two metropolitan cities in China. *Technological Forecasting and Social Change*, 142, 168–182. <https://doi.org/10.1016/j.techfore.2018.11.017>
- [24] Zenker, S., & Braun, E. (2017). Questioning a “one size fits all” city brand: Developing a branded house strategy for place brand management. *Journal of Place Management and development*, 10(3), 270-287. <https://doi.org/10.1108/JPMD-04-2016-0018>