






Reframing Walkability Through the Lens of Cultural Industry Infrastructure in Emerging Southeast Asian Cities

Setyo Nugroho¹, Phan Thi Phuong Thao², and Shafira Zulfa Audina¹

¹ Department of Architecture, Institut Teknologi Sepuluh Nopember, Surabaya 60111, Indonesia

² Department of Mechatronics, School of Mechanical Engineering - Hanoi University of Science and Technology, Hanoi, Vietnam

setyo@its.ac.id

Abstract. This study examines the interrelationship between walkability and cultural industry infrastructure in Southeast Asian urban corridors, with a focus on Tunjungan Street in Surabaya, Indonesia, and Trang Tien Street in Hanoi, Vietnam. Both corridors exemplify historically layered environments where heritage, commerce, and creativity coexist within walkable urban forms. Using a comparative qualitative approach, the research integrates urban design qualities and visual observation to assess how perceptual design attributes support cultural industry infrastructure. The findings indicate that high levels of imageability, transparency, human scale, enclosure, and complexity promote pedestrian comfort, visual interest, and social interaction, which in turn support small-scale creative and cultural enterprises. Conversely, the presence of active cultural industries enhances street vitality and extends pedestrian use. The study concludes that walkability and cultural industry infrastructure are mutually reinforcing, forming a spatial and social ecosystem that strengthens the identity and sustainability of creative urban districts in Southeast Asia.

Keywords: Walkability, Cultural Industries, Urban Design Qualities, Surabaya, Hanoi.

1 Introduction

The concept of walkability has gained increasing attention in urban design studies as a key indicator of a livable city [1]. The definition of walkability refers not only to the physical capacity of the built environment to support walking but also to the perceptual qualities of the pedestrians as they engage with their surrounding environment [2]. Theories of urban design qualities [3] suggest that perceptual attributes (imageability, enclosure, human scale, transparency, and complexity) shape how people experience urban space and contribute to their decision to walk. Enhancing those qualities allows users to actualize its capabilities and fulfill people's aspirations [4]. Therefore, walking

becomes more than a mode of mobility; it is a form of embodied urban experience where sensory perceptions, social encounters, and place meanings converge [5].

Along with this, Southeast Asian cities have focused on the cultural industries infrastructure to boost the economy of the city [6]. Cultural industry infrastructure refers to a space that accommodates creative production, cultural expression, and local entrepreneurship. These infrastructures are often embedded within historically rich or socially vibrant neighborhoods in the city center. The emergence of cultural industries infrastructure is not only linked to economic revitalization but also to the enhancement of the urban experience [7]. Urban experience represents the perceptual and emotional dimension in city life, which is linked to how individuals sense, interpret, and interact with the urban environment. For example, when people walk, they perceive architectural rhythm, street performance, and street art, which enrich the urban experience. In Southeast Asian cities, cultural industry infrastructures often cluster within a walkable, mixed-use, and historically rich district [8]. On the other side, cities with a walkable environment tend to foster creative activities and cultural participation, making walkability an essential enabler of vibrant cultural economics.

This interrelationship between walkability and cultural industry infrastructure raises a critical question: how does walkability support the formation of cultural industry infrastructure, and conversely, how does cultural industry infrastructure contribute to enhancing walkable urban environments? While walkability promotes human-scale engagement and interactions [9]; [1], cultural industry infrastructure creates spatial content that makes walking meaningful [10].

This study aims to explore the relationship between walkability and the emergence of cultural industry infrastructure by examining two case street corridors in the cities of Surabaya (Indonesia) and Hanoi (Vietnam). Both cities represent an evolving urban context in Southeast Asia where historical legacies intersect with contemporary urban transformation [11]; [12]. While global cities have widely adopted walkability and creative city frameworks, Surabaya and Hanoi demonstrate distinct socio-spatial patterns that remain underexplored. Understanding the synergy between walkability and cultural industry infrastructure could inform more inclusive and sustainable urban policies, encouraging not only movement but also meaning, creativity, and local identity within the urban fabric. Thus, this research focuses on Tunjungan Street in Surabaya and Trang Tien Street in Hanoi which share similar characteristics as historically significant urban corridors that function as city icons and economic hubs. By analysing the urban design qualities along the streets, this study seeks to examine how the walkability of these corridors relates to the emergence of cultural infrastructure within. Through a comparative lens, Jalan Tunjungan and Trang Tien provide valuable cases for exploring the interdependence between walkable public realms and the development of cultural infrastructure in dense, historically layered urban contexts.

2 Literature Review

2.1 Urban Design Qualities and Walkability

Ewing and Clemente [13] propose a framework to understand how the built environment influences walking behavior and pedestrian perception, which is called urban design qualities (UDQs). Detailed definition and each key elements of the UDQs aspect are summarized in Table 1. These qualities not only shape the physical attractiveness of streets but also influence people's sense of safety, orientation, and emotional attachment while walking.

Table 1. UDQs: Detailed Definition and Key Elements

UDQs (Perceptual Dimension)	Detailed Definition and Key Elements
Imageability	Refers to the distinct visual element of a place that makes it memorable. It is often defined by historical landmarks, prominent elements by scale, proportion, and unique architectural style.
Enclosure	Describes the degree to which streets and open spaces are defined or framed. This framing is achieved by vertical elements (buildings, walls, trees, etc.) and horizontal elements (roof, branches of trees, sky, etc.).
Human Scale	Relates to the physical element in relation to human size, proportion, and visual detail. These elements correspond to human walking speed.
Transparency	Concerns the visual connection between public and private realms. It is often determined by windows, proportion of sky, arrangement of street furniture, and active uses.
Complexity	Captures the richness and diversity of visual and functional elements. These elements contribute to sensory engagement in the urban setting (buildings, streets, street furniture, and human activities).

Source: adapted from Ewing and Clemente [13]; Nugroho and Zhang [9].

The broader concept of *walkability* encompasses these perceptual dimensions alongside functional and morphological characteristics such as connectivity, density, and land-use mix. While traditional walkability measures often focus on physical indicators (sidewalk width, intersection density, or proximity to amenities), recent research has emphasized the perceptual experience of walking as a determinant of urban livability [3]; [9]. Walkability thus represents both the physical capacity of an environment to support pedestrian movement and the qualitative experience that encourages people to walk, linger, and interact. Studies show that when perceptual qualities are strong, walking transforms from a utilitarian act into a meaningful urban experience [14].

In the Southeast Asian context, several recent studies have applied the urban design qualities framework to understand pedestrian experience and cultural identity. A study conducted in Surabaya, Nugroho and Zhang [9] explored young people's walking experience and found that historical architecture, human-scale environments, and social interactions along heritage corridors significantly enhanced a sense of place. The study

finds that participants respond most to human scale and enclosure qualities. It means that unique physical element corresponding to human walking speed and sense of shading are crucial for walkable environment. While in Hanoi, comparable research has assessed UDQs across different urban typologies [15]. Finding suggest that areas with historical buildings, outdoor activities, and public open space score higher in perceptual quality and respondents' satisfaction. Hanoi's old quarters and cultural corridors exhibit strong imageability and complexity through vibrant cultural and economic activities, street vending, and dense urban fabrics, which support walkable environment.

The reviewed literature highlights two research gaps. First, both Surabaya and Hanoi have been studied separately in relation to walkability and cultural identity, few studies have explicitly examined the spatial and perceptual relationship between walkability and cultural industry infrastructure. Second, comparative research across Southeast Asia cities in seeing the relation between walkability and cultural industry infrastructure remains scarce, despite their shared colonial legacies, compact morphologies, and emerging creative economies.

2.2 The Growth of Cultural Industry Infrastructure

The rise of cultural industry infrastructure in Southeast Asia reflects a multifaceted transformation, including an economic shift toward creative economies [16] and an urban regeneration strategy [17]. On one hand, governments have established formal creative zones or districts, for example Bangkok's Creative District or Yogyakarta's Malioboro corridor, to centralize creative and cultural activity, attract tourism, and formalize the creative economy [18]; [19]. On the other hand, informal and personal or community-driven initiatives have grown organically as artists and entrepreneurs who utilize existing urban space for cultural use. This dual mechanism shows how Southeast Asia's creative urbanism is both policy-enabled and culturally embedded (rooted in local practices).

The physical form of cultural industry infrastructure in Southeast Asia tends to cluster in compact, walkable, and historically layered urban environments, which are mostly found in the city center. Within the city center, historic shophouses, traditional markets, and compact street networks create a fine-grained urban structure that supports entrepreneurship, social interaction, and the transformation of built heritage for contemporary uses [20]. Studies have shown that such urban settings promote creative clustering because they provide affordable space, visibility, and accessibility for both producers and consumers [21]. For example, in Yogyakarta's Malioboro corridor, cultural industry infrastructure manifests as an integrated network of heritage buildings, public spaces, creative enterprises, and pedestrian movements [19]. Preserved colonial shophouses and heritage arcades accommodate a wide range of creative functions (art galleries, souvenir stores, batik workshops). Public spaces function as venues for street musicians and sellers, and pedestrianization policy has enhanced walkability and increased visibility. The spatial infrastructure of Yogyakarta's Malioboro corridor shows how cultural industry infrastructure is embedded in the urban fabric. In this sense, walkability facilitates pedestrian movement, social interaction, and sensory experiences, which increase both demand for and the visibility of cultural production. While in Bangkok's Creative District, along Charoen Krung Road, illustrates the collaboration between the hybrid of policy-led community-driven initiatives. The district turns

shophouses and colonial warehouses into art galleries, cafés, and co-working hubs, linking spatial design with cultural vitality [18].

The growth of cultural industry infrastructure in Southeast Asia, Yogyakarta and Bangkok case; demonstrates an integration of policy initiatives on culture, strategies for conserving heritage, and approaches to creating walkable urban environments [22]. This street-based cultural corridor activates the vibrancy of the city, which sustains both economic activity and urban experience. The cases of Yogyakarta and Bangkok are essential before analyzing how particular streets in Surabaya and Hanoi demonstrate the interplay between perceptual qualities and the presence of cultural industry infrastructure.

3 Methods

3.1 Site Study

This study adopts a comparative qualitative approach by employing two different city corridors in two countries as case studies: Tunjungan Street in Surabaya and Trang Tien Street corridor in Hanoi. Fig. 1 shows the street morphology between Trảng Tiễn Street in Hanoi and Tunjungan Street in Surabaya. Trảng Tiễn Street is characterized by a compact and grid network radiating from Hanoi Opera House as key landmark. High connectivity and narrow block patterns reflect the colonial urban fabric, supporting dense built environment and mixed-use street life. Meanwhile, Tunjungan Street exhibits a linear street network but irregular inside representing the urban village. The blocks and building lots in Tunjungan are smaller, while the street maintains a high level of continuous frontage activity with preserved heritage buildings. Both street corridors exemplify Southeast Asian urbanism where heritage, commerce, and creativity intersect within a walkable environment [23].



Fig. 1. Site location and morphology

Tunjungan Street, located in the heart of Surabaya, is one of the city's most historic and iconic urban corridors. Stretching approximately 700 meters, it has served as a commercial and cultural spine since the early 20th century. The corridor is lined with colonial-era buildings, including the Hotel Majapahit, the Siola Building, and several shophouses that reflect a blend of Dutch colonial and modern architectural styles linked with emerging retail, culinary, and cultural enterprises [24]. Designated as part of Surabaya's heritage conservation zone, Tunjungan has undergone revitalization projects emphasizing pedestrian comfort, façade restoration, and the activation of ground-floor uses. It positions the street as a developing cultural industry corridor that mixes historical character with contemporary creative economies [25]. In the present context, the street accommodates mixed functions, including retail, hospitality, offices, cafés, and public events such as the Tunjungan Flower Festival and the weekly Car-Free Day.

Similarly, Hanoi's Trang Tien Street corridor shows the culturally vibrant thoroughfare that captures both colonial legacy and modern dynamism in the heart of the French Quarter. Shaped by long historical development, Vietnamese cultural heritage embodies concentrated cultural values, and many heritage assets have already received recognition from global to local levels [26]. Historical landmarks, mixed-use buildings and shophouses, and high pedestrian intensity characterize the 710-meter long Trang Tien street corridor. Architecturally, Trang Tien is distinguished by landmarks such as the neoclassical Hanoi Opera House, the Vietnam National Museum of History, and the modern-heritage Trang Tien Plaza. Over time, it has evolved into a hub for shopping, cafés, cultural institutions, festivals (such as Lunar New Year, Mid-Autumn Festival), and pedestrian-friendly events. The street's mix of luxury boutiques, local crafts, performance venues, and public festivals makes it more than a commercial corridor.

3.2 Data Collection and Analysis

To capture the perceptual walkability (UDQs) and cultural industry infrastructure, the study employs two layers of data sources: spatial and visual data. Spatial data is extracted from Google Maps, OpenStreetMap, aiming to identify land use, building footprints, street networks (Fig. 1.), and the spatial distribution of cultural industry infrastructure (art galleries, café, cultural centers, creative space, souvenir shops, cultural activities, etc.). Visual data is obtained from site observation and Google Street View (GSV), as seen in Fig. 2. to assess UDQs along the selected street segments. The use of digital spaces and data can enrich pedestrian experiences both directly (by supporting cultural activities at heritage sites) and indirectly (through digital representations of the heritage) [27].

Data from GSV, especially the visual data, are then analyzed using the five operational definitions of UDQs (imageability, enclosure, human scale, transparency, and complexity) [13]. For example, imageability identifies the historical landmarks, attractive non-rectangular buildings, buildings with identifiers, etc.). Enclosure captures the availability of horizontal-vertical elements in providing the sense of shading (are there any trees or arcades that provide shading for pedestrians?). Human scale is measured by the proportion of windows at street level, average building height, small planters, street furniture, and visual detail corresponding to human walking speed. While transparency explores the presence of street walls, the active uses of buildings. Complexity focuses on identifying the visual richness of physical buildings, pedestrian movements,

and activities (outdoor dining, street arts and performance, building’s color, etc.). The data are synthesized through qualitative analysis and cross-comparison, revealing how perceptual qualities of walkable environments enable the emergence and sustainability of cultural industry infrastructure (see Table 2).

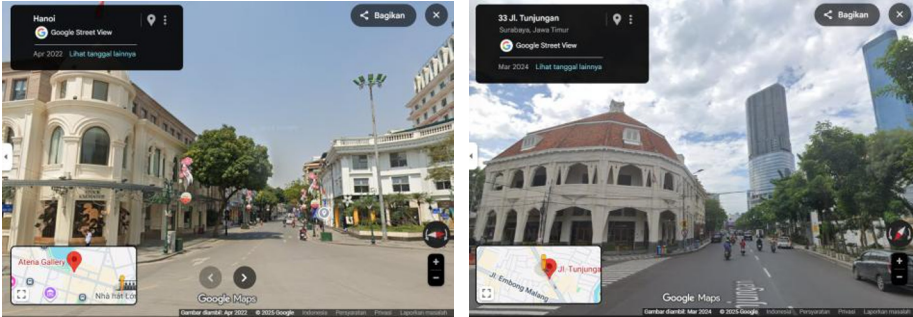


Fig. 2. GSV data for Trang Tien (left) and Tunjungan street (right)

Table 2. Method for Assessing Each UDQ Dimension and Specific Role in Supporting CII

Urban Design Qualities	Operational Definition (Source Examples)	Support Role for Cultural Industry Infrastructure (CII)
Imageability	Distinct visual elements, often historical landmarks (Hanoi Opera House, Siola Building, Hotel Majapahit).	Strengthens CII by developing memorable places embedded by distinctive landmarks that attract visitors and creative activities.
Enclosure	Streets framed by vertical/horizontal elements (trees, projecting architectural elements, arcades, roofs).	Creates a meaningful place protected from physiological obstacles (sun and rain) in tropical climates. Enhances pedestrian comfort and safety.
Human Scale	Physical elements corresponding to human size/walking speed (low-rise buildings, detailed façades, street furniture).	Enhances comfort and interaction, allowing pedestrians to connect closely with street-level cultural spaces (shops, cafés, galleries).
Transparency	Visual connection between public and private realms (windows, glass façades, active ground-floor uses).	Supports visual connection between interior and public realms, inviting curiosity. Cultural industries depend heavily on this for visibility.
Complexity	Richness and diversity of visual/functional elements (mixed land uses, colors, signage, pedestrian activities, street events).	Stimulates sensory engagement. Cultural events (Car-Free Day, walking street program) transform the street, enabling street vendors and performances to flourish.

4 Result and Discussion

4.1 Urban Design Qualities: Tunjungan Street

The findings from Tunjungan Street indicate that the corridor demonstrates a high level of imageability, primarily influenced by the presence of numerous preserved heritage buildings that reflect its designation as a protected cultural area. Among these structures, three corner buildings (the Seiko Building, Locaahands Building, and Siola Building, see Fig. 3.) serve as visual anchors, enhancing the street's legibility and spatial orientation. In addition, the Hotel Majapahit, a nationally recognized heritage landmark, holds a particularly prominent role as a symbol of Surabaya's heroic identity, reinforcing both historical memory and urban character. Other heritage buildings, though less monumental, act as supporting visual elements that collectively contribute to the corridor's coherence and cultural depth. The architectural expressions along Tunjungan represent a harmonious combination of colonial and modern styles, which strengthens the overall imageability and establishes the street as a memorable cultural corridor within the city's urban fabric. These features align with Ewing and Clemente's [28] conceptualization of imageability as the extent to which a place leaves a distinct and lasting visual impression.



Fig. 3. Key landmarks in Trang Tien (top) and Tunjungan Street (bottom)

Transparency in both corridors is expressed through the presence of windows, openings, and material articulation along building façades. Transparent shopfronts with large glass display and active ground-floor uses (such as the gallery displays in the Siola Building and the street cafés along Tunjungan Street) encourage continuous visual interaction between interior and exterior spaces, reinforcing social vibrancy and providing natural surveillance (see Fig. 4.) [15]. The sense of enclosure along Tunjungan is

moderate, defined by two-to three-story heritage buildings and shaded canopies created by street trees and projecting architectural elements. This configuration creates a semi-enclosed pedestrian realm that balances openness and protection, offering visual orientation and enhancing pedestrians' sense of comfort and safety (see Fig. 4.). Meanwhile, the human scale is well supported by low-rise building heights, detailed façades, and pedestrian furnishings such as benches and lighting poles, which together make the environment visually and physically accessible (see Fig. 4.). Although several high-rise structures appear along the corridor, such as the Hotel Platinum (22 floors) and the Hotel DoubleTree (23 floors), these buildings maintain setbacks that preserve the human-scale podium level.



Fig. 4. UDQs in Trang Tien (top) and Tunjungan street (bottom)

The complexity of the corridor (arising from its mixed land uses, diversity of colors and architectural styles, material variations, and dynamic pedestrian activities) creates continuous visual stimulation and encourages prolonged walking behavior. Thus, the mixed-use of the street can create a sense of place [29]. Tunjungan Street functions as one of Surabaya's key cultural corridors, hosting annual events such as the Flower Festival, the Historical Flag-Ripping Theatrical Performance, and the weekly Car-Free Day [30]. These recurring cultural activities enhance the street's sensory richness and reinforce its identity as a civic and cultural destination. During the evening and nighttime, the corridor becomes even more animated as pedestrian movement intensifies along the sidewalks, supported by outdoor dining areas and street performances. This combination of physical diversity and social activity exemplifies Ewing and Clemente's [28] notion of complexity as a driver of visual interest and urban liveliness, making Tunjungan a vibrant and engaging pedestrian environment.



Fig. 5. Walking street as a complexity quality day and night

4.2 Urban Design Qualities: Tràng Tiền Street

Tràng Tiền Street is characterized by large building plots, where prominent structures act as visual anchors and landmarks (for example, Hanoi Opera House, which is located in the prominent junctions) that enhance street imageability. Tràng Tiền Street has numerous intersections that generate multiple corner buildings that contribute to the spatial legibility [1]. Significant architectural landmarks along the street include the Vietnam National Museum of History, Hanoi Opera House, Hanoi Stock Exchange, and Tràng Tiền Plaza (see Fig. 3.). The building expression reflects a fusion of French neoclassical and modern influences. The most recognizable feature of this neoclassical architectural style includes the mansard roofs, horizontal wall ornaments, semi-circular gables, and pilasters. Transparency is primarily shaped by the windows, shop entrances, and glass façades, particularly at the ground level of buildings. It allows continuous visual interaction between pedestrians, buildings, and interior activities.

The sense of enclosure on Tràng Tiền is composed of a combination of arcades and overhanging roofs, which provide shade and spatial continuity along the sidewalks. In the eastern part, close to the Vietnam National Museum of History, the enclosure is formed by street trees. In terms of human scale, Tràng Tiền Street presents a more intimate spatial proportion compared to Tunjungan Street due to its narrower street spatial scale. In Tràng Tiền Street, the average building height is three to four-story buildings with a 6-meter street width. While in Tunjungan Street, the average building height is two to three-story buildings with an 8-meter street width. These moderate heights create a balanced and engaging pedestrian environment that enhances both comfort and visual experience.

The complexity of Tràng Tiền Street is demonstrated by the combination of street furniture, mixed land uses, and pedestrian activities. The street corridor accommodates a wide range of functions (hotels, cafés, retail shops, cinemas, and museums), which

collectively generate continuous visual stimulation and social interaction. Similar to Tunjungan Street in Surabaya, Tràng Tiền Street serves as an active cultural street corridor where public life extends beyond commerce into celebration and cultural expression. The street hosts a series of annual events such as the Tết Festival (Lunar New Year), the Mid-Autumn Festival, the Hanoi International Film Festival, and the weekend walking street program (see Fig. 5.), all of which transform the space to move to place to be [1]. The recurring events not only enrich the sensory experience of pedestrians but also strengthen the corridor's identity as a cultural hub within the city center of Hanoi. Both corridors illustrate how functional and experiential diversity enhances sustained pedestrian presence by linking walkability and cultural vitality in Southeast Asian contexts.

Through a detailed comparison of the two street corridors, it can be concluded that the UDQs, namely imageability, transparency, enclosure, human scale, and complexity that found along Jalan Tunjungan and Trang Tien exhibit comparable characteristics. Both corridors project an image of historic streetscapes marked by colonial-era buildings, although Trang Tien contains a greater number of corner buildings. Transparency in both corridors is expressed through the use of windows, openings, and visually permeable façade materials, while enclosure is articulated through arcades and canopies that shelter pedestrian pathways. Both streets also provide a human scale with a high level of complexity, resulting from mixed land uses and intensive pedestrian activity. Collectively, these UDQs shape the perceptual qualities of walkable environments along Jalan Tunjungan in Surabaya (Indonesia) and Trang Tien in Hanoi (Vietnam).

4.3 Walkability and Cultural Industry Infrastructure

Perceptual walkability captures how the visual and spatial qualities of streets shape people's comfort, attention, and engagement with their surroundings [28]; [31]. Both Tunjungan Street in Surabaya and Tràng Tiền Street in Hanoi exemplify environments where visual stimulation, spatial coherence, and human-scale details encourage people to linger, observe, and interact. Historical landmarks, such as the Siola Building, Hotel Majapahit, and Locaahands in Tunjungan; and Hanoi Opera House in Hanoi; together with street-level activities from shops and cafés, create the experiential foundation upon which cultural and creative activities can flourish. This finding aligns with previous research showing that urban environments can evolve from a mere space to move (focused on circulation and accessibility) into a place to be; a meaningful setting enriched by cultural encounters [1]. The transformation from space to place often involves pedestrianization projects, physical revitalization, and community participation among local residents [32]. While it is undeniable that the first step toward creating a walkable neighborhood is providing adequate pedestrian infrastructure, increasing people's willingness to walk also requires attention to perceptual qualities [9], one of which can be effectively fostered through active cultural industry infrastructures and street-based creative activities.

The cultural industry infrastructure on Tunjungan Street includes adaptive reuse of heritage buildings, local shops, cafés, and performance zones. While in Tràng Tiền streets, the cultural industry infrastructure encompasses art galleries, cinemas, the adaptive reuse of heritage buildings, local craft shops, and performance zones. These infrastructures depend heavily on visibility, accessibility, and street-level engagement to

function effectively [2]. For example, all buildings at the street-level in Tunjungan have an active frontage façade (transparent open windows and outdoor display) so that pedestrians can connect with the street environment and communicate with the producers (here, the owner of the shops, café, or galleries). The communication and interaction between producers and audiences (pedestrians, users, or prospective customers) create a vibrant walkable environment, transforming ordinary streets into platforms of cultural exchange. In these findings, walkability is not only a mobility but also a spatial generator of creative urban economies.



Fig. 6. Street vendors in Trang Tien (right) and Tunjungan street (left)

The study shows that five urban design qualities (UDQs) identified by previous studies [28]; [15]; [9] are particularly relevant to the cultural industry: transparency, complexity, and enclosure. Transparency supports visual connections between the interior and public realm, inviting people to feel a sense of curiosity. Both Tunjungan and Trảng Tiễn streets have active shopfronts, so that pedestrians can see what lies beyond the façade (see Fig. 4.). Complexity is demonstrated through the variation of building type and style, color, signage, activities along the sidewalk, stimulating sensory engagement, and reflecting the discrepancy of cultural economies. One of the street events in both corridors, which is held weekly, is the weekend walking street in Trảng Tiễn street and Car-free day in Tunjungan Street. Both aim to close off the street from motorized vehicles and create a sense of community. During this event, street vendors and performance flourish (see Fig. 6.). While the enclosure is shaped by the vegetation, overhang roof structure, street arcade, and street furniture. The enclosure is significant to create a meaningful place protected from physiology (sun and rain) and psychological obstacles (privacy, territory). Since both case studies are located in the tropical climate country, a sense of shading is essential [9]. Imageability strengthens cultural industry infrastructure by developing memorable places embedded by distinctive landmarks (Locaahands, Siola Building, Hotel Majapahit) and heritage buildings that attract visitors and creative activities. The last urban design qualities, human scale enhances comfort and interaction between pedestrians and the surrounding environment, allowing pedestrians to connect closely with street-level cultural spaces such as shops, cafés, galleries (both Tunjungan and Trang Tien Street), supporting vibrant, people-centered creative environments.

Table 3. Conceptual Framework of the Mutually Reinforcing Relationship

Direction 1: UDQs → CII	Direction 2: CII → UDQs
Provides: The physical and spatial setting (condition) for CII growth.	Enriches: The urban experience through visual stimuli, color, texture, and movement.
Promotes: Pedestrian comfort, visual interest, and social interaction.	Enhances: Street vitality and complexity.
Human Scale Increases: Visibility and accessibility for small-scale creative and cultural enterprises.	Encourages: Longer pedestrian engagement and builds emotional attachment.

As it illustrates in Table 3, the relationship between perceptual qualities and cultural industry infrastructure is reciprocal and mutually reinforcing in creating a dynamic and meaningful urban experience, which is aligned with [7] study. Walkable streets enhance the visibility and accessibility of cultural and creative space, while active cultural industry infrastructure enriches the urban experience through visual stimuli, which influence the walking behavior. The presence of cultural industry infrastructure adds complexity and identity to the streets as well as encourage longer pedestrian engagement to build emotional attachment. Hence, walkability becomes both a condition (providing the spatial and physical setting) and a product of cultural vitality (enhanced by cultural vitality). Walkability and cultural industry infrastructure create a feedback loop contributing to sustainable urban regeneration in Southeast Asian cities.

5 Conclusion

This study concludes that walkability and cultural industry infrastructure are mutually reinforcing systems that together shape the vibrancy and sustainability of Southeast Asian urban corridors. The analysis of Tunjungan Street in Surabaya and Tràng Tiền Street in Hanoi demonstrates that perceptual qualities of walkable environments play a central role in enabling cultural and creative activities within similar characteristics. The study concludes that five UDQs are particularly relevant to the cultural industry. Furthermore, walkable streets provide not only physical accessibility but also sensory engagement and social visibility, allowing creative enterprises, adaptive reuse buildings, and cultural landmarks to thrive. Conversely, the presence of active cultural industries enhances the perceptual richness of the urban environment, generating color, texture, and movement that further attract pedestrians. These findings highlight that the cultural industry infrastructure in cities such as Surabaya and Hanoi grows from fine-grained, human-scaled environments embedded in historical districts and everyday street life. The condition where heritage, commerce, and creativity coexist visualizes a uniquely Southeast Asian approach to establishing urban sustainability.

However, this study is limited to the complete observer approach in which the researcher remained entirely external to the situation and had no direct interaction with the research subjects. Accordingly, future research is recommended to engage participants directly in the observational process, allowing their perceptual dimensions, particularly regarding the relationship between Urban Design Qualities (UDQs) and the Cultural Industry Infrastructure (CII), to be more comprehensively assessed and to yield a richer understanding of the interplay between the two aspects.

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