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Reviving the past: urban strategies for renovating historic commercial streets in city centers

Amera S. Shehab El-Deen[1*], Ahmed H. Aboulsaadat[1] and Walaa A. Nour[1]

*Correspondence:
amera_shehabeldin@f-eng.tanta.edu.eg

[1] Architectural Engineering Department, Faculty of Engineering, Tanta University, Tanta, Egypt

Abstract

Historical city centers are one of the reasons that give cities their identity, memory, and sense of belonging. The commercial areas within these centers are particularly important, as they contribute significantly to the vitality of the urban environment. However, due to rapid developments in recent times, many of these historic commercial streets have lost their significance and fallen victim to informal usage, resulting in the erosion of their historic identity. Consequently, it becomes imperative to renovate these historic commercial streets to preserve the community's identity. The proposed methodology aims to foster local culture by revitalizing these streets and emphasizing the principles and criteria of heritage preservation that not only preserve the community's identity but also serve as vibrant and inclusive spaces for residents and visitors alike to fulfill the concept of vitality and livability. In this context, the focus is on protecting historical areas and ensuring their ongoing relevance and benefits, extending not only to street users but also to the entire community. To achieve this, a series of steps are suggested for the renovation of historic commercial streets within city centers, accompanied by a reliable set of criteria that preserve their visual identity rooted in history. To demonstrate the application of these criteria, a case study was conducted for the proposed renovation of Mahmud Al-Banna Street, a historic commercial street in downtown Tanta, Egypt. The objective of the study was to develop strategies that would effectively address various aspects, including urban, visual, environmental, and economic issues. As a result, the research concluded that the proposed regeneration strategies, if implemented, could enhance the vitality and livability of the historic commercial districts for other urban environments.

Keywords: Historical city centers, Historic commercial streets, Heritage preservation, Urban strategies, Community identity

Introduction

Historic city centers have a crucial role in safeguarding the historical and cultural heritage of their respective regions. Apart from preserving the physical urban landscape, it is equally important to take into account the social, economic, and environmental aspects that impact the local community [22]. One of the most significant characteristics

of historical city centers are the commercial areas, placing them at the top of the list of areas in need of proper policies to solve their issues and survive for future generations [29]. Therefore, renovation works are necessary to sustain their continuity, and policy-makers should pay attention to the unique needs of each community to ensure that the revitalization process is effective and benefits the local population.

According to Whyte, W. H. [42], The commercial street is the city's stream of life, where we meet, the pathway to the heart. So, commercial streets, in particular, are vital areas that require renovation work. In order to fulfill this renovation, some work must be carried out, such as protecting the commercial areas and their streets, creating pedestrian spaces, promoting ecological sustainability, regulating traffic intensity, and addressing social and psychological needs [7]. In the past, specifically during the late 17th and early eighteenth centuries, these streets have been a gathering place for commerce, social interaction, and entertainment. However, with the rise of the industrial revolution which started from the mid eighteenth century, the focus shifted towards developing roadways to accommodate the growing population and number of cars [20]. Nowadays in the twenty-first century, the world is moving towards lively streets that provide for fundamental requirements like food and safety but also aesthetic appeal, cultural impressions, and a sense of place, luring people in and enhancing the quality of life in public areas [12, 32].

As mentioned above, historic commercial areas reflect the economic and social aspects of a city and serve as a means of access and communication between them. In addition, trading blocks play a crucial role in attracting visitors and stimulating economic activity in these areas. One key aspect that needs to be highlighted is the concept of vitality and livability. So, the study relies on visual perception as it is a vital factor in enhancing the economic and social life of public spaces in the current economic experience [43]. But, it is not enough to merely restore the physical structures; equal attention must be given to creating vibrant and engaging spaces that attract people and promote social interaction.

The aim of this research is to develop strategies and recommendations for the renovation and revitalization of historic commercial areas within city centers. The focus is on preserving the historical and cultural heritage while also considering the social, economic, and environmental aspects that impact the local community. By emphasizing vitality and livability, the research aims to provide guidance for policymakers and urban planners to ensure effective and beneficial revitalization processes that meet the unique needs of each community.

Research methodology

The aim of the research was to formulate approaches that could appropriately tackle a range of factors, encompassing urban, visual, environmental, and economic concerns. So that, the research adopts a deductive approach, employing a systematic process to establish a set of criteria that can be used to assess the feasibility of renovating historical commercial streets, while preserving their historical value and distinctive urban character. The methodology consists of the following key components:

(a) Literature review: a review of some relevant literature is conducted to explore theories, concepts, and best practices related to the renovation and revitalization of his-

toric commercial streets. This review serves as the foundation for developing the criteria and strategies.

(b) Framework development: based on the insights gained from the literature review, a conceptual framework is developed to guide the assessment and transformation of historical commercial streets. This framework incorporates elements such as urban design principles and heritage preservation guidelines.

(c) Case study: a case study is conducted on Mahmud Al-Banna Street in downtown Tanta, Egypt, to demonstrate the practical application and effectiveness of the proposed regeneration strategies. The selection of the case study is based on its historical significance, the presence of urban challenges, and the potential for revitalization. The justification for selecting this case study is provided, taking into account factors such as the street's architectural heritage, economic potential, and the willingness of local stakeholders to participate in the research.

Literature review

Historical city centers

According to the International Council on Monuments and Sites (ICOMOS), historical city centers are all those existing human settlements that have been strongly influenced by a physical structure from the past and may be identified as a collection that depicts the progression of a people. Consequently, they should include both types of settlements: (a) those that develop from villages to cities intact, and (b) those that have grown to become part of a bigger framework. Because of their monumental heritage, historical city centers have obvious cultural value as well as economic and social importance [19, 38].

Historical city centers, also known as "basic paths focus," are not only important because of their cultural and historical significance, but also because they are the starting and ending points for numerous and diverse motions in a city. The social, cultural, commercial, and recreational activities of the city's residents, as well as the materialistic and intellectual interaction of people, take place in the city center [1]. Therefore, cities' historic centers play an important role in affirming the cultural and historical measurements of these areas where the roots of the city take shape, as well as the clarity of thought and the form of the urban fabric and their impact on the socioeconomic, cultural, and economic structure of communities. In addition, historical city centers play a significant role in fostering community identity and pride. They are often closely tied to the community's collective memory and serve as a symbol of shared heritage and values. The preservation and revitalization of these centers can help to foster a sense of belonging and ownership among residents, leading to increased community engagement and participation in local activities [31].

The aforementioned may sum up the characteristics of the most significant elements of historical city centers, where the original urban structure reveals the importance of the center in terms of architecture through its distinctive architectural traits. It also illustrates the clarity of thought that went into the design of the urban fabric and the facets of life reflected in its planning, streets, and structures [11, 15].

Commercial streets

Commercial streets are widely utilized urban areas for people to interact with each other and participate in public life [4]. According to [29], commercial streets are one of the most important elements of urban heritage, with several values, including history, architecture, economy, and society. Commercial streets often reflect the city's history and cultural identity, and their architecture and design serve as a testament to the city's past. In recent years, there has been a growing focus on the sustainable development and regeneration of historic commercial streets. Studies have focused on the sustainable renewal of the economy, society, culture, and environment, recognizing the importance of preserving the historical and cultural significance of these streets while also ensuring their relevance and vitality in the modern world [8, 40, 45].

So, the preservation and renovation of commercial streets are crucial for maintaining their historical and cultural significance and protecting the city's heritage. This requires careful planning and management to balance the preservation of historical buildings and structures with the need for renovation and adaptation to contemporary needs. Renovation involves updating infrastructure to meet current standards and trends, while contemporary needs encompass changing demographics, economic conditions, technological advances, sustainability practices, and urban design principles. Balancing these two ensures commercial streets remain relevant and responsive to societal demands, preserving heritage while ensuring the longevity and vibrancy of the street for future generations. The protection of historical streets is also essential for maintaining the city's unique identity and character and promoting cultural tourism.

Types of historic commercial streets in city centers

Historic commercial streets in city centers can have distinct shapes and features. Each type has its own identity and personality [46], the following are a few typical varieties of these streets:

- Historic district streets: In areas designated as historic districts, the entire street or a section of it may be preserved and restored to maintain its historical character. These streets often feature well-preserved architecture, facades, and a concentration of heritage buildings converted into shops, galleries, or museums [21]. As an illustration, Beacon Hill, Boston, MA, USA is a historic district known for its preserved 19th-century architecture, cobblestone streets, and red-brick townhouses, which now house boutique shops, art galleries, and cafes.
- Historic high streets: These streets have a long history of commercial activity, often lined with historic buildings that have housed shops and businesses for generations. They may feature a mix of traditional and modern storefronts, creating a blend of old-world charm and contemporary commerce [6]. For example, this type of street is the Shambles in York, England, a historic high street with timber-framed buildings dating back to the fourteenth century. It is famous for its narrow, winding lanes, overhanging facades, and a mix of traditional shops and modern boutiques.
- Pedestrian streets: These streets are designated for pedestrian use only, with limited or no vehicular traffic. They are often lined with shops, cafes, and restaurants, creat-

ing a vibrant and pedestrian-friendly commercial environment [30]. One example of this kind of street is Strøget, Copenhagen, Denmark, a renowned pedestrian street known for its vibrant shopping scene. It spans several blocks and features a mix of high-end brands, local shops, cafes, street performers, and outdoor seating areas.

- Arcade streets: Arcade streets feature covered walkways or arcades, providing shelter and shade for pedestrians as they explore the shops and boutiques along the street. The arcades may have decorative elements and architectural features that add to the street's charm and character [18]. Galleria Vittorio Emanuele II, Milan, Italy: This iconic arcade street is a stunning example of 19th-century architecture. It features a glass-vaulted ceiling, intricate mosaics, and high-end shops, restaurants, and cafes.
- Market streets: These streets are known for their bustling markets and vibrant trade activities. They are characterized by an array of stalls, shops, and vendors selling a wide range of goods, including fresh produce, textiles, handicrafts, and more [23]. As an illustration, Grand Bazaar, Istanbul, Turkey, is one of the oldest and largest covered markets in the world. It offers a labyrinth of shops selling spices, textiles, jewelry, ceramics, and more, providing a vibrant and bustling market experience.
- Boulevard streets: Boulevard streets are wide and spacious, designed to accommodate both vehicular traffic and pedestrian activity. They often have a central promenade or median, with trees, benches, and open spaces, making them attractive for shopping, strolling, and socializing [5]. Champs-Élysées, Paris, France is a famous boulevard known for its wide sidewalks, tree-lined promenade, luxury boutiques, cafes, theaters, and iconic landmarks like the Arc de Triomphe.
- Waterfront or harbor streets: These streets are located along waterfront areas or harbor fronts, offering commercial activities such as seafood restaurants, souvenir shops, and boat tours. They provide a unique atmosphere with scenic views and a connection to maritime heritage [13]. For example, the Rocks, Sydney, Australia, is a historic district located along the Sydney Harbour waterfront. It features cobbled streets, heritage buildings converted into shops and restaurants, and offers stunning views of the Sydney Opera House and Harbour Bridge.

These examples showcase the diverse characteristics and unique qualities of each type of street, highlighting the rich heritage, cultural significance, and commercial vibrancy they bring to their respective cities.

Visual perception

Historic commercial streets with a strong visual appeal can considerably boost the economic and social life of public space and have significant design research value in the current experience economy era [17, 34]. Consequently, the street's appearance will have a big impact on how businesses behave in the street space, which will be crucial for the growth of the urban economy. The reaction of commercial street space to visual appeal in urban planning, as well as the urban quality and operational efficiency, must be improved.

Designers or professionals are utilizing traditional evaluation methods such as interviews and questionnaires to assess the street rehabilitation after the renovation process is complete. However, external variables, such as the way spaces are used and one's own

emotions, significantly impede how individuals communicate their opinions on visual appeal. To address this gap, virtual reality technology can be used to create a virtual design environment of a historic commercial street. This technology allows for the assessment of the visual impact while walking a retail street space in real-time before the renovation process begins. By analyzing the variations in visual appeal brought on by various design techniques, the primary factors influencing the visual appeal of historic commercial streets may be objectively and practically determined, offering useful guidance for planning and design. Emphasize the significance of preserving and restoring historical features, such as facades, ornamentation, and signage, as they contribute to the visual character of the streets. The retention of these elements fosters a sense of continuity with the past and enhances the authenticity of the streetscape.

Renovation theories of historic commercial streets

The significance of the essential elements of design and location, society and culture, and urban planning has been shown in several books and research studies as a means of enhancing the vitality and liveability of public streets [35, 44]. The design and location component focuses on the physical, aesthetic, and spatial aspects of a site, including the character of the street, whether it is dominated by cars or pedestrians, and the street's edges, decor, and design details [2, 36]. Besides the social and cultural factor considers the street's appropriateness for people and its capacity to support their social needs, reflecting the identity of the community through shared memories and place context [3]. Last but not least, the urban planning component employs a bottom-up methodology and focuses on street accessibility, density, diversity, and context on a human scale.

In the last five decades, there have been numerous proposals for the renovation of historic commercial streets that are located in city centers. Most of them recommended turning these streets into pedestrian malls, specific locations with shade-giving trees and pedestrian walkways, which are devoted to shopping in city centers. Walking at a leisurely pace is ideal for navigating through downtown areas since it is not associated with any certain path and allows pedestrians to quickly and easily adjust their course based on what piques their attention [37]. It helps to revive commercial and economic activity, and malls create an urban attraction in a city center [14].

Historic commercial streets can be severely impacted by a number of variables when they are renovated [29]. The factors that follow, which should be carefully taken into account during the design and execution phase, are:

- Traffic and mobility: it is critical to assess parking availability, pedestrian access, and traffic flow. Reducing the number of automobiles on the commercial street or stopping traffic entirely should lead to considerations on how to deal with the anticipated increase of traffic in the nearby streets. In this context, it is important to investigate the interaction between street traffic and pedestrians, as well as the best ways to arrange the latter to promote comfort and safety.
- Pedestrian movement: a stroll of no more than 1.5 km that lasts 20 min should be considered when walking in a commercial street. Furthermore, parking areas and destinations should only be separated by a maximum of 800 m (10 min of walking).

- Infrastructure and utilities: throughout the remodeling process, it is essential to evaluate and fix the state of the infrastructure, which includes the utilities, walkways, lighting, and drainage systems. Enhancing infrastructure to conform to contemporary standards enhances functionality, safety, and accessibility.
- Historical significance: the historical value and significance of the street plays a crucial role in determining the extent and approach to renovation. Preservation and restoration efforts should aim to maintain and enhance the street's historical character, architectural elements, and cultural heritage. In addition to the examination of buildings heights, facades, texture and finishing materials, building techniques, and so forth, in order to create decisions that will carefully develop these structures.
- Maintenance: maintenance is a crucial factor that directly impacts the renovation of historic commercial streets. It involves ongoing repair, cleaning, the disposal of rainwater, and upkeep of the street to ensure its continued functionality and attractiveness.
- Climate: by encouraging people to become more sensitive and aware of the commercial street, planners can control the protection of commercial areas by reducing the amount of direct or reflected sunlight and balancing atmospheric humidity through the use of trees and covered paths in front of stores.
- Resources and financing: sufficient financing and readily available resources are essential for the old commercial streets' successful restoration. To pay for the costs of restoration, infrastructure upgrades, and continuing upkeep, it is frequently required to secure financial support from grants, private investors, government agencies, and community fundraising events.
- Stakeholder Engagement: The involvement and support of local stakeholders, including residents, business owners, community organizations, and heritage preservation groups, are essential. Engaging stakeholders throughout the renovation process helps ensure their interests are considered, fosters a sense of ownership, and promotes community buy-in.
- Regulatory and planning framework: compliance with local regulations, zoning ordinances, and heritage preservation guidelines is essential. Understanding the legal framework and obtaining necessary permits and approvals is crucial to ensure that the renovation aligns with the applicable regulations and preserves the street's historical integrity.

By taking these criteria into consideration, historic commercial streets can be effectively preserved while revitalized into lively and functional districts.

In order to develop a framework for evaluating street design performance, a survey of renowned literature from 1981 to 2022 [16, 24–27, 39, 41], was conducted, identifying physical variables that affect the design, caliber, and liveability of urban streets. The literature review revealed that different studies emphasized various attributes. Therefore, this study aims to collect the critical aspects that examine the historic commercial street performance (see Table 1). These variables include elements such as street width, sidewalk width, aged buildings, street furniture, and public life. As noted in the previous table, the assessed literature did not emphasize the same

Table 1 Street design performance aspect

The Street design performance aspect	[24]	[16]	[26]	[27]	[41]	Wagner and Caves, 2019	Al-Tamimi and Asmael, 2022
A good environment		√					
Accessibility	√	√	√	√	√	√	√
Aged building and harmony between architectural			√				√
Community and public life	√	√			√		√
Facilities for disabled people			√		√		
Identity and control	√	√					
Legibility							√
Lighting			√		√		
Livability	√	√					√
Maintenance and cleaning			√	√	√		√
Microclimate pollution level							√
Parking space			√		√		√
Paving			√	√		√	
Planting			√	√		√	
Proportions of space				√	√		
Sculpture and fountain			√	√	√		
Street furniture			√	√	√		
Sense	√	√					
Sidewalk width			√		√		√
Signs			√				
Street width			√		√		√
Sustainable infrastructure							√
Traffic management			√		√	√	√

attributes; thus, this study aims to collect the important aspects that examine the historic commercial street performance.

Case study: Mahmud Al-Banna Street in Tanta, Egypt

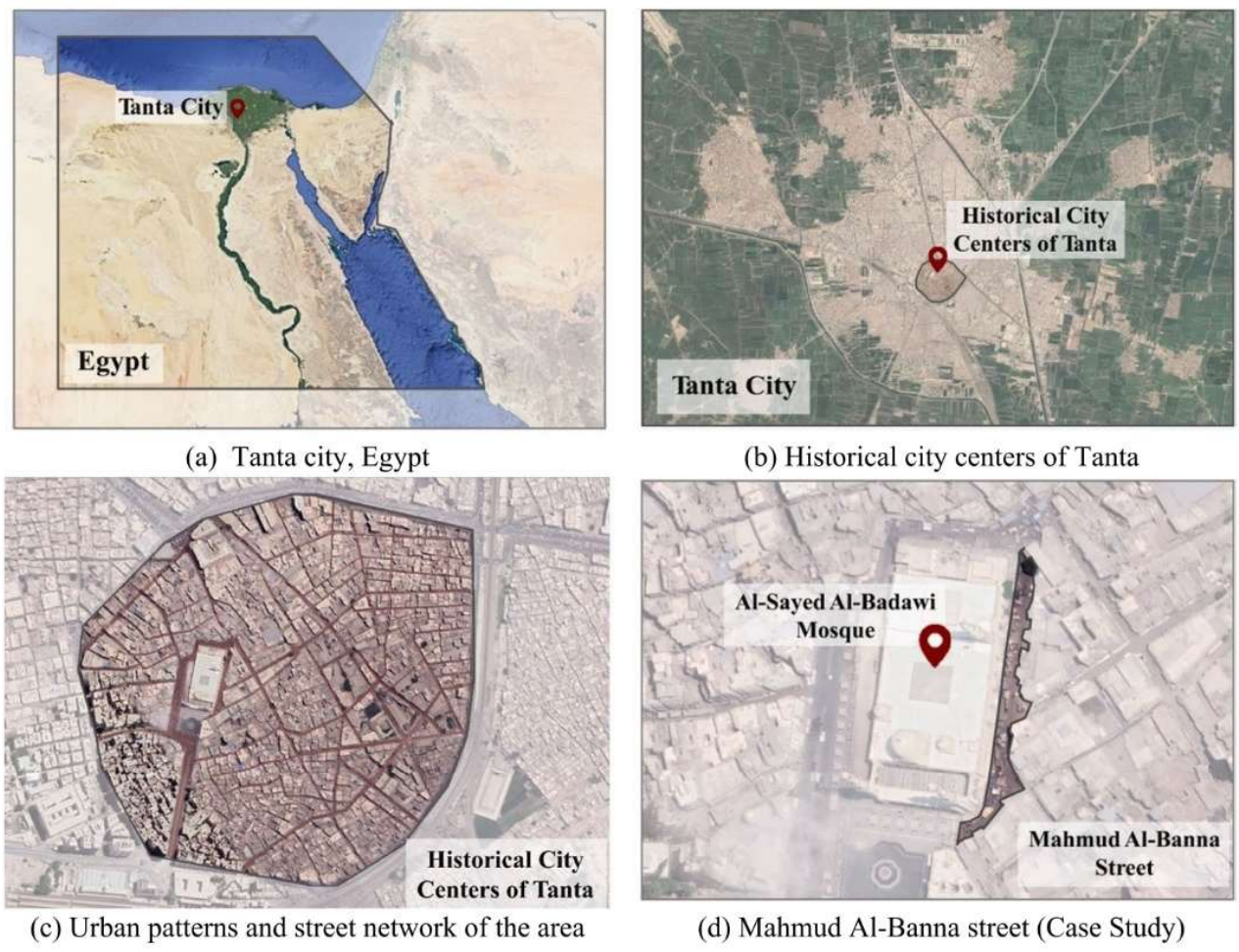
In this section, we present a proposed case study focused on Mahmud Ali Al-Banna Street, aiming to apply previous literature and theories of renovation to this historic commercial street. Al-Banna Street, located in the city center of Tanta, Egypt, holds significant historical and cultural value, making it an ideal candidate for a comprehensive renovation project. The renovation process focused on addressing urban, visual, environmental, and economic issues through a comprehensive approach that involved two phases. The first phase entailed multiple fieldwork visits to determine the problems facing street users, which were categorized into four groups and analyzed using a simplified SWOT analysis. The second phase included a questionnaire to gather users' perspectives on these issues. The proposed renovation strategies for Al-Banna Street contained rehabilitation, copying, removing, and upgrading, targeting key components such as street ground, street furniture, greenery, street lighting, and building facades. Finally, a 3D model was created to illustrate the proposed renovation schemes for Al-Banna Street. By examining the existing literature and theories,

we will provide insights and recommendations for preserving the street's historical character while enhancing its functionality, economic vitality, and overall livability.

Location of case study

Tanta is the fifth-most populous city in Egypt, with a population of 445,130 as of 2022. This city is located 94 km (58 miles) north of Cairo and 130 km (81 miles) southeast of Alexandria. Tanta gained prominence in 1856 when it became a stop on the railroad due to its large cotton plantations, which were primarily used for exporting cotton to European markets. The district is home to the oldest mosque in Tanta, the Al-Sayed Al-Badawi Mosque, which hosts annual celebrations in late October to honor the birthdate of Al-Sayed Ahmed Al-Badawi, a famous Sufi figure from the 1300 s who created the Badawiya Tariqa in Egypt and is buried in the mosque. The presence of the Al-Sayed Al-Badawi Mosque has led to the development of an urban agglomeration that serves as a commercial market, with shops offering wholesale and craft supplies, spices, fabric and apparel, and brass items. As noted, the historical center of Tanta City has an urban fabric with a special character shown in its mosques, commercial markets, and old buildings. Consequently, it is important to enhance and renovate these places in line with the objectives of architecture and planning [28].

Mahmud Ali Al-Banna Street is a bustling commercial street located in the heart of Tanta's historical district, in close proximity to the Al-Sayed Al-Badawi Mosque, as illustrated in Fig. 1. The reason for naming the street as Mahmud Ali Albanna Street is to honor and commemorate the renowned Egyptian reciter, Mahmud Ali Al Banna. He was



(a) Tanta city, Egypt (b) Historical city centers of Tanta

(c) Urban patterns and street network of the area (d) Mahmud Al-Banna street (Case Study)

Fig. 1 Location of Mahmud Al-Banna Street, Tanta City Center, Egypt

(Source: Authors). **a** Tanta City, Egypt. **b** Historical city centers of Tanta. **c** Urban patterns and street network of the area. **d** Mahmud Al-Banna Street (case study)

a prominent figure in the field of recitation and had a significant connection with Al-Sayed Al-Badawi Mosque in Tanta, where he studied theology and later led prayers in the late 1950s. This street has a length of approximately 210 m, and its width ranges from 8 to 12 m. As a result of its irregular width, it allows for good air flow, making it a comfortable place to stroll. The buildings on Al-Banna Street are primarily classified into three types based on their intended use: commercial, residential-commercial, or religious (see Fig. 2). The street's intense commercial activity is what sets it apart. Clothes shops are located at the entrance, followed by kids' toy kiosks, handicraft shops, and fabric stores. Al-Banna Street is considered a mixture of some of the different types of streets that were mentioned previously, namely Historic District Streets, Historic High Streets, and Market Streets.

Al-Banna Street is characterized not only by the diverse activities of its shops but also by the diversity of building heights. As shown in Fig. 3, the majority of buildings on the street have only one floor, representing 83% of the total buildings, and all of them are used as commercial shops. The remaining buildings consist of a commercial ground floor only, and some buildings have one additional upper floor used as a residential floor. It is worth noting that the buildings and kiosks on the street do not reflect any particular Islamic architectural style, despite their proximity to the Al-Sayed Al-Badawi Mosque. These buildings are old and in need of development and repair, as shown in Fig. 4. The lack of architectural coherence on the street is likely due to the fact that the buildings were constructed at different times by different owners, each with their own unique vision for the street. Overall, while Mahmud Ali Al-Banna Street offers a unique shopping experience with its diverse range of shops and activities, the buildings themselves are in need of repair and enhancement to ensure their longevity and preserve the street's character for future generations.

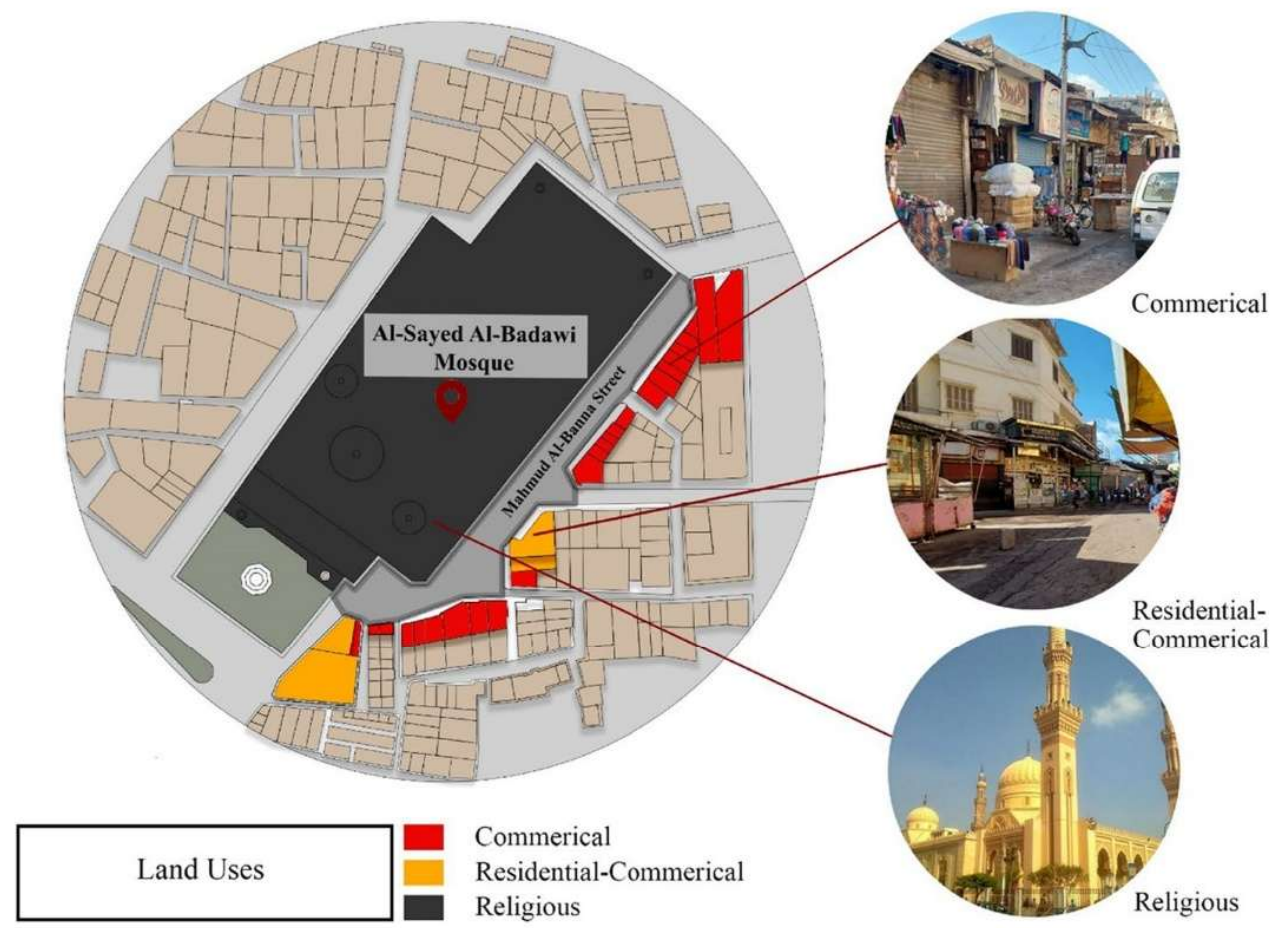


Fig. 2 Land uses map of Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

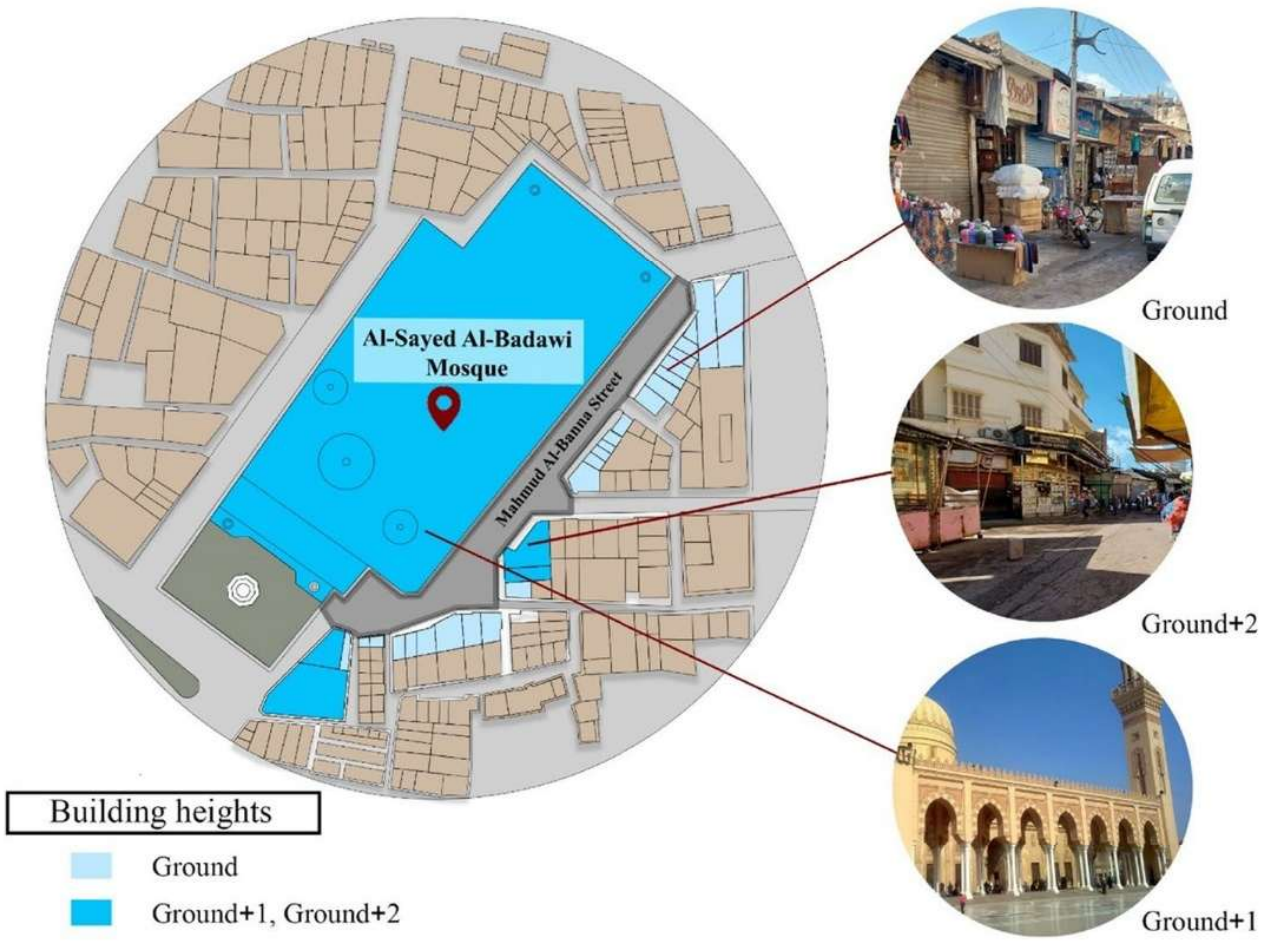


Fig. 3 Building heights map of Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

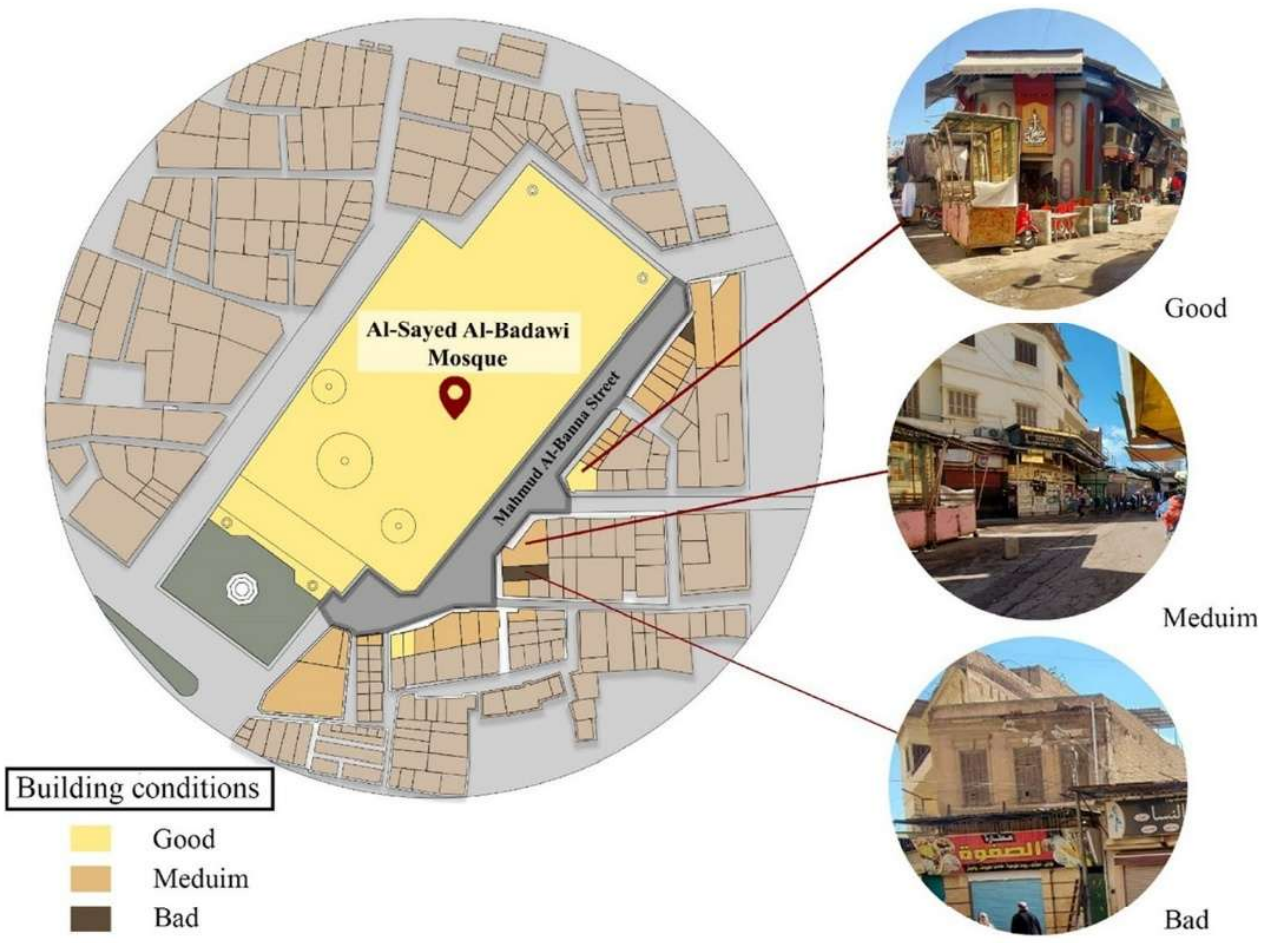


Fig. 4 Building conditions map of Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

Analyzing challenges in Al-Banna Street: a comprehensive assessment

Mahmud Ali Al-Banna Street faces a range of challenges that impact its urban, visual, environmental, and economic aspects. The problems facing users of Mahmud Ali

Al-Banna Street were investigated in two phases. Firstly, after visiting the street several times, including at midnight, during the day, on holidays, and during significant events, the primary problems, which are as follows, were eventually released:

- Urban problems: Al-Banna Street suffers from several urban issues, such as store owners encroaching on the sidewalks of the buildings to sell their wares, limited street width, and disruption caused by motorized vehicles and pedestrians. Moreover, the street's pavement is in bad condition, and the street is less level compared to other streets in the surrounding area. Finally, urgent restoration is needed due to the state of various structures. The previous points are depicted in Fig. 5.
- Visual problems: The distinctive architectural design of the Al-Sayyed Al-Ahmadi Mosque stands in contrast to the overall architectural style of the shops and kiosks, leading to a visual disconnect. Disorganized stores also affect the street's appearance and slow down traffic and the movement of buyers and sellers. Also, there are not enough parks and other open areas in the streets, as seen in Fig. 6.

Fig. 5 Urban problems in Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

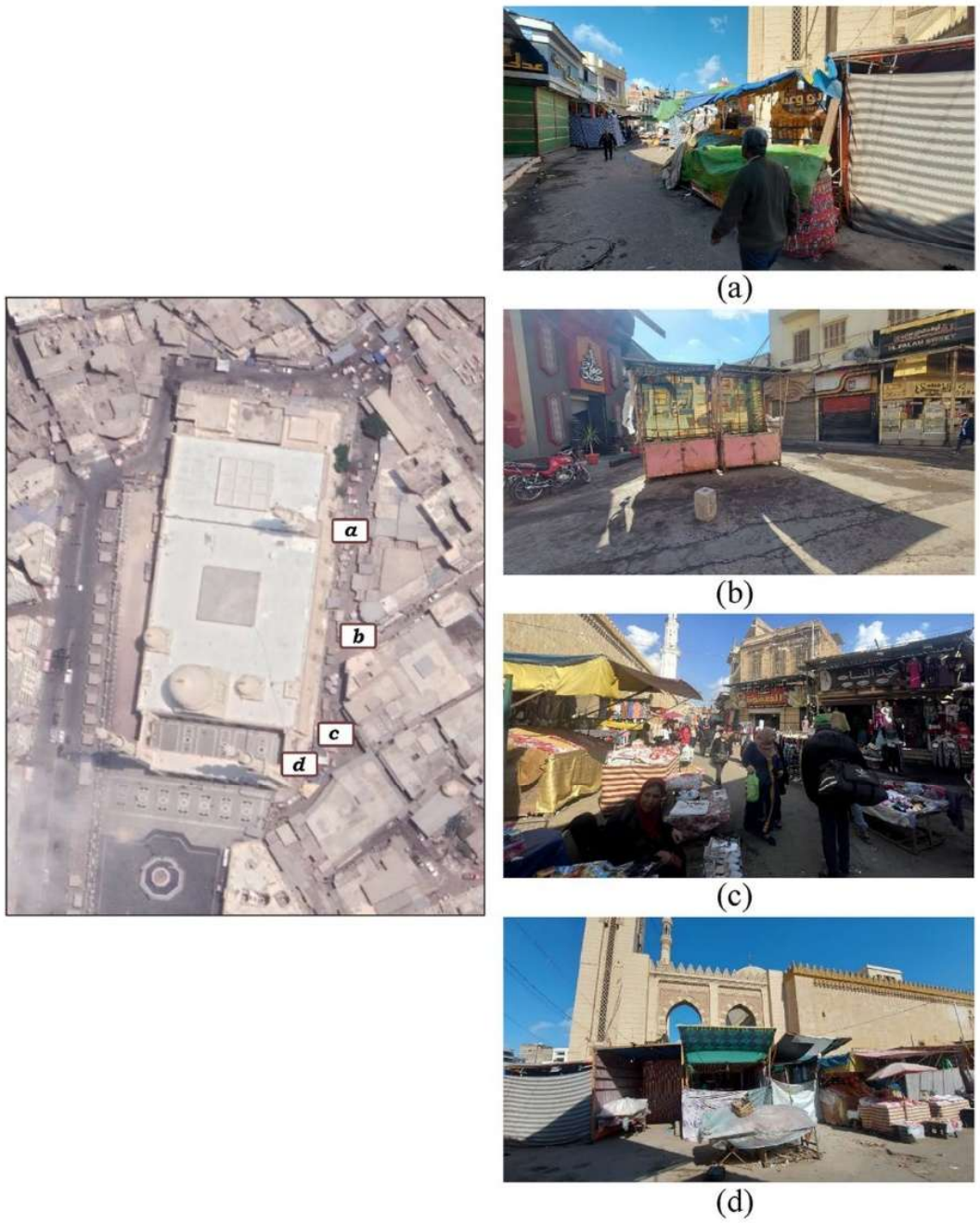


Fig. 6 Visual problems in Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

- Environmental problems: The absence of trash cans harms the local environment, and there is no rain drainage on the street due to its lower level compared to surrounding streets, resulting in the accumulation of rainwater, as shown in Fig. 7.
- Economic problems: As illustrated in Fig. 8, the way that goods are sold is distorted by overlapping uses of stores and their disorganization. Nevertheless, despite the region's ideal strategic location, shops have been unable to sell commodities and handmade items effectively.

Finally, a simplified SWOT analysis is conducted to summarize the issues that were identified for us throughout the fieldwork, as listed in Table 2. A SWOT analysis is a method for determining a street's strengths, weaknesses, opportunities, and threats. Despite being straightforward, it is an effective technique for assisting in identifying competitive prospects for improvement. The strengths of Mahmud Ali Al-Banna Street include its vibrant commercial activity, diverse array of shops, and location in the heart of Tanta's historical district. However, the street also has several weaknesses, such as poor pavement conditions, inadequate trash facilities, and disorganized stores

Fig. 7 Environmental problems in Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

that affect the street's appearance. Opportunities for improvement on the street include the potential for restoration and redevelopment of the buildings, as well as the introduction of more public spaces.

Due to the fact that the general public serves as the last arbitrator for evaluating urban spaces, it is difficult to evaluate the validity and quality of urban spaces, such as the street, without taking into account the users' opinion of that area [33]. Therefore, it is essential to consider the users' opinions of the area to evaluate its validity and quality. As part of the second phase of the study, a questionnaire was designed to reveal users' perspectives on the identified problems and their impact on the street's living conditions. The individuals' perspectives on physical difficulties were then measured using a Likert scale with five response options ranging from "strongly disagree" to "strongly agree" [9].

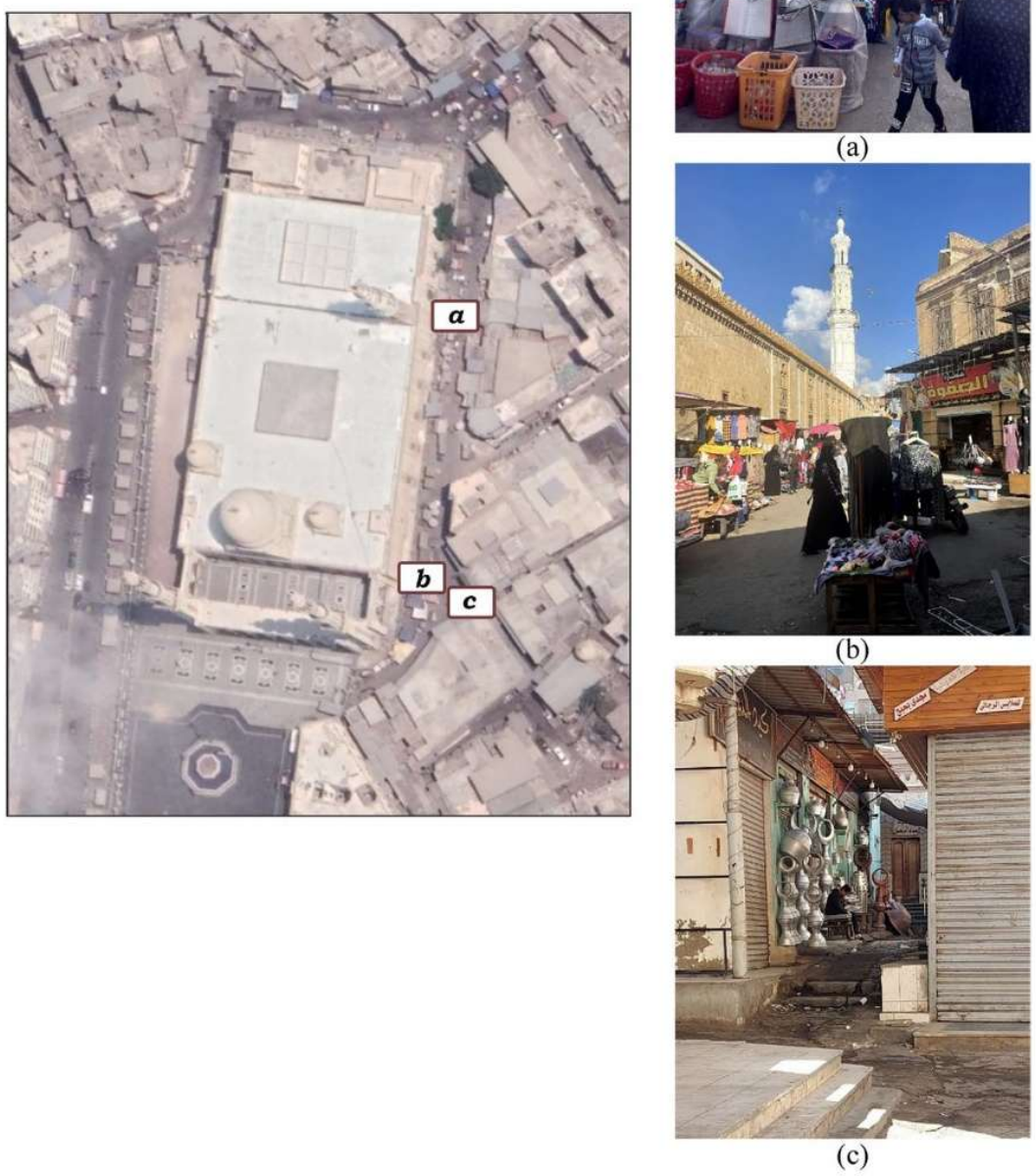


Fig. 8 Economic problems in Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

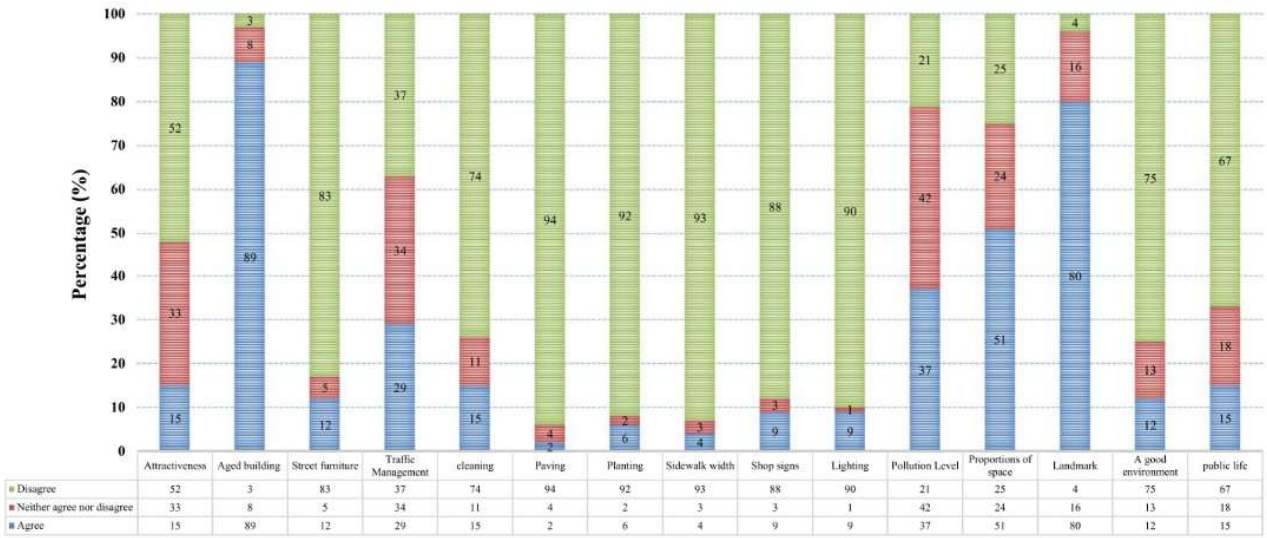
Table 2 A simplified SWOT analysis for Mahmud Al-Banna Street

Strengths	Weaknesses	Opportunities	Threats
The existence of Al-Sayed Al-Badawi Mosque, a tourism and heritage attraction	No trash cans exist inside the street	Availability of vertical extension of buildings	Limited street width
The proximity of the railway station to the street location	The state of the street paving is bad	Al-Sayed Al-Badawi, a religious and historic organization is present and serves as a great visual attraction	Insufficient parking spaces
Availability of employees and human resources	Unorganized overlapping of uses inside the street	Flexibility in moving and arranging the kiosks inside the street	Compared to nearby streets, the street is lower in level

Firstly, the demographic information section of the questionnaire included four main questions related to the respondents' gender, age, and occupation, in addition to the purpose of visiting the study area. It is worth mentioning that respondents were asked to indicate their purpose for being in the area in two categories: living or shopping/visiting. This distinction was made because the primary functions of these areas are living, commercial retail, and religious tourism, which is symbolized by visiting the mausoleum of Al-Sayed Al-Badawi. After that, the second part of the questionnaire involved users' opinions regarding the mentioned problems in Al-Banna Street, such as the state of aged buildings, street furniture, traffic management, cleaning, and the state of paving, as well as sidewalk width, planting, lighting, and pollution levels, which are likely to be influenced by their personal experiences and perceptions of the street's current condition. For example, users who frequently walk on the street might be more likely to notice issues related to traffic management, but users who live or work near the street might be more concerned about the state of aged buildings, lighting, and the level of pollution. At the end of the questionnaire, we include questions asking users for their suggestions or observations about the renovation project, as well as their concerns about the renovation process. This helps us gain a comprehensive understanding of the thoughts and opinions of street users and enables us to identify any additional issues or areas for improvement that may not have been addressed in the previous questions. Overall, the purpose of these questions is to gather as much information as possible about the users' experiences with the street, their needs and preferences, and their thoughts on the proposed renovation project.

For the purpose of doing data analysis, 150 respondents were chosen. This sample size was chosen in light of the fact that 100–150 is the lowest number that should be utilized while analyzing data, according to Dooley [10]. The research was intended to determine whether respondents agreed or disagreed with the specified concerns identified in the study area using data analysis of the questionnaires. To simplify the analysis process, the original five categories of "strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree" were reduced to three: "agree, neither agree nor disagree, and disagree." The extent of agreement was not important, and the focus was on whether the respondents agreed or disagreed with the identified concerns. The study sample consisted of 42% men and 58% women, with 28% living or working in the area and 72% shopping or visiting the area. Furthermore, the results of a questionnaire depicted in Fig. 9 which indicate the users' opinions regarding the mentioned problems in Mahmud Al-Banna Street. These results demonstrate the significance of these issues from the users' perspective.

Based on the bar chart provided (see Fig. 9), we can see the opinions of respondents regarding various aspects of street design. According to attractiveness, the majority of respondents (52%) disagreed that the street design is attractive, while 33% respondents neither agreed nor disagreed, and 15% agreed. Additionally, 83% respondents disagreed that the presence of street furniture in the street design is positive and approximately 90% respondents disagreed that the quality of the street's pavement, incorporating planting, the width of the sidewalks, lightening, and shop signs. In contrast, due to aged buildings and landmarks, more than 80% of the respondents agreed that incorporating aged buildings and landmarks like Al-Badawi Mosque in the street design is favorable. These



	Attractiveness	Aged building	Street furniture	Traffic Management	cleaning	Paving	Planting	Sidewalk width	Shop signs	Lighting	Pollution Level	Proportions of space	Landmark	A good environment	public life
Disagree	52	3	83	37	74	94	92	93	88	90	21	25	4	75	67
Neither agree nor disagree	33	8	5	34	11	4	2	3	3	1	42	24	16	13	18
Agree	15	89	12	29	15	2	6	4	9	9	37	51	80	12	15

Fig. 9 The users' opinions regarding the mentioned problems in Mahmud Al-Banna Street, Tanta City Center, Egypt (source: authors)

findings provide valuable insights into the opinions and perceptions of the respondents regarding different aspects of the street design. The data can be further analyzed to identify areas of improvement and prioritize actions to enhance the overall street design based on the feedback received.

Renovation of Al-Banna Street

The renovation work on Mahmud Al-Banna Street in Tanta's historic center aimed to reclaim the street as an active and livable urban environment that benefits both the city center and its inhabitants. In order to begin the development process, it was necessary to identify the issues that the street and its users face by conducting a thorough analysis of its current state (as mentioned in the previous section). Based on this analysis, the following strategies have been proposed for the renovation process:

- Rehabilitation: this involves repairing the buildings and shops on the street while preserving their historical characteristics and enhancing their vitality. Structures that are beyond repair should be demolished and replaced with new ones. Additionally, a rainwater drain should be constructed to solve the problem of water removal from the ground.
- Emulate: the facades of shops, buildings, and street kiosks should be designed to simulate the Al-Sayed Al-Badawi Mosque's style. This will create a cohesive visual identity for the street and enhance its historical significance.
- Removing: the problem of street vendors should be eliminated, and the distorted street kiosks should be removed to restore the street's visual appeal. These should be replaced with booths that maintain the historical identity of the area.
- Upgrading: this involves improving the street's visual appeal by adding essential aspects of street design and adding visual attractions in keeping with the mosque's style. This element is the placement of banners and posters that maintains propriety and reflects the cultural and natural characteristics of the region. Additionally, create green spaces in urban areas and commercial areas to reduce the pollution caused by the concentration of numerous activities and people. Besides, develop a touristic

commercial trail that provides a choice of activities and aids in the creation of places of interest.

Figure 10 illustrates the proposed strategies for the renovation process of Mahmud Ali Al-Banna Street. The infrastructure, landscape, and lighting were given the highest priority during the renovation process. In addition, the preparation of a 3D model was done for the facades of shops, buildings, and street kiosks in accordance with the design of the historical district, as depicted in Fig. 11. The proposed renovation process for Al-Banna Street is therefore based on an important element, which were determined from a simplified SWOT analysis and the questionnaire, including (a) street ground; (b) street furniture; (c) green; (d) street lighting; and (e) building and shop facades.

Basalt stone was used in the design of the street ground in order to complement the area's historical style and the previously developed Al-Sayed Al-Badawi Mosque's surroundings. It is used on historic commercial streets with high pedestrian traffic due to this type of stone's hardness and good resistance to abrasion and friction. It is worth noting that some nodes were designed at the points where the street intersects with the secondary streets, with some distinctive signs whose idea extends from the historical style of the region (see Fig. 11). As shown in the proposed 3D model for renovation, special kiosks are set aside for peddlers. The placement of these kiosks was carefully considered to ensure that they did not impede pedestrian traffic or detract from the historical character of the area. Furthermore, the necessary civic furniture (benches, garbage cans, etc.) was created and detailed to meet the users' needs for rest and leisure. These were designed to meet the needs of pedestrians while also complementing the historical character of the area. Finally, the installation of a rainwater ditch was included in the proposal to address the issue of water removal from the street. The ditch was carefully

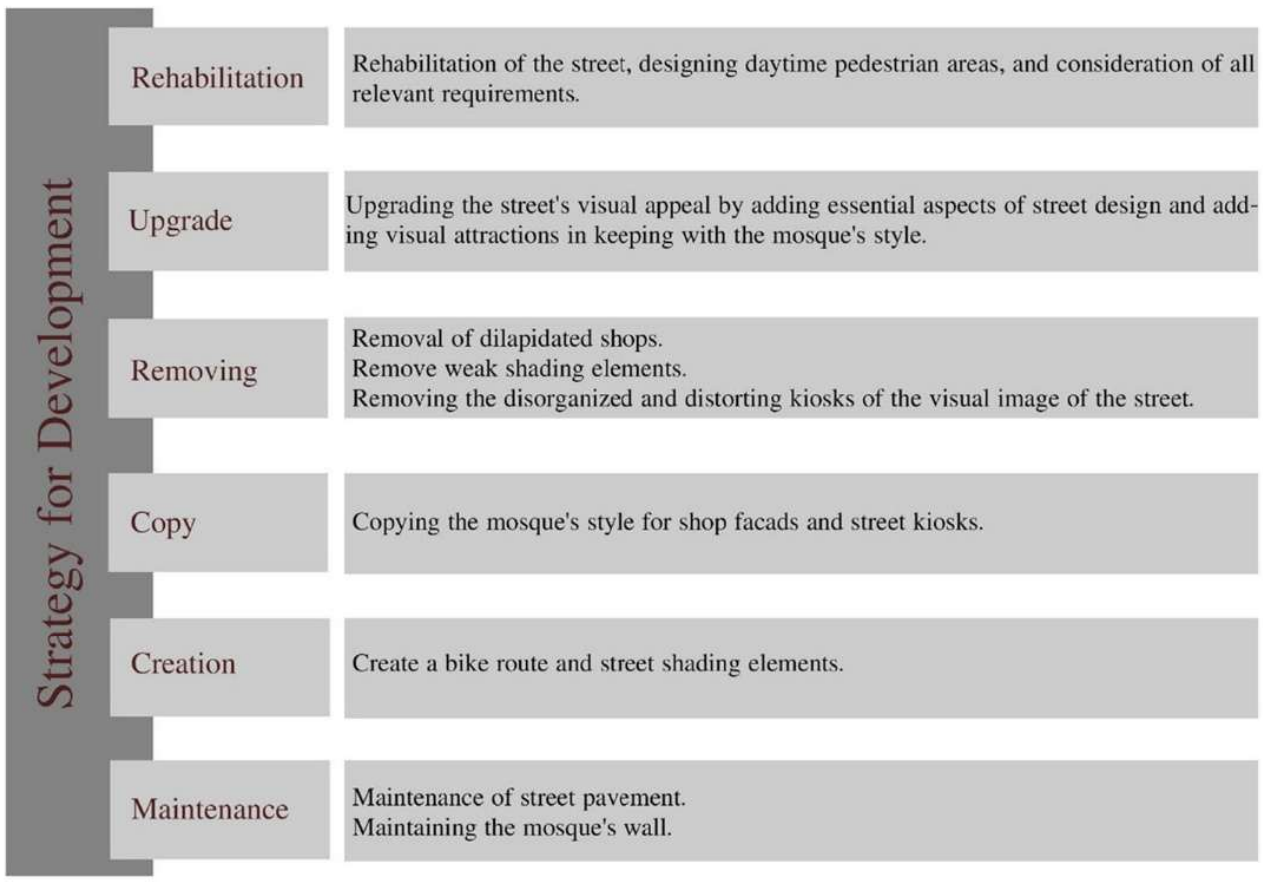


Fig. 10 The strategy for development of Mahmud Al-Banna Street in Tanta City Center, Egypt (source: authors)

Fig. 11 The proposed renovation 3D model for Mahmud Al-Banna Street in Tanta City Center, Egypt (source: authors)

designed to ensure that it does not detract from the visual appeal of the street while also effectively addressing the problem of standing water. This will improve pedestrian safety and comfort during periods of inclement weather.

In the proposed renovation process for Al-Banna Street, special kinds of trees were selected for the long sections of the street. These trees serve to define boundaries, paths, and subspaces, creating a more cohesive and visually appealing environment. Additionally, trees were put in between kiosks to add to the space's richness and display varied shades of green. In terms of lighting, it is a crucial component of renovations and is considered a solution to many problems caused by insufficient lighting in the current state. Thus, the installation of lighting makes the street a safer area, which will encourage more people to use it at night. Due to the street's narrowness as well as the density of users, light poles have been positioned on the left side of the street for this reason so as not to hinder pedestrian traffic. Furthermore, illumination was used on buildings and storefront facades to differentiate and highlight them. This will create a more visually appealing environment and enhance the historical character of the area. The illumination will be carefully designed and installed to ensure that it complements the architectural style of the area.

For the renovation of streets and buildings, the data gained from the fieldwork and the analyses created for each building were first arranged to show its current condition (as previously explained). Priority was given to repairing deteriorating buildings. After that, each building was studied separately, and the proportions of windows, door casings, and facades were studied. The windows and signs generated by the haphazard construction work on the street were the main source of visual pollution. Therefore, the windows

have been precisely redesigned in keeping with the area's historical style. In addition, consistent facades with stone and glass materials were applied to every shop to facilitate the exhibition of their goods and thus reduce the visual pollution that was shown at fieldwork time. Signage lines and materials were also updated to ensure that they complement the historical character of the area. This will help to create a more visually appealing and cohesive environment, contributing to the street's cultural and economic vitality. Finally, gates inspired by the Al-Sayed Al-Badawi Mosque's exterior (as previously shown in Fig. 3) were used as shaded pedestrian areas in front of the shops. These gates serve a dual purpose: they provide a shaded area for pedestrians to rest and relax, and they also enhance the historical character of the area. This will create a more visually appealing and comfortable environment for pedestrians and contribute to the area's cultural and economic vitality.

One notable social impact of the renovation is the improved sense of community pride and cohesion. The revitalized street has become a focal point for residents, encouraging social interactions and fostering a stronger sense of belonging. The aesthetically pleasing and pedestrian-friendly design of El-Banna Street has created a welcoming and inclusive environment, attracting people of all ages and backgrounds. This has resulted in increased social connections, community engagement, and a renewed sense of ownership among residents. Additionally, the renovation of El-Banna Street has had a positive impact on the residents' quality of life. The incorporation of green spaces, recreational areas, and seating areas has provided a welcoming and safe environment for leisure activities and social gatherings. This has encouraged a healthier and more active lifestyle among residents, promoting well-being and community bonding. It is important to note that these social impacts were carefully considered throughout the planning and execution of the renovation project. Community engagement initiatives, such as public consultations and involvement of local residents, ensured that the project aligned with the community's needs and aspirations.

Finally, Table 3 presents a comprehensive overview of various indicators, associated problems, and the corresponding solutions implemented before and after the renovation of Mahmud Al-Banna Street. It highlights the transformation brought about by the renovation process. Overall, the table demonstrates the significant positive changes brought about by the renovation of Al-Banna Street. By addressing traffic management, paving, environment, livability, facades, signs, and other aspects, the street has been transformed into a more visually appealing, functional, and user-friendly space.

Conclusions

Historic districts serve as both the physical and spiritual relics of a city, serving as witnesses to its growth. As a result, maintaining the unique character of historic districts is a top priority in every city's strategy for sustainable development and revitalization. Therefore, this study offers insightful information about how to create and build successful urban places, particularly when it comes to reviving a historic commercial strip. It highlights how crucial it is to take into account a variety of theories and methods in order to properly improve the functionality and livability of the street. The study's conclusions can help urban planners and designers create practical

Table 3 The summary of the renovation process for Mahmud Al-Banna Street in Tanta City Center, Egypt

Indicator	Problem	Solution	Before Renovation	After Renovation
Traffic Management Pedestrian Time Accessibility	Pedestrian traffic interferes with the means of transporting goods inside the street.	At the beginning of the development process, and due to the narrow width of the street, pedestrians were temporarily separated from cars, by making cars entering the street for the purpose of using commercial shops from 12 a.m. to 5 a.m.		
Paving	The street's pavement is in bad condition, and the street is less level compared to other streets in the surrounding area. store owners encroaching on the sidewalks of the buildings to sell their wares.	Basalt stone was used in designing the street floor to complement the historical style of the area and the surroundings of the previously developed Al-Sayyid Al-Badawi Mosque.		
A good environment Pollution Level	the lack of parks and open spaces in the vicinity affects the visual appeal and recreational opportunities in the area.	Separating pedestrian traffic from mechanical movement contributed to reducing environmental and visual pollution as well as providing green elements inside the street provides a clean environment for pedestrians.		
Livability Community and public life Personal space Activities	The disorganization of stores negatively impacts the street's appearance and hampers the flow of traffic and movement of buyers and sellers. the lack of parks and open spaces in the vicinity affects the visual appeal and recreational opportunities in the area.	Street vendor kiosks were organized in an organized manner, which contributed to facilitating the movement of pedestrians, as well as separating them with seating areas and providing a social environment.		
Facades Integration Aged building & Harmony between architectural	The architectural design of the Al-Sayyed Al-Ahmadi Mosque appears distinct from the overall architectural style of the shops and kiosks on the street, creating a visual disconnect.	The storefronts were developed to be glass in proportion to the display of products with the integration of this with the historical heritage through the corridor knotted with contracts similar to the contracts of the building of Mr. Al-Badawi as well as the facades of the building's Islamic elements such as mashrabiya as well as kiosks on the Islamic heritage.	 	 
Signs Street furniture Planting Light	The absence of trash cans contributes to environmental issues, as it leads to litter accumulation and impacts the cleanliness of the street. the lack of rain drainage on the street, coupled with its lower level compared to surrounding streets, results in the accumulation of rainwater, potentially causing inconvenience and water stagnation.	Different elements of the street mattresses were provided, as well as shop signs were designed uniformly, and trash cans and rain buckets were provided to drain the rain.		 

plans for turning underutilized urban areas into thriving, aesthetically pleasing settings that serve the requirements of the neighborhood.

The authors propose a renovation process for Al-Banna Street, where in Tanta's historical center (in the El-Gharbia governorate), represents one of the most important streets to have been affected by the failure to enact enough planning and building laws to control development. The process comprises four strategies as follows:

- Firstly, the rehabilitation of the old buildings on the street while preserving their historical characteristics.
- Secondly, the copying of Al-Sayed Al-Badawi mosque's architectural style for the facades of shops, buildings, and street kiosks.
- Thirdly, removing the distorted street kiosks from the visual image of the street and their replacement with booths that maintain the historical area's identity.
- Fourthly, upgrading the street's visual appeal while keeping in mind the cultural and natural characteristics of the region. This would entail creating green spaces in urban areas and developing a touristic commercial trail. To enrich the renovation process, the previously described categories of historical commercial streets (mentioned in the research) were integrated so that it represents a historical high street, pedestrian street, arcade street, and market street to serve the area's people, business owners, and users.

Recommendations

This study suggests that the proposed methodology be used to renovate traditional commerce streets in cities' historical centers. By considering policy implementation, stakeholder engagement, adaptive reuse, infrastructure improvement, knowledge exchange, and monitoring, the proposed methodology can be effectively applied to inspire future scholars and researchers in this field. Finally, the aim is to create sustainable and vibrant urban environments that preserve the historical identity and contribute to the overall well-being of the communities they serve.

Finally, the government must inform people about the importance of urban care and cleaning. Municipalities will be unable to keep a city clean and livable unless they take care of their citizens. Furthermore, another government duty that must be taken seriously is the supervision and enforcement of the law to preserve the historical identity of historic commercial streets represented in the façade and signage of the stores.

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Authors' contributions
Amera S. Shehab El-Deen: contributed to writing the draft, editing the manuscript, generating maps and 3D modeling, and other community analyses. Ahmed H. Aboulsaadat: contributed to supervising the research, formatting the manuscript, read and approved the final manuscript. Walaa A. Nour: contributed to supervising the research, read and approved the final manuscript.

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Declarations

Competing interests

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