

# Towards Walkable Streets: The Case Study of Talaat Harb Street, Downtown, Cairo

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**Abstract:** Walking is the most sustainable mode of transportation and one which has the least impact on the environment. Unfortunately, walking as a mode of transport is still often underrepresented in the overall transport system. Since sustainability is a worldwide trend, walkability is one of the highlighted aspects which need more consideration. Unfortunately, the present urban development is marginalizing the role of the pedestrian environment. There is a gap between theory and practice in academic research and practical implementation of urban street design. This research aims to understand the challenges facing users in the pedestrian environment in Talaat Street, Downtown, Cairo. An analytic approach will be used on mixed Random samples from the people using the case study area, containing distinct categories which differ in age, gender, job title, education level...etc. mixed research method is used for both data collection and analysis. The walkability framework is deduced from a summarized cross-sectional literature review about walkability, its definitions, importance, and indicators. Applying and testing this verified framework on the case study area by using a survey to assess the study area based on users' opinions to determine users' satisfaction level and needs. This research explores the difficulties encountered by users and highlights the significant findings obtained thoroughly analyzing their concerns and issues.

**Keywords:** walkability; walkable street; walkability needs; walkability indicators; pedestrian environment.

## 1. Introduction

There is a growing recognition of the need to shift towards sustainability and sustainable development driven by concerns about climate change, resource depletion, and creating equitable and resilient societies. Governments, businesses, and communities worldwide are taking action to promote sustainable practices and systems. This shift also presents opportunities to create jobs, innovate, and improve quality of life. The significance of walkability is increasing within planning and design fields [1]. It is being acknowledged increasingly as an urban strategy that can promote healthy communities and help establish sustainable and livable cities. Walking has been a primary mode of transportation for humans throughout history, with efficiency being a primary advantage [2]. The popularity of cars rose in the 1930s due to economic growth but concerns about pollution led to a renewed interest in walking and cycling infrastructure [3]. Such infrastructure not only enhances the livability of cities and towns but also promotes tourism [4]. Walking is fundamental to sustainable urban mobility and offers various social, environmental, and economic advantages while curbing the growth of motorization [5], [6]. Nevertheless, walking has been gradually declining and has been considered a secondary mode of transportation along with cycling [7]. The paper presents the Walkability Needs Indicators and considers them as mandates for improving the pedestrian environment. The paper integrates theoretical, applied, and analytical studies. The theoretical part tends to identify the concept of walkability, its benefits, and Walkability Needs Indicators. followed by the applied part, a case study of

Talaat Harb Street, Downtown, Cairo. An analysis is provided and a conclusion of the current situation in the study area in terms of Walkability Needs Indicators.

### 1.1 Research Objectives

The study's main objective is to develop a better understanding towards the challenges that users encounter in the pedestrian environment in the study area. This will be achieved through the following objectives:

- Investigating the current level of walkability in Downtown, and identifying the factors that contribute to walkability.
- Developing a better understanding of users' perception towards the Pedestrian environment.

### 1.2 Research Questions

In fulfilling the addressed objectives, the study is to answer the following questions:

- How can field measurements be used to evaluate the street indicators that affect walkability needs?
- How can the framework methodology be utilized to evaluate the current situation of the case study and the proposed solutions?
- What are the suggested solutions for sustainable walkable street design?

### 1.3 Research Gap

Academic research and practical implementation of urban street design in Egypt are not aligned, creating a noticeable gap between theory and practice. Past studies have emphasized the significance of viewing streets as livable spaces during the design phase, with an emphasis on

fostering community engagement and creating a sense of place. One of the key factors in achieving this is ensuring that the streets are walkable [8], [9]. The focus is on constructing infrastructure for vehicular traffic due to the urgent need for rapid development, leaving little time for designing pedestrian-friendly streets. Local authorities are not involved, resulting in streets being treated primarily as conduits for vehicular traffic. A more effective process is needed to design urban streets that consider both road network upgrades and safe, accessible walkable streets for pedestrians [10].

## 2. LITERATURE REVIEW

Designers of walking often view walkability as a neighborhood that incorporates specific design elements. This neighborhood's "urban form" is defined and evaluated at the neighborhood level, but this approach has certain limitations in terms of urban design and implementation, as evidenced by research and practical experience [11]. There are various scales and measurement tools for walkability. This paper will be working on the project scale, using walkability indicators to assess pedestrians' perception of site specifications and develop pedestrians' level of satisfaction.

### 2.1 Walkability Definitions

Urban planners first introduced the concept of walkability in the early 1990s, with a focus on the fundamental aspects of urban environments and the factors that impact walkability. The idea has been described using various terms and has been attributed to a range of factors and assessments [12]. According to Southworth's definition [13]; walkability is: "The extent to which the built environment supports and encourages walking, by providing pedestrians comfort and safety, connecting them with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network". According to Lowlor, walking refers to the capability of people to travel on foot securely without relying on a vehicle [14]. To ensure the safety of pedestrians, it is crucial to plan walking routes appropriately and understand how to integrate walking with the surrounding communities, residents, and businesses. In 2004, a study titled "Making London a Walkable City" defined walkability as the degree to which walking is easily accessible to individuals as a safe, connected, and pleasant activity. The study highlighted that the key characteristics of a walkable city are: Connected, Pleasant, Obvious, Agreeable, and Advantageous [12]. There are numerous factors affecting walkability including but not limited to, street connectivity, land use diversity, residential density, the presence of trees and vegetation, the frequency and variety of buildings, and street layouts and road plans that work for both pedestrians and retail areas [15]. The walkability of an area is contextual and can be influenced by several factors. As per Reid [16], a location's walkability is influenced by the five D's: density, diversity, design, destination accessibility, and distance to transit, all of which can affect an individual's decision to walk. Consequently, it

can be inferred that walkability refers to the extent to which an urban environment encourages its residents to travel on foot. Creating walkable environments is a priority for the new urbanism movement, which aims to promote pedestrian-friendly living conditions.

### 2.2 Walkability Indicators

Alfonzo's [17] "Hierarchy of Walking Needs", a model within the social-ecological framework assumes that people have a choice to walk. The model is relevant for both destination and strolling trips, but if no choice exists, the hierarchy of walking needs matters little. The existence of choice is particularly crucial regarding the influence of a person's higher-order needs. If a person has no access to a vehicular mode of transport, he or she has no choice but to walk, and higher-order needs are unlikely to affect the decision to walk. The issue of choice is especially relevant for vulnerable groups, such as children, adolescents, the economically disadvantaged, and the elderly, who may prioritize their need for safety or comfort less due to limited choices.

In the PPS study titled "What Makes a Great Place?" The researchers emphasize that exceptional public spaces are characterized by their ability to foster social and economic interactions, encourage cultural integration, and facilitate community gatherings. These spaces act as platforms for public life. The study identifies four key attributes that contribute to the success of public spaces: Accessibility and Connections, Comfort and Aesthetics, User Engagement and Activities, and a sense of Sociability [18].

The "Guide to the Healthy Streets Indicators" developed in London, highlights the Healthy Streets Approach as a framework that prioritizes the well-being and health of individuals when making decisions regarding the design, utilization, and management of public spaces. The ultimate objective is to create streets that are safe, healthy, and inclusive for everyone. This approach is built upon 10 Indicators of a Healthy Street, which include encouraging walking, cycling, and the use of public transport, ensuring pedestrian accessibility for people from diverse backgrounds, facilitating safe crossing, fostering a sense of security, providing engaging activities and attractions, offering places for relaxation, promoting a tranquil atmosphere, minimizing noise pollution, ensuring clean air, and providing shade and shelter. This comprehensive set of indicators serves as a guide for creating a healthy and conducive street environment [19].

### 2.3 Conceptual framing

After building a theoretical background through having a cross-sectional literature review of scientific research for walkability needs and the indicators that affect each need and operationalizing walkability. The researcher deduced a model for walkability indicators based on the work of Alfonso, PPS, and Guide to the Healthy Streets Indicators as shown in (FIGURE 2).

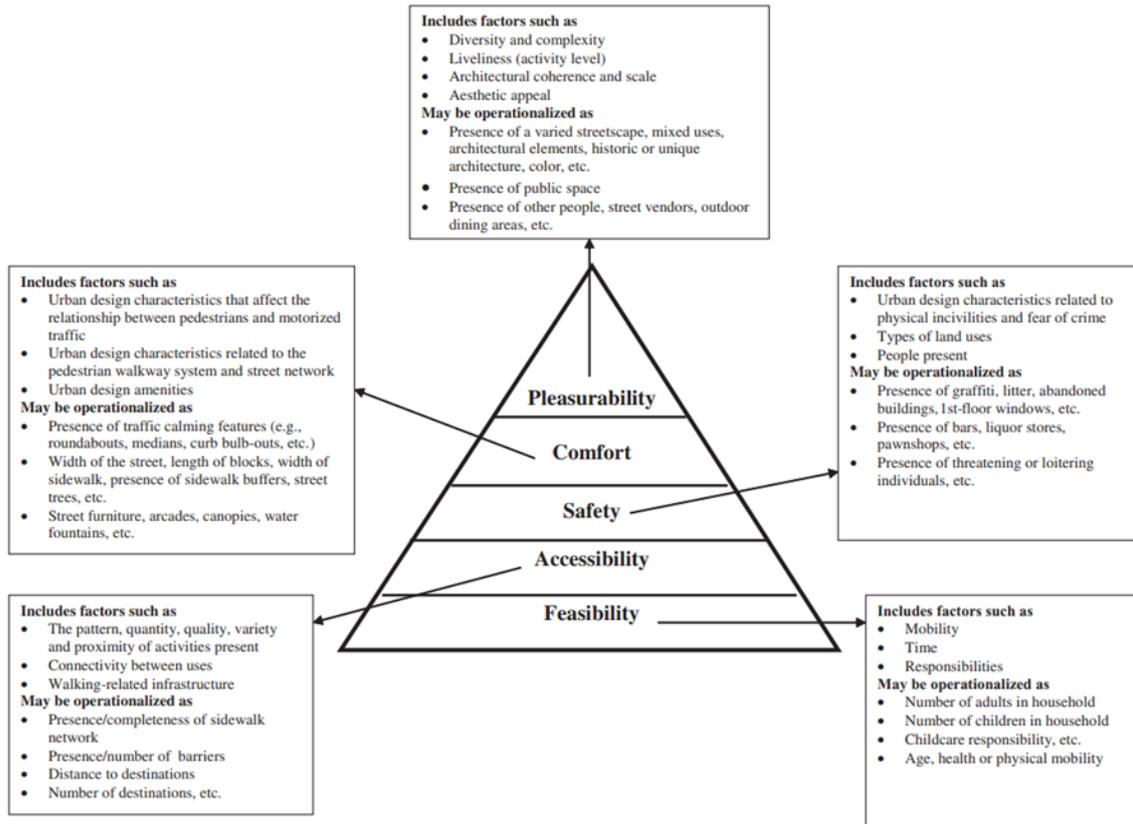


FIGURE 1. Hierarchy of Walking Needs, Source: Alfonzo, 2005

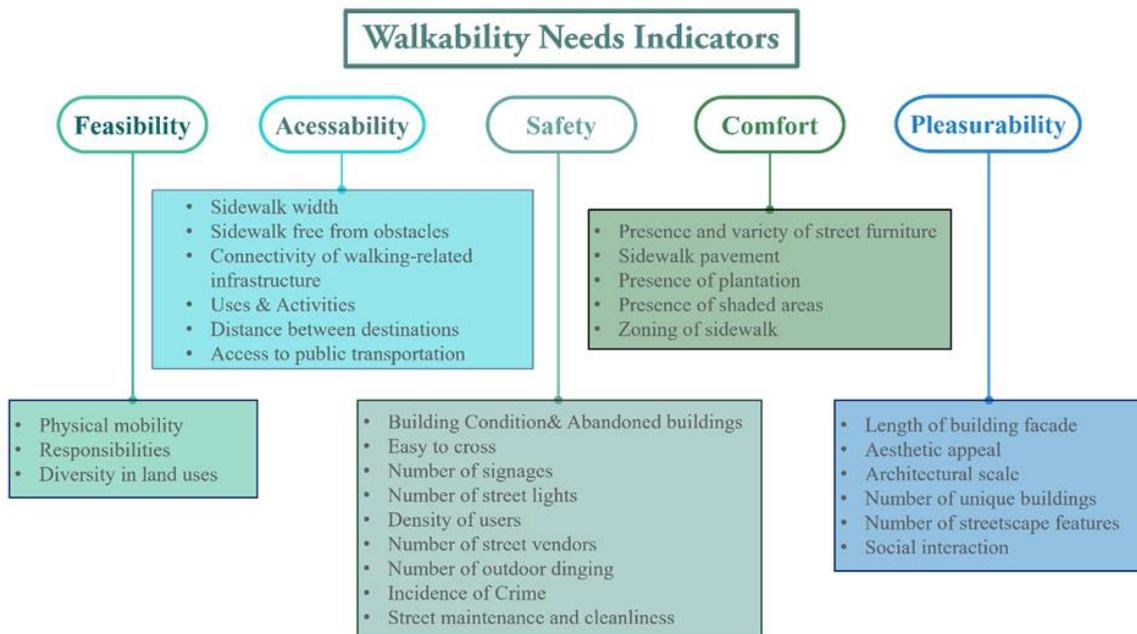


FIGURE 1. Walkability Needs Indicators, Source: Author, 2023

### 3. METHODOLOGY

In response to current environmental challenges, there is a need to enhance walkability and shift towards the decarbonization of cities. As stated previously, the overall objective of the study is to initially understand the difficulties that pedestrians face in the study area.

This study will use a mixed-methods approach to collect data from multiple sources, including primary and secondary sources [20], [21], [22] to provide comprehensive evidence, various points of view, and coverage of various research questions [22], [20]. Accordingly, the data will be collected through different techniques as follows:

### 3.1 Secondary Data

current situation analysis through secondary data using quantitative and qualitative approaches [23], [24] is proposed as part of the fieldwork methodology in order to critically assess the following: current policies; approaches taken to enhance walkability in Egypt; structure and performance of the governance of transportation system in Egypt; identification of key actors and their relationship. This information will be gathered by having a comprehensive review of publicly available state documents and reports made available by ministers, for example, through their official websites.

### 3.2 Primary Data

Quantitative methods (Closed-questions questionnaire) (approximately 15 minutes each); within the selected case study area, a closed-question questionnaire will be conducted with a random sample of local users to provide numerical data in large quantities [22], [21]. This questionnaire aims to help generate the background information used to understand users' perceptions of how to enhance walkability in their area. The questionnaire is designed as a self-completion questionnaire where a 5-Likert scale was used, ranging from strongly agree to strongly disagree. Participants will be asked to discuss and mention if they experience any challenges and to determine their current transportation use and willingness to walk. Potential participants will be from the local users who live, work, or visit the street in this area, and will be selected (average 150 participants in total in all case studies). These selected participants are households over 18 and able to work, eligible for voting, making decisions, and being considered independent persons. Moreover, observation and site visits from the researcher which includes recording videos and capturing photos of the pedestrian environment during different times along the day, the visits took place from 8 May 2023 to 22 May 2023 at varying times, and semi-structured open-ended interviews were used to analyze the pedestrian environment and users' perception.

## 4. CASE STUDY: Talaat Harb Street

Ismail Pasha hired renowned architects to implement Parisian urban planning in downtown Cairo, resulting in the creation of a new public center for the city. The area features ornate architecture and a pedestrian-friendly network, earning it the nickname "Paris on the Nile." However, urban decay has been an issue, and recent efforts have been made to refurbish the district. Talaat Harb Street,

named after an entrepreneur who helped boost the Egyptian economy in the 1920s and 1930s, is a blend of Western popular culture and Arab tradition and reflects the current reality of Egypt. Street businesses are trying to develop economic strength while inadvertently ignoring their rich cultural heritage [25].

The plan for Egypt's development in 2050, which is also referred to as Egypt 2052, has a vision for Downtown to become a sophisticated and lively destination that highlights its history, culture, and livable neighborhoods on a global scale [26]. However, the Cairo Governorate collaborated with national, academic, and private stakeholders to refurbish facades and relocate sidewalk vendors to Torgoman, a move that was welcomed by residents. Currently, the governorate developed a bike lane at Downtown, which has improved the urban realm through the installation of traffic lights, the transformation of some passages into pedestrian passages, and the development of public spaces. A campaign to promote the sidewalk as a public space has been also initiated, as noted by [27].

Talaat Harb Street starts with Orabi Street, passes by Talaat Harb Square, and ends with El-Tahrir Square as shown in the map (**Error! Reference source not found.**). It intersects with 26 July Street, Abd El-Khalik Tharwat Street, Qasr El-Nile Street, Mahmoud Basiouny Street, Mohamed Sabri Street, and Al-Bustan Street.

**Error! Reference source not found.** illustrates the accessibility and feasibility of services within the case study area. Talaat Harb Street is surrounded by 5 parking where, P1: Is Tahrir Underground Parking, P2: Qasr El-Nile Outdoor Parking, P3: Al-Bustan Multi-level Parking, P4: Al-Bustan Outdoor Parking, P5: Supreme Court Outdoor Parking. Moreover, it is surrounded by 4 Metro stations which are Gamal Abd El-Nasser Station, Ataba Station, Sadat Station, and Mohamed Naguib Station.

## 5. FINDINGS

Referring to the survey results, the majority of respondents are under 40 years old representing almost 62% of all users divided between males (45%) and females (55%). Nearly half of the respondents (47%) visit the study area for shopping and entertainment, while 25% visit it for work purposes. Respondents frequently visit Talaat Harb Street, where 38% visit the area daily and 28% visit monthly. Additionally, the majority of Respondents visit the study area during the morning hours (9 AM to 12 PM) and evening hours (6 PM to 12 AM), representing 28% and 40% of users, respectively.



FIGURE 3. Case study map, illustrates Talaah Harb street and its Intersections and nodes, Source: Google maps, edited by the authors, 2023

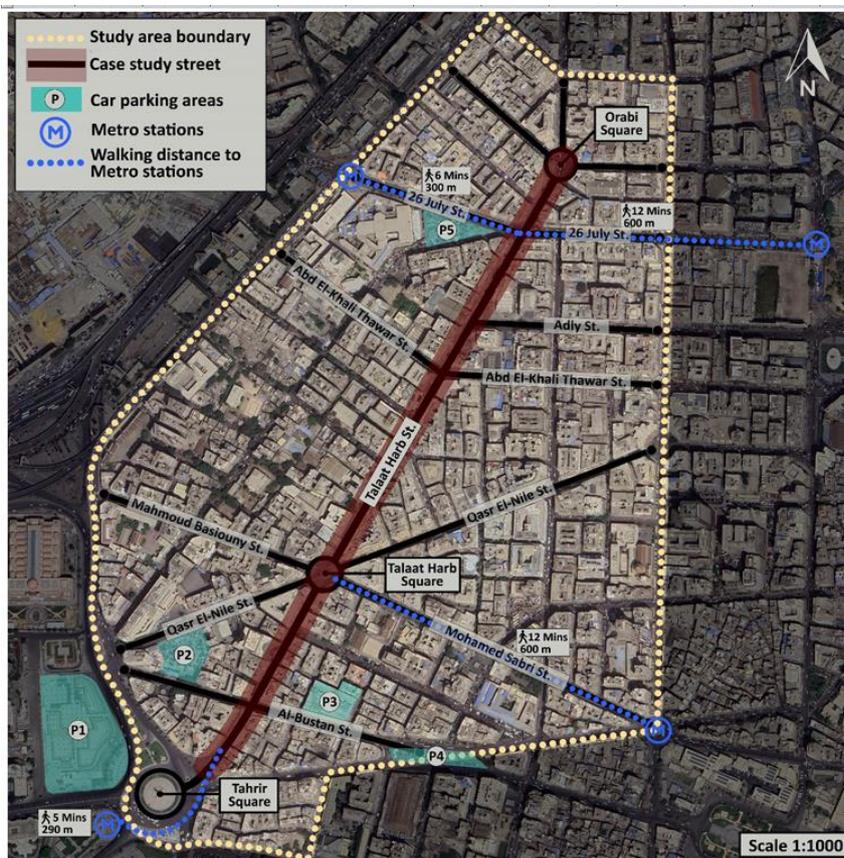


FIGURE 4. Accessibility Map, Illustrates the closest Metro stations and parking garages around Talaah Harb Street, Source: Google maps, edited by the authors, 2023

TABLE 1. The weighting of each Walkability Need to Walkability (Author,2023)

Walkability Needs		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Mean	Relative weight	Impact factor
Accessibility	Number of Response	214	266	212	111	97	3091.00	20.606	13.737%	50.130
	percentage	%23.78	%29.55	%23.56	%12.33	%10.78				
Safety	Number of Response	353	429	456	321	241	5732.00	38.213	25.475%	93.379
	percentage	%19.61	%23.83	%25.33	%17.83	%14.00				
Comfort	Number of Response	67	244	338	185	66	2761.00	18.406	12.271%	44.969
	percentage	%7.44	%27.11	%37.56	%20.56	%7.33				
Pleasurability	Number of Response	199	479	179	27	16	3518.00	23.453	15.636%	55.750
	percentage	%22.11	%53.22	%19.89	%3.00	%1.78				

Referring to (Error! Reference source not found.), (Error! Reference source not found.), and (Error! Reference source not found.), it is noticeable that the highest value for the total for each walkability needs is 5732, while the lowest value is 2761. Moreover, the Mean value of each need varies between a maximum value of 38.213 and a minimum value of 18.406. Additionally, the impact factor for each walkability needs indicator heights and the lowest values are 44.969 and 93.379 successively.

According to (Error! Reference source not found.), (Error! Reference source not found.) and (Error! Reference source not found.), based on users' perceptions of walkability at Talaat Harb Street, the Respondents agreed that safety is the most important walkability need that can be found in the study area, as they agreed that density of users and number of outdoor dining are main indicators to make them feel safe. Moreover, they also agreed that excessive congestion can sometimes make people feel unsafe or frightened as Respondents expressed concerns that the overcrowding could result in people being hit by others and being exposed to harassment or robbery which contribute to the incidence of crime.

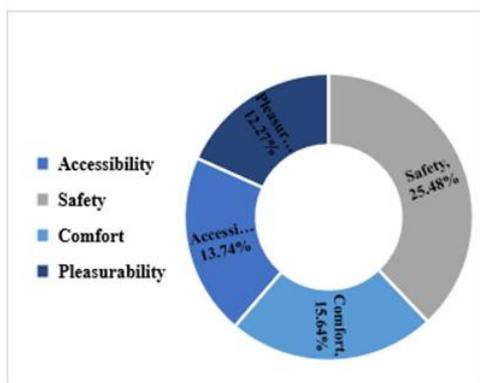


FIGURE 5. Relative weight for walkability indicators, Source: Author, 2023

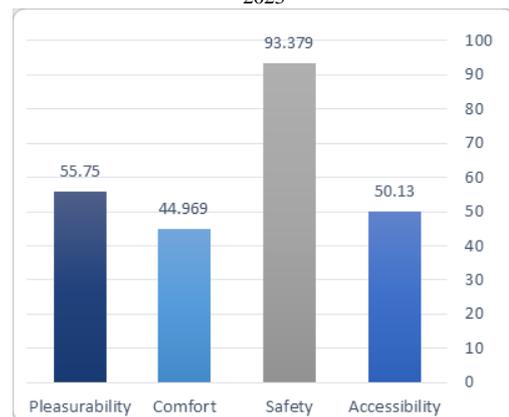


FIGURE 6. Impact factor for walkability indicators, Source: Author, 2023

Moreover, respondents agreed that the easiness of street crossing is important for their sense of safety, and they pointed out the availability of traffic lights at every road intersection, pedestrian crossing markings, and the presence of traffic officers at Talaat Harb Street. However, they also noted that a significant percentage of users do not follow designated crossing areas and instead choose to cross the street from any location, even if it is not sufficient for crossing and not safe. Moreover, respondents agreed that the number and distribution of signages were considered to be insufficient because they did not encompass all of the destinations on the street which can create confusion and frustration for users, and reduce accessibility and safety, especially in areas with complex or diverse destinations. Moreover, respondents agreed that outside of the working hours of the commercial stores, the lighting tends to be somewhat inadequate or weak which makes the street dark and somehow frightening to the users.

Based on respondents' perception of walkability at Talaat Harb Street, pleasurability was selected as the second walkability need that can be found in the study area. Respondents agreed that the proportion between street width and building height (architectural scale) is crucial in creating a comfortable environment for pedestrians on Talaat Harb Street. Appropriately scaled buildings can create a sense of balance and proportion that makes pedestrians feel at ease.

Users agreed that the building facades along Talaat Harb Street are essential in creating an interesting experience. Attractive and well-maintained facades with unique architectural details, vibrant colors, and interesting textures, and public art such as sculptures and murals add to the overall aesthetic appeal of the street and inspire and engage users. Additionally, the street offers various amenities and attractions, including shopping and dining options, making it a well-designed and maintained urban environment. On the other hand, respondents agreed that Talaat Harb Street lacks social interaction as there are no public social activities that encourage users to socialize or get to know new people, but groups who already know each other find the study area as a good place to meet and socialize.

Based on users' perception of walkability at Talaat Harb Street, respondents agreed that the most common means of transportation for users to reach Talaat Harb Street is public transportation, which includes buses, minibuses, the metro, and taxis, representing 43.33% of users. Taxis are the second most common means of transportation at 20%, followed by private cars at 16.67%.

When analyzing the accessibility at Talaat Harb Street based on the perception of users, it is clarified that respondents gave the highest rating for the variety of services occurring along the street and their allocations as it is the most important thing that attracts users to visit the study area. Respondents' opinions on the sidewalks of Talaat Harb Street are divided into two groups; one group values continuous mobility along the street as an essential element of sidewalk accessibility, while the other group believes that the sidewalk width is sufficient for their needs. However, both groups acknowledge that there are obstacles hindering pedestrian movement, such as street vendors, shops encroaching on sidewalks, crowding in front of dining areas, and irregularly allocated trash bins. Additionally, respondents agree that the street does not consider the needs of people with special needs, despite the current governmental focus on caring for them. Overall, users feel that the sidewalk width is satisfactory, but removing obstacles and addressing accessibility issues would provide more space for pedestrians to walk freely.

Based on users' perceptions about walkability at Talaat Harb Street, respondents agreed that the material of sidewalk pavement is considered comfortable as it is flat, smooth, and well-maintained, with no areas broken or uneven. Moreover, commercial store owners pave the sidewalk areas in front of their stores and take care of their maintenance. Moreover, it is noticeable by the authors during the site visits the height of the sidewalk is also good, ranging from 10 to 15 cm.

Based on the respondents' perception and site visits by the authors, it is noted that the urban design, built environment, and building heights at Talaat Harb Street serve the purpose of giving its users the option to choose whether to walk on sunny or shaded areas as there are shaded areas on at least one side of the street, sometimes of the day most of the street is shaded. This is important especially during hot weather, as the shaded areas can provide relief from the heat and make walking more comfortable. Additionally, the sidewalk on Talaat Harb Street is cluttered and obstructed by street vendors, commercial shops, irregularly placed trash bins, and advertising boards. These obstacles hinder pedestrian flow. Users struggle to find space to stand away from the flow of pedestrians due to the lack of sidewalk division. Moreover, the trees are not well-maintained and lack variety, with only Ficus trees present. Furthermore, there are no conveniently placed seats on Talaat Harb Street, with only a few located in a pedestrian-only street branching off from the intersection.

## 6. DISCUSSION

Talaat Harb Street is a commercial and business center hub with many shops, restaurants, cafes, and entertainment venues catering to a wide range of consumer needs, drawing in visitors looking for leisure activities. The area is also home to various businesses, making it a popular location for employment opportunities and business events.

When reflecting users' perception through the survey on the Walkability Needs Indicators it results that diversity of land uses is the most effective indicator as people walk to find a place to go to. When analyzing an established urban environment, such as the case study in this research, observing people walking in the street suggests that there is at least one destination in the area that attracts them [28], [16], [29]. The physical feasibility of the pedestrian environment was studied in this research, focusing on the diversity of destinations, arrival timing, repetition, and reasons for visits. However, analyzing feasibility from the users' perspective, such as their mobility and responsibilities, for example, users' age, weight, health status, working status, and time limitation, etc... according to [28], [30], can provide valuable insights into the types of destinations and design language that should be prioritized in the strategic plan for the area.

When overlooking the walkability needs indicators based on users' opinions at Talaat Harb Street, it is found that with regards to the indicators of safety, excessive congestion is perceived in front of dining shops and cinemas. This causes a significant obstacle to walking, disrupting users' walking experience, causing traffic congestion, and putting their safety at risk. Despite generally being considered a safe street, users expressed concerns about crime or unethical behavior during peak hours, particularly on holidays or special occasions when congestion is high. Street vendors were also cited as obstructing pedestrian circulation and making users feel unsafe. Nevertheless, when analyzing these findings, it is important to acknowledge that when

individuals have their most fundamental needs of walkability met, their minds naturally seek higher aspirations [17], [31]. On the other hand, most users felt more secure with a higher density of users on the street, while only 30% believed that outdoor dining and excessive congestion contributed to their sense of safety. This finding contradicts the previous results. However, the density of users can be a double-edged weapon, as exceeding a certain limit can negatively impact the perception of safety and comfort while walking. When considering the safety indicators, users' perception aligns with the walkability needs indicators that indicate the presence of these indicators should enhance the users' sense of safety. Although, concerning indicators of safety that include the number of street lighting, number of signages, and ease to cross, they agreed that these indicators are available in the study area to some extent. However, despite this, when users were questioned about their perception of safety, the majority of users agreed that they feel safe enough, which is not compatible with the walkability needs indicators which suggest that the presence of all indicators should fulfill the need for safety. Therefore, improving these indicators should enhance the overall sense of safety for pedestrians. It is important to note that even though users feel safe enough, there is still room for improvement to ensure optimum safety levels. Therefore, by improving these safety indicators, the overall sense of safety and a more walkable environment will take place.

When overlooking the walkability needs indicators based on users' opinions at Talaat Harb Street, concerning indicators of pleasurability, they agreed that most of these indicators are available in the study area with varying percents, as appropriately scaled buildings can create a sense of balance and proportion that makes pedestrians feel at ease. Users also value attractive and well-maintained building facades with unique architectural details, vibrant colors, and public art, which add to the overall aesthetic appeal of the street. Additionally, the street offers various amenities and attractions, including shopping and dining options, making it a well-designed and maintained urban environment. This characteristic contributes to a pleasurable and enjoyable experience for pedestrians, which subsequently encourages walking behavior and amplifies the attractiveness of the study area. However, they agreed that social interaction is not readily available, as there are almost no public activities to facilitate socializing, which is Compatible with the walkability needs indicators that suggest that when all the indicators are present, the sense of pleasure will be fulfilled. Nonetheless, groups who already know each other find the study area a good place to meet and socialize. Therefore, improving social interaction should enhance the overall sense of pleasure for pedestrians. Therefore, by improving these pleasurability indicators, the overall sense of pleasure and a more walkable environment can be increased.

Based on users' opinions on the accessibility indicators of walkability needs at Talaat Harb Street, such as access to public transportation, uses and activities, connectivity of walking-related infrastructure, and sidewalk width they

agreed that these indicators are available in the study area to a considerable extent as users perceive Talaat Harb Street as a place accessible by public transportation, especially buses, minibuses, the metro, and taxis. The variety of services available along the street is highly rated, attracting users to visit the area. Opinions on sidewalk accessibility are divided, with some valuing continuous mobility and others finding the sidewalk width sufficient. However, both groups agree that obstacles hinder pedestrian movement, such as street vendors, shops encroaching on sidewalks, crowding in front of dining areas, and irregular trash bin allocation. Users also note that the street does not consider the needs of people with special needs, and addressing accessibility issues would provide more space for pedestrians to walk. Despite this, most users still find the study area easy to access, which aligns with the walkability needs indicators which are previously conducted from the literature review (FIGURE 1), suggesting that when all the indicators are present, accessibility needs are met, also it was mentioned by Mehta [31]. Therefore, improving the indicator of having sidewalks free from obstacles and considering the needs of people with special needs would enhance overall accessibility for pedestrians.

Based on users' opinions regarding the comfort indicators of walkability needs at Talaat Harb Street, such as sidewalk width and the presence of shaded areas, they agree that these indicators are available in the area to a considerable extent, as pedestrians agree that the urban design and building heights provide shaded areas on at least one side of the street, which is important during hot weather. However, when it comes to the presence and variety of street furniture, the presence of plantation, and the zoning of sidewalks, users agree that these indicators are only partially or almost not available in the study area, as the sidewalk is cluttered and obstructed by street vendors, shops, irregularly placed trash bins, and advertising boards, hindering pedestrian flow. Users struggle to find space to stand, and there is a lack of sidewalk division. Based on the respondents' perception and site visits by the authors, it is noted that the trees are not well-maintained and lack variety, with only Ficus trees present, and there are few conveniently placed seats on Talaat Harb Street. As a result, most users do not find the study area comfortable, which aligns with the walkability needs indicators which are previously conducted from the literature review (FIGURE 1), suggesting that when all the indicators are present, comfort needs are met, also it was mentioned by Alfonzo [17]. Therefore, improving these indicators, such as by providing more street furniture and planting a greater variety of trees, should enhance the overall sense of comfort for pedestrians. By doing so, the overall sense of comfort and creating a more walkable environment can be enhanced.

## 7. CONCLUSION

Encouraging pedestrians to walk in urban areas is crucial for improving their livability and reducing the amount of car traffic on the roads. To achieve this goal, it is important to identify the key factors that impact walkability and people's perception of walking, as well as gather spatial data to assess

the current state of walkability. This information can then be used to prioritize interventions to improve walkability in the most critical areas.

This paper presents the case study of Talaat Harb Street, a well-known commercial and business destination in downtown, Cairo, which experience severe problem of lack of proper infrastructure and facilities for pedestrians, and the area is often congested with traffic, making it difficult for a pedestrian to move around freely. These factors contribute to a pedestrian-unfriendly environment that discourages walking and limits the accessibility of the area. This problem was approached with a descriptive-analytical case study approach, using surveys and open-ended interviews to collect users' perceptions about the study area and relate them to the walkability needs indicators.

Accordingly, the study conducted at Talaat Harb Street found that, based on users' perceptions, safety is the most important and most available need in the area. However, almost half of the safety indicators were not met, which contradicts the walkability needs indicators that suggest all indicators should be available for the need to be fulfilled. On the other hand, users experienced the pleasurable need as the second most fulfilled need in the study area, as most of its indicators were available. This finding goes against Alfonzo's theory which suggests that when people's basic walkability needs are fulfilled, they tend to focus on higher goals [17]. The current situation at Talaat Harb Street is contrary to this theory, as safety is prioritized over accessibility, and pleasurable is prioritized over comfort, according to the users' experiences.

This research aims to identify gaps in knowledge and suggest future research areas on walkability in urban design. It stresses the importance of walkability for the livability and sustainability of cities and proposes guidelines for street design based on walkability needs indicators. Potential research areas include assessing the effectiveness of current policies, incorporating green infrastructure into street design, examining the relationship between walkability and economic development, and investigating the possibility of a pedestrian-only downtown area. Other areas for investigation include the role of street furniture and street lighting in improving walkability and safety.

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