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TOWARDS MORE PEDESTRIAN- FRIENDLY STREETS IN CAIRO



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TOWARDS MORE PEDESTRIAN-FRIENDLY STREETS IN CAIRO

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* This paper is based on the author's MPA thesis entitled "Towards more Pedestrian-Friendly Streets in Cairo" submitted to the Department of Public Policy and Administration in Fall 2016. ElGhandour is currently working at The American University in Cairo. Any questions or queries related to this working paper may be sent directly to sgh@aucegypt.edu

Abstract

This study explores the factors that would make the streets of Cairo more inviting and adaptable for use by pedestrians. The research investigates one major street in Cairo as a case study, using qualitative research methods of participant observation and interviews. The analysis shows that cleanliness and street safety are the main factors that influence people's walking experience. Moreover, the quality of pavement and sidewalks, availability of street furniture and lighting positively impact street walkability. The recommendations encourage conducting further research in order to cover more geographic areas in Cairo in different times of the year and to focus on; adopting a participatory planning approach; enforcing laws and regulations on street occupancy; applying people-oriented planning paradigms; and raising public awareness on walkability issues.

1. Introduction

1.1 Background: Framing the Issue of Pedestrian Use of Streets as Part of Public Space

According to the UN-Habitat report (2013), streets have multiple roles aside from being means of linking between destinations. Streets act as common spaces for multiple users, including diverse gender, age, and socio-economic groups, who can engage in social, cultural, political, and economic activities (UN-Habitat, 2013). Thus, streets represent a main component of public space that embodies different users with multiple interests.

In this research, streets are defined in their wider context of being a public space. According to UN-Habitat (2015:1), "Public spaces are all places publicly owned or of public use, accessible and enjoyable by all for free and without profit motive." The characteristics of public spaces mentioned in this definition are pertinent to the uses of streets in general and to pedestrian-friendly streets in specific. Thus, it is believed that the factors and forces that influence the uses of public spaces in general are applicable to streets, as well.

Studying the public space and its dynamics in general and the walkable or pedestrian-friendly space in specific is one of the multidisciplinary topics that attract the attention of scholars, practitioners, and policy-makers from different disciplines, such as urban designers and city planners, environmentalists, public health specialists, local administration, and city managers. This multidisciplinary attention to the topic is driven by the benefits of having pedestrian-friendly streets in cities in terms of social, economic, environmental, and political dimensions, which integrate to enhance the well-being of both the people and the city. In this regard, the UN Habitat (2013) mentioned the benefits of walkable and pedestrian-friendly streets as follows: It is assumed that when streets are planned and designed to accommodate different modes of mobility such as walking, cycling and public transportation rather than being car-oriented streets, the results will thus be lessening carbon emissions and cutting down dependence on fossil fuels, which is good for the environment and a basic requirement of sustainable urban development. In addition to the environmental benefits, pedestrian-friendly streets have social and economic merits. When streets are designed to be more people-friendly, it means that people can gather, socialize, and share common activities. Hence, people from different socio-economic backgrounds interact and share equally their public space. This function of streets can help to encourage social diversity and connectivity, therefore, creating neighborhoods that are more cohesive, lively, and eventually more attractive to both residents and investors.

Thus, it was found that those cities that are considered prosperous are those that recognize the significance of allocating proper public spaces and those which have assigned adequate land to the street development (UN-Habitat, 2013). On the other hand, cities that have failed to incorporate the diverse functions of streets are those that have lower productivity and quality of life for people (UN-Habitat, 2013).

1.2 The Cairo Context

The overpopulation in the Greater Cairo Region (GCR) has been a key challenge to a safe walking experience throughout most of the city. The city is burdened with challenges of overcrowded streets with vehicles and other mobility issues. According to the World Bank (2014), 19 million residents live in GCR, with an expectation to reach 24 million by 2027. Seven thousand motor vehicles per hour per lane is an estimated traffic volume on main access strips such as the Ring Road at Carrefour al-Ma`ādī and the 6th of October bridge during peak hours (Tadamun, 2016). The planning paradigm that is followed in Cairo in response to the traffic congestion that causes mobility problems is the construction of more roads, tunnels, and bridges (Tadamun, 2016). This motor vehicle-oriented solution leads to other problems in terms of environmental pollution by increasing the number of motor vehicles, thus increasing both carbon emissions and traffic accidents. As stated by the Central Agency for Public Mobilization and Statistics (CAPMAS), there have been 15,516 road accidents in Egypt in 2012, leading to 21,620 Road Traffic Injuries (RTI) and 6,431 Road Traffic Fatalities (RTF), where the percentage range of cyclists and pedestrians in RTFs increased from 20% to 75% of RTIs in Egypt (Tadamun, 2016). Hence, the current planning paradigm for transportation and mobility issues in Egypt, especially GCR, needs a shift from being one of vehicles-focused to people-focused, which can lead to more sustainable and safe solutions for the well-being of both the people and the city, overall.

Thus, the improvement of streets starting from the planning and design phase of new streets and roads until their management and maintenance, coupled with relevant policies and laws has to reflect the various priorities of street uses in order to benefit from the multiple roles of streets as public spaces. Interventions have to encourage alternative mobility options such as walking and cycling with the aim of gradually replacing the increasing number of vehicles on streets that cause negative impacts on the environment and the people. Furthermore, regulating the uses and activities of different groups of street users is essential to reduce the conflict that arises among them. Each group claims its right and priority in using the public space without having clear boundaries, causing widespread issues

On the subject of policy relevance, people's rights to well-established pedestrian-friendly streets needs to be echoed in the Egyptian constitution, laws and regulations. Thus, public policies need to address the issue of pedestrian use of streets. The policy framework for this issue can be encouraged under more than one policy directive: environmental policies, in terms of mitigating emissions by reducing car and vehicle usage; social rights in streets as part of the public space, in terms of the 'right to the city', which is defined by the Global Platform for the Right to the City (n.d) as " the right of all inhabitants, present and future, permanent and temporary to use, occupy and produce just, inclusive and sustainable cities, defined as a common good essential to a full and decent life" (p.3).

Recently, some plans have been implemented towards *pedestrianization* of downtown streets such as Al-Alfi and El-Boursa streets. However, the proposed study focuses on pedestrian-friendly streets and not pedestrian-only streets.

1.3 Statement of Purpose and Research Questions

The proposed research intends to focus on the streets of Cairo from the pedestrian-use perspective. The main purpose of the research is exploring and examining the factors that make the streets of Cairo better places for walking, more inviting, and adaptable to be used by pedestrians, who are the main group of interest in this research. This study intends to contribute to the limited qualitative research on walkable streets and pedestrians' walking experience, specifically in Cairo. In addition, it provides a conceptual framework for understanding walkability of streets and the experience of pedestrians built on both empirical field study and prevailing theoretical models as reviewed in the literature.

In order to closely examine the factors that determine Cairo streets to be walkable and therefore pedestrian-friendly environments, the research investigates the current status of one street in Cairo as a case study. The case study entails investigating both the street characteristics and the local pedestrians' needs and perceptions towards their experience of walking in the street. In addition, an expert's points of views are pursued in order to have deeper insights into the issue of pedestrian-friendly streets from a professional perspective.

The research aims to address the question: What would make Cairo Streets more pedestrian friendly and/or walkable?

In order to find answers to this question, more specific questions have to be answered:

1. How walkable are Cairo's Main Streets? How do local pedestrians perceive the walking environment of Cairo's Main Streets?
2. What are the factors that influence pedestrians' walking experience in Cairo's Streets?
3. How would one mitigate factors that negatively impact pedestrians' experience in Cairo's streets?
4. What are the pedestrians' suggestions to manage different street uses and to improve street conditions for a better walking experience?
5. What are the policies, strategies, and other levels of interventions that can help improve the pedestrians' walking environment in Cairo?

2. Theoretical Framework

In designing the conceptual framework, various concepts and theories were studied and taken into account. First, the framework suggests that streets should accommodate different groups of users, included among them are pedestrians. According to Pedestrians' Quality Needs Report, a pedestrian is defined as "a human being assuming a specific role in traffic and in public space by walking and sojourning, in principle without using transportation means" (Methorst, 2010: 37). In order to be used by pedestrians, who can be so-called people on foot, the conceptual framework proposes that streets should possess certain features and characteristics to facilitate people's walking experience.

The conceptual framework is mainly guided by Mehta (2008) and MARC (1998), where street characteristics are suggested to be divided into three categories: physical, social, and land-use characteristics. The research proposed investigates those features, in terms of observing current features and asking participants about their perceptions and needs of the street characteristics that help our streets to be pedestrian-friendly. The analysis relies on the report by the European Cooperation in Science and Technology (COST) in its Pedestrian Quality Needs Report, which looks at the physical and environmental characteristics of the selected street studied, such as street sidewalks, lightings, furniture,

crossing signs, and greenery, besides other features that will mainly tackle the social aspects of streets, such as perceived safety, gathering places, and street activities. In addition, street characteristics in terms of land-use are investigated, which include a variety of goods, services, and businesses.

Referring to the designing and planning paradigms of streets as main components of public spaces, Jane Jacobs's Urban Design Theory is considered to be one of the main guiding theories in the field of urban design regarding public spaces which was introduced in her book *The Death and Life of Great American Cities* (1961). As per Sung et al. (2015), Jacobs criticized the prevailing planning paradigm of cities at the time of writing her book, where the focus was on the construction of highways and large-scale redevelopments instead of small-scale developments at the district and/or street levels. Jacobs (2015) supposed that this planning paradigm contributes to the loss of the vital urban life of spaces in general and of city streets in specific. In order to bring back, sustain, or encourage a vital urban life in cities, Jacobs asserted that "the physical environment should be characterized by diversity at both the district and street levels" (Sung et al., 2015: 1). Jacobs (1961) clarified that in order to achieve the urban diversity that creates vitality of the urban spaces, four key conditions have to be integrated: small blocks that are short with more intersections to decrease the travel distance across blocks for pedestrians and to slow down vehicles speed respectively, mixed land uses in terms of businesses and shops that attract visitors, adequate concentration of buildings in order to attract people, and buildings representing different ages with different businesses scales ranging from low-income to medium and high-income which can promote economic diversity (Jacobs, 1961).

In addition, the conceptual framework suggests that the dominance of one group of street users over other groups can contribute to making our streets less pedestrian-friendly. As mentioned earlier, streets are public spaces that have more than one group who claim their ownership. Each group has a different interest in using the street. On one hand, pedestrians' ease of access, mobility, and their right to use streets are the focus of this study. On the other hand, street ownership is claimed by other groups such as street vendors and car drivers, which creates a conflict among multiple stakeholders over the right in using streets; this conflict can be one of the outcomes of the car-oriented street environment, where pedestrians' needs are not well prioritized. In this regard, the research tries to pursue pedestrians' needs and perceptions of this issue. Pedestrians' walking needs are presented in the conceptual framework based on the guidance of existing models and theories, mainly Maslow's (1943) Hierarchy of Needs and Alfonzo's (2005) Hierarchy of Walking Needs. These two models assume that people's needs are set in a hierarchical order according to the importance of the need, where the basic needs are located at the bottom of the hierarchy. In reference to Maslow's theory of human motivation, it is concerned with human needs in general, which are physiological, safety, belonging, self-esteem, and self-actualization needs; while Alfonzo's model focuses on pedestrians' walking needs in specific, namely feasibility, accessibility, safety, comfort, and enjoyability.

Pedestrians' walking experience is affected not only by their needs and street characteristics, but also by their perceptions towards all of these factors, which is in turn shaped by their social and cultural background. It has been assumed by Hofstede (2001) and Early (1989) that different people in different situations with diverse cultural backgrounds may have dissimilar priorities regarding their needs (as cited in Methorst, 2010).

Yet, people's perception of an issue and their rights is not enough; these rights need to be protected by laws, regulations and institutions that guard the public interest. Thus, the role of urban management is essential in managing the public space in a way that balances the different uses and interests. It is supposed that if urban management and

regulations do not take into account the perceptions and needs of pedestrians, their efforts and regulations will not be directed towards improving pedestrians' experience.

3. Research Methodology

Qualitative research methods are used for both data collection and analysis in order to seek deep insights into the issue, serve the purpose of this micro-scale study by allowing the researcher to describe the setting's micro-scale characteristics through participant observations, help in learning why people behave in a certain way through interviewing some of them, and generate, shape, and reshape the conceptual images of the setting continuously according to the ongoing observations; thus, improving the validity of the developed conceptualization (Ambert et al., 1995).

The study depends on primary sources for collecting first hand data directly from the field of study. A case study of one street in Cairo was conducted: Abou El-Atahia Street, which is an extension of Abbas El Akkad Main Street in Nasr City, as one of Cairo's well-established districts. Studying Nasr City as one of Cairo's peripheral districts helps to explore further areas. According to Elshahed (2015), Nasr City was built in 1958 during Nasser's military regime as the *city of revolution*, which was envisioned to be Egypt's new capital. It was planned by architect and planner Sayed Korayim as a modern city that reflects the development the new regime was heading towards. Building Nasr City was aimed at attracting the new middle class during the late 1950s. Beside residential purposes, planners of Nasr City dedicated spaces to building administrative facilities to locate new ministries and to relocate others from the downtown zone (Elshahed, 2015).

The case study street, Abou El-Atahia Street, is an extension of Abbas El Akkad Main Street in Nasr City district. The street connects between two main artery streets in Nasr City: Mostafa El Nahas and Zaker Hussein streets, which cut through almost all neighborhoods of Nasr City. Abou El Atahia Street then is one of the connections between these streets, as an extension to Abbas El Akkad Street, which helps to move heavy traffic from central Nasr City towards its edges, including traffic heading to the New Cairo and the Ring Road.

With regards to the street type in terms of usage, it is not limited to one type of either residential or commercial uses; instead, it is a mixed-use street visited by wide-ranging types of pedestrians due to the presence of a number of landmarks. For example, there is the international park, which is a destination for a variety of people for multiple purposes, such as school trips from different governorates, families, and individuals for recreation, jogging, walking, wandering, dinning, etc. Moreover, there is the Wonderland shopping mall and amusement park, which has a cinema theatres, diners, coffee shops, a famous supermarket, and other types of shops. On the other side of the street, there are residential buildings that have on their ground floors clinics offering a range of medical services, shops including bookstores, stores for renting and selling bicycles, computer services and copying centers, among others, and the Egypt Air travelling office, as well. On both sides, there are kiosks that serve both car drivers and people on foot, whether walking down the street or visiting the park or the mall. Due to its mixed-use nature, it is believed that this street is diversified in usages and activities; thus, various categories of people are visiting it for diversified purposes and during different times, which offers a rich environment for studying the pedestrians walking experience in a naturalistic setting among other street users.

The case study entailed nineteen interviews that were conducted with willing pedestrians where their walking needs and perceptions were extracted from their responses. In addition, the street characteristics and street users' behavior were observed by the researcher through several visits as field observations helped in providing answers to the detailed research questions, both directly and indirectly

In addition to field observations and interviews with pedestrians, a thirty minute in-depth interview was conducted with an expert in urban planning in Egypt, who has been involved in launching a number of pilot projects in the Downtown area such as revitalising the passageways to serve as public spaces for people-oriented activities.

4. Study Findings

A. Field Observations of Street Characteristics and Users' Behavior

Physical characteristics

Pavement/sidewalk

The study found that the pavement on the side of the Egypt Air office in Abou El-Ataheya Street-the study area-was broken at the corners, where bricks are out of place and sand appears. In addition, metal protrusions were more than one on the same pavement. As for the street middle island pavement, it was in a very bad condition. Tiles were broken and wrecked totally and they obstruct pedestrians; also, the pavement is so narrow that pedestrians can easily fall. On the other side of the street, at the side of the International Park and Wonderland Mall, the pavement was higher than that on the other sides, especially in front of the mall, which may cause difficulty for people to step up and down from it. Nevertheless, some parts of the pavement along the international park side were lower than normal. Therefore, no steady design of pavements was recognized.

Street furniture

On the side of the Egypt Air office, there was only the bus stop seat that was recently installed. No seats were seen elsewhere within the area limits of the study site. During one of the interviews, two participants stated that they were using the seats of the bus stop to have some rest, and they were not waiting for the bus. Other participants were observed sitting on the grass in the street's median island eating their lunch, as there were no benches to rest on.

Lightings

As for the lightings, one of the sidewalks was lit up by lamps that are installed by the Egypt Air office on the fence surrounding it; no other lights were installed by the municipality. While on the pavements of the street's middle island, municipality lamps were installed overlooking both sides of the streets; however, the researcher found that at evening approximately half of them were not working. On the other hand, the advertising signs that were posted on these lamps were lit up.

Signage for direction/ to find one's way

There was no signage showing the directions to streets or even to landmarks around the site selected. During the participant observation, more than one pedestrian was asking about the directions to nearby streets and shopping malls. Only advertising signs were noted everywhere.

Crossing lines/signs/speed bumps

No zebra crossing lines or signs were observed. In addition, there were no speed bumps to slow down cars despite the high pedestrian traffic on that street. This would be an important addition, especially since school trips with different ages of students visit the international and the amusement parks.

Trees and green areas

The street has a landscape that can be categorized as an aesthetic factor, particularly due to the presence of the huge international park. However, the trees were not perceived to provide the shade needed for pedestrians.

Social characteristics

In order for streets to be a space for social interaction, some elements that may partially be related to users' behavior have to exist such as cleanliness and safety. Thus, street users' behavior towards those elements was observed. It was noted that restaurants and food outlets employees throw their waste beside the garbage containers and in the green middle island, despite the presence of huge waste boxes allocated close to the pavement. As a result, street dogs gathered around the food leftovers and caused fear for people on foot either trying to cross the street or just walking. The presence of packs of dogs caused great concern to pedestrians who were worried about their physical safety on this street. For example, pedestrians tried to avoid the garbage around the corners and on the pavements, but this decision exposed them to the risk of going down the pavement near the cars speeding on the street, which is noted to be an unsafe act. During participant observation, two young girls wanted to cross the street from one corner to another. They stopped the researcher and asked for help in crossing because they were afraid of the dogs surrounding the garbage. While crossing with them, the researcher seized the opportunity and asked them about what they dislike about this particular street. They answered quickly and without delay, "The bad smell of the garbage and the dogs".

In addition to the dispersed waste by the food outlets, pedestrians' were observed throwing waste while walking. Moreover, restaurants' motorcycles used for delivery, private cars, and buses of school trips parked along the pavement, leaving no space for pedestrians to walk safely neither on the pavement nor down the street as they will be much closer to the traffic. Details of these concerns are discussed later as part of interview responses reflecting people's walking needs.

Regarding the presence of gathering places for people on street, there was no such feature, except if people purchase a ticket to enter the Amusement or the International Park. Besides, there were no seats or benches on the street where people could sit to rest or socialize. Instead, it was observed that people use the bus stop seats and the middle island to rest, talk, sit and eat together. Thus, it was observed that people needed to use the street in social activities such

as gathering, eating, or just to rest from a walk, but there were no facilities satisfying their social needs. However, they managed to use the bus stop seats and the middle island to undertake their needed activities.

Land-use characteristics

Abou El-Ataheya Street is a mixed use street, where it has a variety of land use. There is the International Park that attracts people, especially school trips, and Wonderland Mall and Amusement Park which includes cinemas, shops, and a supermarket.

There are business offices, medical care clinics and centers, pharmacies, bookshops, groceries, and other outlets, as well. Therefore, the street was noted to be offering a variety of services to its visitors, which was observed to be an advantage as it attracts different groups of people to enjoy the diversity in goods, businesses, and services.

Street users' behavior

Vehicle drivers

It was observed that cars and motorcycles park partially, totally, or adjacent to the pavement, leaving limited space for people on foot to either walk on the pavement or on the street itself as they are forced to be closer to the traffic.

Street vendors

This phenomena was not observed on the case study street except for one vendor with a cart selling slippers beside the shopping mall. Accordingly, the absence of this factor on the case study street makes it difficult to analyze the influence of street vending on pedestrians' walking experience. This absence proves to be one of the study's limitations that needs further research in other areas.

Shopkeepers

Food leftovers and waste from restaurants were thrown outside the garbage bins and scattered on the ground where dogs are normally gathered, causing them to fetch the waste and annoy and frighten people on foot.

Photo (1). People using the middle island to sit and eat.



Photos (2) & (3). Wrecked pavement/sidewalk.



Photo (4). Metal protrusions on the pavement/sidewalk.



Photo (5). Encroachment by a government entity; no lights



Photos (6), (7), and (8). Where would people walk? Parking, garbage, and encroachments!



- Source of photos: Author

B. Interviews with Pedestrians

Participant observation included observing the street features and users' behavior. In addition, interviews with willing participants who differ in gender, age, and occupation were conducted. The data collected mainly pointed out people's perceptions of walkable streets, which in turn clarified their walking needs.

By studying the transcripts of interviews facilitated, meanings and labels were assigned to words; subsequently, codes were generated. Thus, codes of similar nature were grouped under one category. However, some codes fit under more than one category.

Categorization of Pedestrians' Needs According to Street Interviews

The research design in terms of its questions, conceptual framework, and guiding models were guided by Alfonzo's (2005) Hierarchy of Walking Needs and Maslow's (1943) Hierarchy of Needs. These were used for guidance in designing the interview questions, which yielded responses with themes that were categorized as follows:

Category I: Safety

According to COST - the European Cooperation in Science and Technology in its Pedestrian Quality Needs Report:

Safety is generally defined by the absence of risk or – less strict - the absence of accidents and potentially harmful incidents. One has to bear in mind, however, that absolute safety is not possible. The safety of pedestrians should always be seen within the context of mobility and accessibility. In the past safety was often achieved by excluding pedestrians and/or making places inaccessible for them. (Methorst, 2010: 97).

When pedestrians were asked about their walking experience on the selected street in terms of what they liked or disliked, many of them mentioned their safety concerns. The safety factor did not show up in the responses in one linear direction; but, they were stated in terms of more than one element that can be sorted out as safety. For example, most of the informants referred to safety in terms of the difficulty they faced in *crossing the street*. One of the interviewed women, who was on the street with her kids, mentioned that “crossing is very unsafe especially that I have children.” Another informant who was an eighteen year old boy expressed his concerns by saying, “When I cross the street, I am not sure whether I will reach the other side alive or dead.”

Not only was this element recorded during the interview, but also it was observed during participant observation, when two young girls wanted to cross the street from one corner side to another and they were asking for help.

Another meaning and perception that was labelled as safety by pedestrians was *harassment*. Men and women informants mentioned this element, where one Sudanese man who lives in Egypt said “I see that streets are not safe for my wife due to harassment. I do not let her walk alone, so I do all the shopping for my family to avoid letting her alone on streets.”

Another young man explained harassment as “dirtiness of people,” he literally said, “I do not let my sisters walk alone because of the dirtiness of people on street, and they do not respect women.” Also, women, especially young ones, mentioned harassment as an annoying feature of streets, where one young girl said, “I face verbal harassments by micro

bus or taxi drivers when I am on the street usually in the afternoon.” Another group of young ladies perceived unsafety in the streets in terms of facing harassment.

Kidnapping was denoted as a factor that makes walking on the street a terrifying experience. This notion was mentioned by one informant when she was talking about the issues she faces on street while walking with her children.

As for the absence of *speed bumps* that oblige cars to slow down, some informants mentioned those elements as part of their fears in the streets. One informant said, “The person who is riding a car feels safer than people on foot; drivers do not care about pedestrians,” while a young girl cited, “There is no single bump on this street to slow down the speed of cars although there are a lot of people on foot here visiting the International Park and the Shopping Mall.”

Some other informants denoted that the presence of *stray dogs* in the streets gave them a negative walking experience. For instance, two young girls asked the help of the researcher, during the participant observation period, to cross the street as they were afraid of both crossing and the dogs on the other side of the street corner. Another young girl expressed her fear of dogs in the streets, but she feels helpless about this trouble as she has to go to school walking; she stated, “I find a lot of dogs when I go to school early in the morning, which makes me afraid to walk, but I have to go to school.”

One informant, who was a young girl, brought up the issue of *homeless people* in the streets who chased her twice while she was walking. She said, “Streets are disgusting. I dislike to walk because of a bad experience I had twice where I was chased by homeless people, I do not know if they were beggars or what.”

Robbery was mentioned as well by some pedestrians. One informant stated, “Streets are unsafe for people on foot as I have been robbed while I was walking.” Other informants mentioned that they heard stories about car drivers who speed up beside pedestrians and grabbed their handbags.

As for *lighting*, it was thought to be of importance, but no informant mentioned this element as a factor that may influence their walking experience on the studied street.

Category 2: Comfort

According to COST - the European Cooperation in Science and Technology in its Pedestrian Quality Needs

Report:

Comfort or Comfortable is one of the 5C's regarding to public space requirements for pedestrian. It relates to the extent to which walking is accommodated to competences and abilities of all types of pedestrians. In 'objective' functional terms comfort refers to observable usability, where pedestrians can use spaces or facilities without the apparent need to strain oneself. Comfort is primarily associated with positive feelings. (Methorst, 2010: 87).

A number of pedestrians' words were embedding the meaning of *comfort*, from which the meaning codes were created. For example, one of the interviews was conducted with two men who were sitting on the bus stop *seat*. During the interview, the researcher tried to know whether they were waiting for the bus or just using the seats to rest; thus, they said, “We are sitting here-bus stop seat- to have some rest.” They did not state clearly during the interview that

they notice the lack of seats for pedestrians to rest on, while in practice they do miss this feature as an element that influences their comfortability.

Another element that was highlighted in the interviews was the pavement/*sidewalk condition*. One informant explained in detail her negative experience with walking on the studied street. She mentioned that pavements do not have a standard design in terms of height and width. In this regard, she said, “The pavement does not have a standard level; I have to go up and down every time I walk on the sidewalk as each part of the pavement has a different height”. Also, she referred to the encroachments on the sidewalks in front of shops, where shop owners extend obstacles on the pavement. Moreover, she defined these features as “visual pollution”. She continued, “The pavement does not have a standard level especially in front of shops; this interrupts my walk especially with my baby stroller.” This makes her see that the street is unaccommodating towards her needs.

Car parking that is not regulated properly was also one of the factors that was mentioned by informants. During one of the interviews, one respondent said, referring to the street condition, “Where can I walk?” Accordingly, the researcher asked her what she meant, as streets have sidewalks for pedestrians. She replied, “There are no sidewalks for people. Cars park partially or totally on pavements in more than one row and I find myself closer to cars than on the street.”

Category 3: Usability

Continuing on codification and categorization, the researcher made the decision to group *priority for vehicles, encroachments, and middle island use* under usability. In this regard, some participants perceived that streets are better accommodated for cars than people. One participant said, “Streets are for cars; pedestrians should take care not cars.” Another mentioned, “I do not prefer walking except if I have to. I prefer using transportation,” pointing out that streets are not for people on foot but rather for vehicles.

Encroachments that were once mentioned as an undesirable remark of pavements that was coded under *comfort*, are noted again in people’s words as an obstacle in their use of the street as pedestrians.

The final element under usability is the use of the *street middle island*. This feature was not considered initially by the researcher until observed during the field visit. It was noticed more than once that groups of people sit on the grass in the middle island and buy food from a nearby cafeteria and use the island for gathering and dining. This was a remarkable feature that the researcher listed under the following categories: *usability and sociability* of streets. The researcher captured the opportunity and asked the permission of some of these groups to participate in the study; and they agreed. One of these groups was a family coming from a rural area. When they were asked about what they like about this street, they replied, “We are from a rural area and we love the crowd of city streets; we love to sit here on the grass and watch cars and people as it is considered as an outing for us.” Another group of teenagers were using the island for sitting and eating, as well. However, when they were asked the same above mentioned question, they pointed out, “What is the use of this space? Why does it not have at least seats for people to rest?”

Category 4: Navigation

Signage showing directions and names of streets were absent on the studied street, as per field observations. Besides, no informant has referred to the need for this feature. However, by observing pedestrians' behavior, some of them stopped to ask other people on street or the employee at the kiosk about the directions to a specific street and a well-known nearby shopping mall.

Category 5: Attractiveness/Pleasurability

As per COST - the European Cooperation in Science and Technology, "Attractiveness means the capability of giving rise to confluences in most pedestrian users through appeal based on intermediate spaces configuration (form, use and structure of spaces) (definition by PROMPT)" (as cited in Methorst, 2010: 86).

Cleanliness is one element that may attract pedestrians to walk on a specific street. Regarding this factor, most of the participants mentioned the lack of cleanliness on the street and the existence of garbage "everywhere" as a negative point. Some quotations of pedestrians' responses are as follows: "Garbage is everywhere;" "I dislike the garbage smell;" "the garbage burning smell annoys me."

The presence of *shops* on a street can also be an attracting feature for people on foot. One informant stated that "shopping is the only reason that can encourage me to walk," as she explained that she prefers going to shopping malls, but the presence of shops on the selected street is the only reason that makes her walk.

It was noted by the expert, who was interviewed for this study, that for street attractiveness, such as walking for shopping, it differs from one location to another. For example, he elaborated that if the study examines Downtown streets, this factor may be mentioned as a main aspect in people's responses, as Downtown streets are full of cinema halls and coffee shops that act as destinations for pedestrians. Consequently, it can be concluded that studying different areas and locations can result in different elements of importance for varying factors, where differences in design aspects may influence people's walking, experience, decisions, and preferences (interview with an expert, 2016).

5. Discussion and Analysis

In this study, findings suggest that *safety* and *cleanliness* in the street were the most frequent factors that influence pedestrians' perceptions of a walkable environment. This conclusion is reached through pedestrians' expressions of those features as explicit or implicit needs; thus, they are suggested to be the main factors that affect their walking experience. This finding supports Maslow's theory (1943), where safety is the second need after physiological needs. In addition, Henson (2000) has asserted that safety features can have significant influence on pedestrians' perception of the overall quality of the street environment (as cited in Sombekke and Katteler, 2008).

However, Alfonzo's (2005) theory, suggests that *usefulness* is prioritized rather than safety, where usefulness is defined by Mehta (2008: 220) as the "ability for the environment to satisfy the individual's basic day-to-day needs

for shopping, eating, entertainment, and so on.” In this study, *cleanliness* was coded as a sub-category of *attractiveness*. Thus, attractiveness that was mentioned in the conceptual framework which has the added components of usefulness as per Mehta’s (2008) definition, was also mentioned frequently as an apparent requirement of pedestrians.

The findings of this study are in tandem with both theories of Maslow (1943) and Alfonzo (2005), where Maslow (1943) suggested that safety is a priority after satisfying physiological needs, and Alfonzo (2005) suggested that usefulness, which is referred to in this study as attractiveness, along with safety are the paramount walking requirements for pedestrians. Nonetheless, this study used qualitative methods that are not directed towards creating a hierarchy of needs; therefore, findings of this research are not listed in a hierarchy. Accordingly, they cannot be generalized as they are not representative of the population, but rather they are indicators that may need further research.

However, some contradictions were found. As per observations, some physical characteristics of streets, such as sidewalk conditions, were obviously in a poor state; nevertheless, interviewees did not mention them as discouraging aspects, even if they were standing on a broken pavement during the interview. Thus, it can be concluded that factors that influence pedestrians’ perceptions of a positive or negative walking experience can be according to each one’s priorities, which indicates that walking requirements can be referred to as subjective judgments. In this regard, people’s different perceptions towards their needs were explained by Appleyard (1976) in terms of three modes of perceptions: responsive, operational, and inferential (Mehta, 2008), which are explained as follows. In responsive mode, people perceive their environment in terms of what they sense, such as smell, color, or texture; while in operational mode what attracts people is the accommodation of the environment to their activities. Finally, in the inferential mode of perception, the environment is perceived as a transporter of meanings and people consider features of the environment that are referred to as symbols for communication. It was suggested that once the basic walking needs have been fulfilled, namely feasibility and accessibility as per Alfonzo’s (2005) theory, the person’s mode of perception would prioritize other higher-level needs (Mehta, 2008).

Similarly, the researcher observed a lack of seats and signage for direction/way finding, besides observing people’s behavior towards these two elements. Instead of describing it as a problem, interviewees dealt with the two issues in different ways. As for the lack of seats, people were sitting on the bus stop seats or on the grass in the middle island. With regards to the lack of signage for direction, interviewees were found asking the help from others in order to discover directions.

Therefore, it can be concluded that although some pedestrians’ behavior indicates the importance of specific elements in the walking environment, these elements may not be perceived as needs. However, feeling the need for certain features may depend on the type of environment examined. For example, Heuman et al. (2005) have distinguished between the types of environment that may influence the importance of street benches. Users’ perceptions, culture, and behavior towards the elements of the surrounding environment, especially in Egypt, were referred to by the interviewed expert, who pointed out that it was notable that most of the new generation do not know that the new street signals were for pedestrians as well as cars. Accordingly, he indicated that people’s “attitude” and “culture” on streets was a key issue.

Cars invading streets was the most notable factor affecting pedestrians' walking experience. Under this theme, the most frequent issues mentioned by pedestrians were: car users who speed up and those who do not respect the traffic signs, as well as cars that park partially or totally on sidewalks. Also, *shop owners*, who encroach on sidewalks by extending goods or other obstacles in front of their shops, were another group of users taken into consideration by people on foot. These issues were sub-categorized in this study under the *safety* and *comfort* categories respectively; thus, they influence pedestrians from two perspectives: one as a safety and comfort concerns, and the other as conflict among different street users. Regarding street vendors, there was no mention of this group through interviews. Observations did not capture this feature at the study area during the participant observation period. It is assumed that this street feature may appear in one location and disappear in another. Thus, its influence on pedestrians could not be examined in this study.

As for the other elements that may influence pedestrians' perceptions towards pedestrian-friendly streets, the conceptual framework points out people's cultural, educational, and socio-economic backgrounds. As per Ewing and Handy (2009: 67), "perception is the process of attaining awareness or understanding of sensory information. What one perceives is a result of interplays between past experiences, one's culture and the interpretation of the perceived." In this regard, interviews had shown that people differ regarding these dimensions; accordingly, a new category was created in this study named *awareness*. Findings under this category revealed that there were no consistent patterns relating people's different backgrounds to their perceptions of a walkable environment. Thus, reflections on pedestrians' awareness could not be drawn. For example, the gatekeeper's daughter was so aware of what she needed exactly on the street; not only did she identify her walking needs in detail, but she also mentioned some solutions in terms of laws and regulations. The employee at the kiosk who was supposed to be at a similar standard of living mentioned that he cares only about making his living and not about the street conditions, as he will walk in the streets under any circumstances. Likewise, one pedestrian, who was an engineering student, was standing on a wrecked sidewalk and did not mention such a feature as an annoying one. Thus, different perceptions were recognized even among people with similar socio-economic backgrounds, such as the gatekeeper's daughter and the kiosk employee.

As a result of field observations and interviews with pedestrians, findings reflected patterns ranging from connections to contradictions in reference to each other. In addition, the in-depth interview conducted with a professional assisted in connecting and analyzing the information gathered and established a deeper insight into the issue, which was reflected in the discussion and analysis processes. The below section will discuss and analyze those patterns to reach conclusions that may argue with relevant theories and models.

6. Conclusion and Recommendations

The aim of the presented research was to explore and examine the factors that help to create a walkable street environment in Cairo. The motive behind studying this topic was the importance of accommodating streets for people on foot in terms of social, economic, and environmental benefits for both the people and the city, as discussed earlier in the literature review. The research was concerned with micro-scale street level features by examining the current situation of one street in Cairo as a case study that could be indicative for similar streets. The case study entails collecting data by using qualitative techniques, namely participant observation, interviews with pedestrians, and one in-depth

interview with an expert in the urban planning field. The used techniques were believed to integrate in a way that shapes the issue from multiple angles, which aims at suggesting comprehensive solutions to policy-makers and city planners and officials, who can prioritize people's needs in order to make the streets of Cairo a better places for pedestrians.

The presented results suggest the importance of safety on streets as a key factor influencing pedestrians' waking experience and perceptions towards a pedestrian-friendly street environment; however, safety is perceived by local pedestrians differently, who referred to it either explicitly or implicitly in terms of crossing the street, harassment, robbery, stray animals, homeless people, and kidnapping. In addition, cleanliness that was indicated by the conceptual framework as a sub-category of attractiveness was suggested to influence local pedestrians' walking experience. Other factors such as the deteriorated conditions of sidewalks, the absence of street seats and signposts, and improper street lighting were also recognized through observing their conditions and people's behavior towards their absence. Besides, the study findings propose that cultural and socio-economic dimensions- stated in the conceptual framework- deserve further study.

The practical value of this research would be its identification of the characteristics of the street environment in terms of physical, land-use, and social aspects and different street uses by car drivers, shop owners, and street vendors, on which practitioners, community organizations and government entities should concentrate their efforts in order to positively impact the dynamics that were found by this study to influence the pedestrians' uses of one of Cairo's streets. Likewise, the study's findings have made additional contributions to understanding pedestrians' perceptions of pedestrian-friendly streets on a micro-scale level by interviewing people on the street to get their insights into the issue.

The findings show that policy-makers, planners and managers of public spaces not only need to provide physical improvements such as proper sidewalks in height, width, and continuity, street benches, speed bumps, signposts, and other micro-scale physical features that create pedestrian-friendly environments; but also, more importantly, need to attract and encourage a variety of people, through recognizing and supporting the needs of different age groups such as elder people and physically disabled pedestrians, who were not observed on the case study street. Consequently, improved streets that consider people-oriented plans and designs, and not limited to car-oriented ones, can positively impact pedestrians' walking experience. As advised by the expert, the three main stakeholders in the process of streets improvement and management are the government, urban planners and designers, and street users as beneficiaries. Accordingly, solutions and improvements on ground, including but not limited to urban planning, policies, laws and regulations, have to be discussed and studied at those three levels with a special attention to the users' inputs.

These findings highlight the need for further policy-oriented research in the city planning process in Egypt. Although this study adds to the knowledge of linking the built environment characteristics and people's walking needs through presenting subjective perceptions of individuals towards their walking environment, it is limited in number of interviewees, location, and timing. Therefore, more studies are needed that can better examine diverse locations, in different timings of the day and around the year, and with other research techniques that may encompass a wider range of pedestrians. The findings also highlight the importance of a participatory planning approach for cities that involves people starting from the planning phase and continuing until managing a city, the target should be the well-being of residents. Thus, setting priorities for planning a new street or managing an existing one can be supported by local

people's feedback, which is difficult to detect without allowing them or their representatives to participate in the planning process. Adopting people-oriented planning paradigms is a key.

The enforcement of existing laws is an essential issue. The Public Cleanliness Law and its Executive Statute with Decree 134/1968, which was amended by Laws 31/1976, 145/1988 and 10/2005, define the responsibility of the governmental entity responsible for public cleanliness works starting from establishing the places appropriate for putting the rubbish and wastes until their transport. It also prohibits to throw wastes or garbage anywhere else other than the boxes or places designated. In addition, Article 9 of the same law states "whoever commits a violation of the provisions of this Law, or the decrees enforcing it, shall be liable to a fine between 20, - EGP and 50, - EGP" (Fahmy, 2013: 32). Similarly, the Environment Law 4/1994, which was amended by Law 9/2009, is concerned with protecting the environment in terms of prohibiting dumping the garbage and solid wastes in any place except at the places or containers specified for such purpose (Fahmy, 2013). Besides, it states that "the local administrative bodies in collaboration with Environmental Affairs Agency, should keep the trucks and bins clean, allocate the bins and places of collection, otherwise the person in charge in the local administrative bodies will be held responsible" (Fahmy, 2013: 33). The two mentioned laws were set as examples showing the presence of laws and regulations that stipulate the responsibilities of the governmental entities towards the public cleanliness and environmental protection; in addition, they set limits for users of public space regarding throwing garbage. However, the case study findings, which were based upon people's responses and observing the study area, suggest that neither the public are aware of these laws nor the local unit's garbage collectors showed abidance to their stated responsibility. Moreover, there are no defined mechanisms through which the local governmental unit can practically detect or monitor abidance and deviation of these laws. Thus, it is recommended to further investigate the existing laws that can influence the street environment and to devise suitable and practically feasible mechanisms that can monitor the enforcement of the set laws.

Finally, in order to create pedestrian-friendly streets, people's awareness of the value and importance of such an environment is suggested to be a key driver. This suggestion is based on the findings that showed that the case study participants were not all aware of the concept itself. Accordingly, it is concluded that public awareness, which includes pedestrians' and other street users, can be one of the suggested mechanisms to be adopted by relevant government entities and civil society organizations in order to direct people's attention towards the social, health, environmental, and economical benefits of having walkable streets and minimizing the reliance on motorized transport modes

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