

Towards Developing Sustainable Design Standards for Open Spaces

Amany Saker Mohamed

**Assistant Professor- Architecture Department, Faculty of Engineering,
October 6 University, Egypt.**

Abstract:

Urban designers are interested in designing open space with aesthetic standards and the process of visual perception, which depends only on vision, while the rest of the human senses are overlooked, regardless of their importance. Thus, this study aims to enable urban designers to achieve better open urban space designs that fit all humans for better interaction. As a result of this appeared the use of strategic process for open spaces developing concepts, where it can be used to define them to put a positive image and identity for open spaces.

In addition, create a set of criteria that help visualize (personalization), the design of an open urban spaces. The conceptual framework will be formulated through a practical study of two examples, one of which is international, which is Congress Park Square located in downtown Portland, and the second is local, which is El Tahrir Square in downtown Cairo in Egypt. The practical results will be combined with field observation and questionnaires. This framework will attempt to provide a methodology for developing the design of urban open spaces.

In the end, the research emphasizes the importance of cultural dimensions and verifying the identities of communities so that cities can benefit from cultural dimensions, attract creators, and provide a conceptual framework for arts and cultural planning to achieve sustainable urban development. These dimensions are distinctive architecture, urban structure, cultural festivals, and art galleries. Where the paper aims to point out the unique values related to heritage and the awareness of urban and architectural character.

Key words: Positive out spaces, Sustainable development, Urban developing concepts.

1-Introduction:

Although few designers are concerned while designing urban spaces with human sense. These senses affect perception which mainly refers to Human sense, vision and hearing are the most influential senses of perception. Nevertheless, the strategic urban development for spaces perception, is carried out for all Human sense and not limited to the sense of vision only. This study focused on the relationship between the psychology of urban perception field and designing urban identity, under the impact of urbanization developing which compatible with all human senses considers.

From the review of previous literature, the urban design standards will be recognized mainly with the sense of vision. Thus, this study combines the theoretical framework presented in previous studies, theories and concepts related to the urban space design standards used in various world cities.

The analyze of ETS and its effect of the urban landscape and its cultural, social, and historical significance in the making of POS. Where ETS is not just a square; the square is the essence of the revolution which eventually brought power to it. And must “clean and beautify” the square, there are many attraction buildings that are distinctive features in ETS, locate south towards ETS the Mogamma building. At the Centre of ETS is a large and busy traffic circle.

For a space to be POS, it must has defining characteristics that can be readily identified. These are functional as well as non-functional qualities, people’s experience of the space, what the place stands, activities, and what kind of People inhabit and visit the place. The successful places had strong qualities, history, culture, lifestyle, quality of place, diversity. Study ETS and the spaces, their (Architecture, Urban Design, Infrastructure, Entertainment and Activities),

In the end determine the elements for the development of ETS open spaces, and the recommendations for reviving and development plan for ETS.

1-1Research objective:

The research aims to revive the values and cultural heritage of the historic ETS area, redesign the square, and add ceremonial, artistic and aesthetic activities while preserving its characteristics and uniqueness. With the provision of a framework for developing,

testing, and evaluating spaces, and developing them for the best use of valuable and neglected out spaces. This includes spaces with culture, heritage, history, and identity. And study places that have succeeded in developing themselves, such as CSP in Portland, and set target goals for the development of places, designed spaces, and the impact of their use on spaces, as well as identifying spaces that should be focused on to develop to attract more visitors.

1-2 Methodology:

This paper attempts to explain the “positive spaces between buildings” and how these spaces attract social interaction. and changes in the perception and use of the spaces between buildings encountered by residents and users of these buildings. The conceptual framework follows a quantitative approach to data collection guided by research questions. This survey is based on being on the site. Statistical analysis was used to analyze the results.

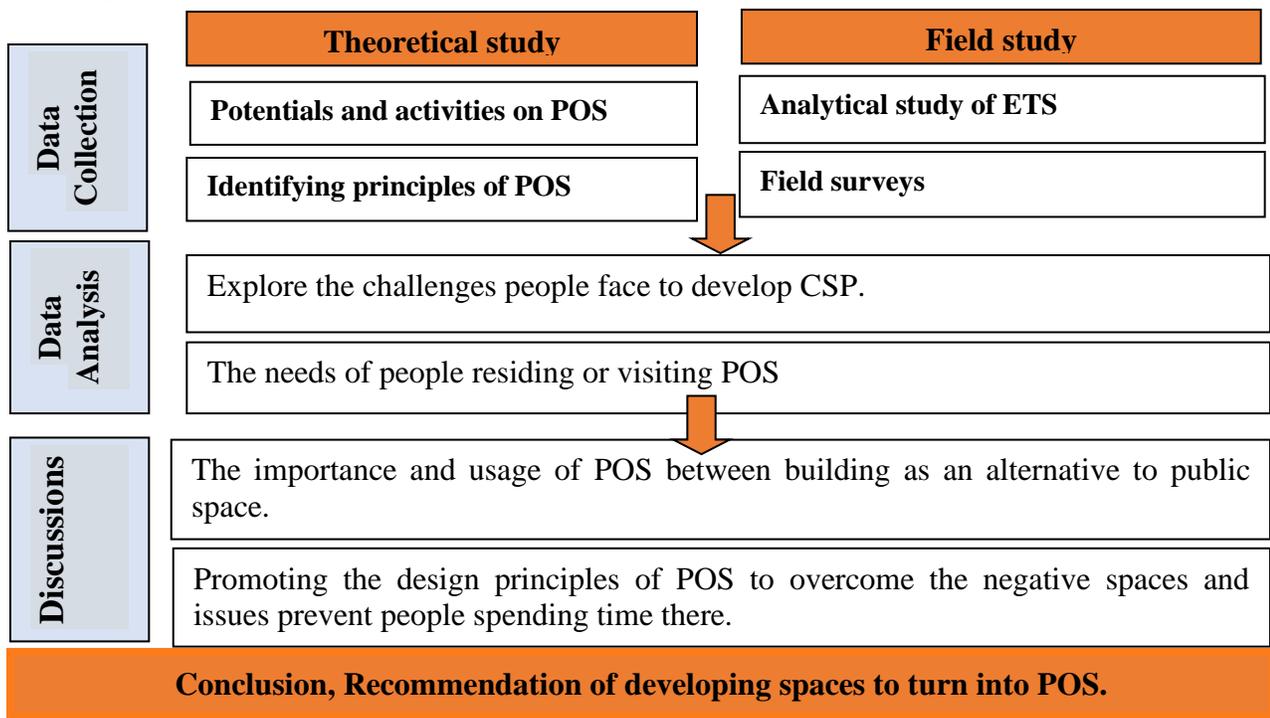


Figure 1: The research methodology. Source (the researcher).

2. The Benefit of POS for Community:

-Is a strong element in the urban design and aesthetic of spaces, plays an important role.

- Supports economic activities and social interaction in community development, -provides the leisure needs of a community and reduces inherited tension and conflict in deprived parts of urban spaces [1].

•**Educational Benefits:**

Especially with the young, playing plays a great role in developing their mental and physical skills, & enhancing their cooperative and interactive habits.

•**Health Benefits:**

Activities like walking, running, & other sport activities enhance the physical health of the community as well as psychological health also [2].

•**Environmental Benefits**

These open spaces help in supporting biodiversity, pollution abatement & cooling, & in maintaining landscape & cultural heritage.

•**Economic Benefits**

Reviving open spaces have many economical spaces like increasing property values, economic revitalization, attracting and retaining business of residents and tourism benefits [3].

2.1 Activities in POS:

Nassery Activities: like Going to school or work, Shopping, Waiting for transportation.

Optional Activities: Taking a walk for fresh air, stopping for a cup of coffee, People watching [4].

Social Activities: Greetings, Conversations,
Passive contacts as simply seeing and hearing other people.

3. El Tahrir Square. A CASE STUDY:

Tahrir Square, also known as "Martyrs' Square", is a square in the center of Cairo. ETS has been a space for political demonstrations in Cairo, which is a unique place in terms of

its culture, architecture, and nature. It has not been developed and redesign to be a positive visual image for the city [5].

3.1. History:

Tahrir Square arose 140 years ago and was previously called “Ismailia Square” after the nineteenth century ruler Khedive Ismail, who experienced the changes that occurred in France, and wanted to re-design Cairo in the Paris style, so he decided to create a neighborhood new downtown "Paris on the Nile". After the Egyptian revolution in 1919 [6].



Figure 2: The relation between ETS in Cairo and Charles de Gaulle square in Paris, 1969 [7].

ETS was designed to emulate the design of Place Charles de Gaulle, which contains the Arc de Triomphe in the French capital, Paris. Streets were designed in straight lines at right angles in most cases and on both sides of the streets were pedestrian lanes, and the middle of the street was for cars and animals. So, it was inhabited by princes and greats [5].

3.2 Attractions:

Ismailia Square (now ETS) as the square served as a southern gateway to the city center and a focal point in the transition westward across the Qasr al-Nil bridge to Cairo's future development and expansion. And there are plenty of tourist attractions. ETS is not just the square but the core of the revolution that finally brought it power [8].

ETS attracted people to visit it from various parts of the city for several reasons. The square is situated at the geographic center of Cairo. The square has been growing from

this center in all directions, by the main streets of Cairo such as El Tahrir Street and Al Kasr Al Aini Street radiate from ETS. This made the square a meeting point for all protests [7].



Figure3: ETS in different time periods. Source: the researcher.

3.3 Feature Around ETS:

ETS includes a lot of buildings, the Egyptian Museum, the House of Folklore, the National Democratic Party (NDP), the Mogamma government building, the Headquarters of the Arab League building, the Nile Ritz-Carlton Hotel, and the campus of the American University in Cairo. The Cairo Metro serves ETS with the Sadat Station, linking Giza, Maadi, Helwan, and other districts and suburbs of Greater Cairo. Its underground access viaducts provide the safest routes for pedestrians crossing the broad roads of the heavily trafficked square [9].

3.4 The Form of ETS:

At the center of ETS is a large and busy traffic circle, ETS is regular circular, central, radial. In ETS Spaces can be defined as positive and negative.

The filled space is defined as POS in the shapes that make up the design. And Negative space is the background. The negative space in design, that space didn't achieve the function that was designed for it. And it important as the POS is.

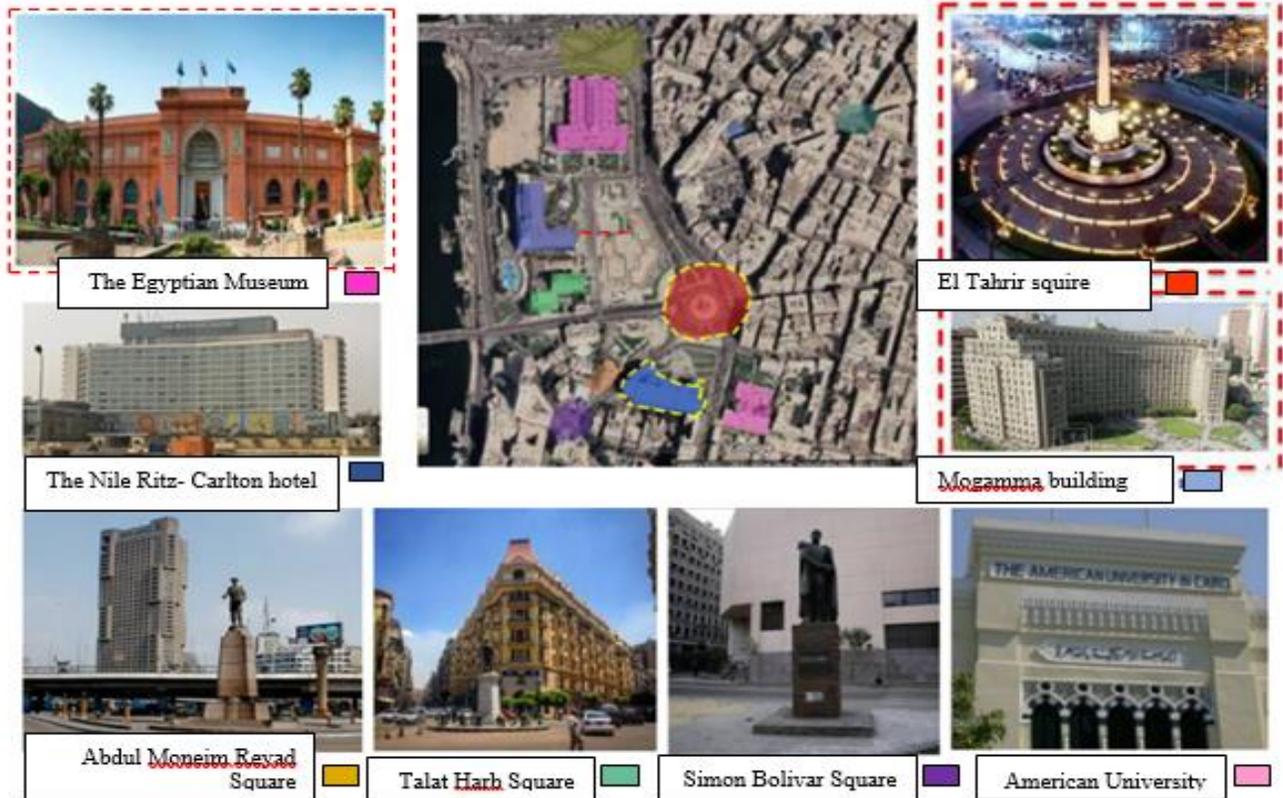


Figure 4: Urban spaces and buildings around ETS. Source: The researcher

The installation of ETS, and its facade and the aesthetic elements that compose the overall design of the square buildings. there is many of the architectural styles in ETS between classic style, such as the Egyptian Museum and apartment buildings, and Islamic style as the Mugamma and the American University building, where the buildings in the square are in harmony with the surrounding buildings [10].

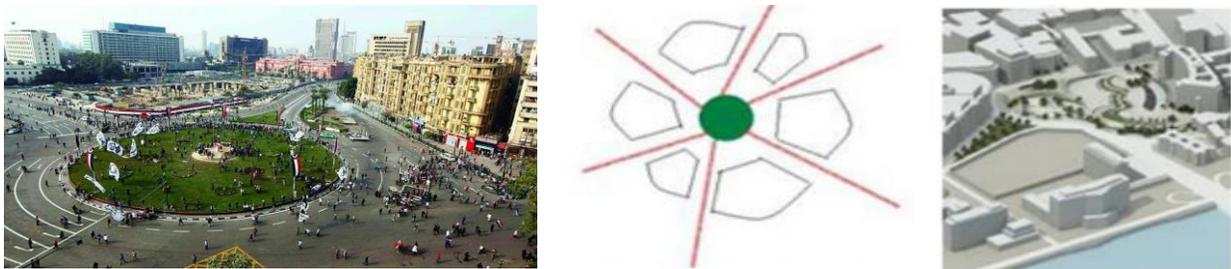


Figure 5: ETS traffic circle and ETS form. Source: The researcher



Negative space positive space
Figure 6: The spaces in ETS Source: The researcher

There are many heights of the buildings surrounding the square, including 4 floors and 12 floors, which forms a movement with the skyline, when study of the skyline and found difference from each other building height, The Altitudes are not fixed at the ETS so the visual image an irregular in this place [10].



Figure7: The skyline of ETS and found difference buildings height.
Source: The researcher.

3.4 The relationship of the Mugamma ETS building with urban space:

Mugamma El Tahrir, a large complex which houses many governments administrative offices and around 18,000 employees. The 55-metre-high edifice was designed in 1951 by an Egyptian architect (Kamal Ismail) who design as Islamic style.

Mugamma El Tahrir is polymorph, from its side it resembles the bow of a ship, and if we look at it from the back, we will see part of the circle, and in the middle of the square, then the Mugamma takes the form of an arc [11]. The formation of the Mugamma El Tahrir in relation to ETS and respect for its circular shape and its connection with its main axes, which gives complete homogeneity and an integrated urban form [12].



The Mugamma from Makram Street in the shape the bow of a ship.

The Mugamma from the middle of the ETS in the form of an arc.

Figure 8: Study the Mugamma El Tahrir building with the urban space. Source: The researcher

3.5 Problems in El Tahrir square:

- 1- El Tahrir square is known as the political square in Cairo, but the urban spaces design does not immortalize the greatness of the events in ETS.
- 2- The Mogamma that serves Egyptians coming from other cities to finish their governmental papers, which contains a lot of functions and uses. don't perceive the building, they perceive billboards.
- 3- Billboards above the buildings surrounding the square, But the problem here is El Tahrir's Users
- 4-Traffic congestion is disrupting many citizens, increasing environmental pollution
- 5- The spread of street vendors problem because they occupy the roads and sidewalks, and it's disrupting the movement of pedestrians in ETS.

6- Lack of interest in landscape eliminate in ETS, a few plantings on sidewalks, and there were no shaded seats, especially in the Bus Station.

7- The Audio pollution in the square comes from the direction of Mugamma El Tahrir which thousands of people visit every day.

8- The lack of POS for pedestrians and sidewalks in ETS.

9- ETS Streets are unclean, as there is no interest in the cleanliness of streets by individuals and organizations

4.The Congress Square Park:

The CSP is in downtown Portland, on the other side of the Portland Museum of Art. The park develop process through an urban renewal project funded by an Urban Development Action Grant in 1980s. The goal was to transfer the park into a “showplace of the city” by creating a new open public space. The park was a gathering place for residents and visitors. These outdoor events added to develop the square of Portland’s arts such as dances, movies, and concerts, the square has a vital space and location, but was allowed to deteriorate. it was not (used, safe, comfortable, or accessible) [13].

Highly populated CSP transforms community assets into an impressive public space and serves a neighborhood crammed with commercial real estate, educational and arts institutions, and residential housing. It must therefore provide these residents with important opportunities for recreation, relaxation, and interaction [14].

4.1 The reason for choosing CSP and its similarity with ETS:

Both are in the center of the city and near a museum that has a cultural impact on visitors to the area, and the steps to develop the successful CSP and transform the square into a “showcase for the city” can be taken through the creation of a new public open space.

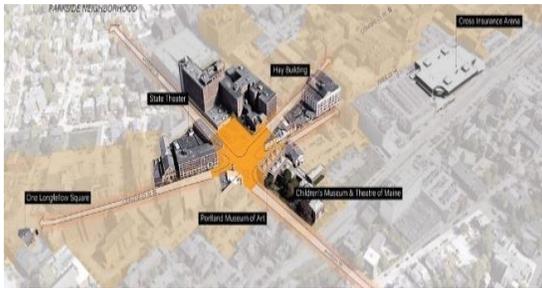


Figure 9: CSP before the interventions [14].



Figure10: CSP Vital location [13].

4.2 CSP Development Process:

As the city approached the sale of the park to an event center developer, Friends of CSP formed of community members, neighbors, owners, and local business owners, believers specifically in the potential of Congress Square Park, and the importance of exploiting public space for the community [15].

The first step: the community led place industry was a huge success, some moving furniture and free wi-fi were provided, more people started stopping. Food trucks brought in meals (coffee, cake, and street food); meals brought more people. More people started coming and staying in the square all day after finding places to sit outside, read the newspaper, enjoy a cup of coffee, have lunch, or get some work done. The square has been transformed into a welcoming public space [16].

Step Two: Add evening activities to the field, such as Swing Dancing in the Square, with a live band, hosting the World Cup on the field, bringing people together in one of the finest traditions of group spirit. CSP breaks down social walls and brings society together [13].



Figure 11 The first step: Friends of CSP clean up the space [14].

Figure 12 : CSP Redesign (Photo by Friends of CSP)



Figure 13 : An event at CSP, like Swing dancing [15].

Watching the World Cup live, Enjoy the sunny day.
Figure 14: Public space industry (Photo by Friends of Congress)

Also, from the events that took place in the square is an exhibition of contemporary visual and performing art to organize events and artistic interventions, and present artists to the public in important ways for artists. The CSP was a great opportunity to connect more people with the artists we believe in working with [17].

Step Three: Improve infrastructure, such as the moving planters in the center of the square, and art installations, such as Pandora LaCasse's sculptural lighting forms that add color, light and shape to the backyard of the garden in the evening. Also implemented a project by artist Michael Clyde Johnson called "Untitled Patio with Benches and Basins" to revitalize the center of the square and give people a place to sit and relax [15,17].



Figure 16: Organize an exhibition of contemporary visual and performing art [17].

Figure 17: CSP, the birth of Art District, with its sightline including the Museum of Art and the Hay Building, 2016 [17].



Figure 18 : Pandora LaCasse's sculptural & Untitled Patio with Benches and Planter lighting) Platform), 2016 [19].



Figure 19: Developing public spaces goals. Source: the researcher.

The CSP is a vibrant community gathering place, successfully creating a world-class public space - a central attraction in the heart of Portland's arts district - that will serve as a foundation for economic and community growth in the space [16].

With redesigning, improved safety for all modes of transport and traffic flow, pedestrian width and position are improved to ease congestion. Invitation paths, bench walls, shade trees, plantings, lighting, and a natural play scene are provided, one gets a welcome year-round urban respite. Enhancing and increasing social ties and enhancing a sense of pride and belonging in the neighborhood, and the result is a positive community gathering place that welcomes and inspires future generations [19].

4.3 Conclusions from the successful development of the CSP:

1. Maintaining the plaza as POS in the heart of the city center, serving as a green oasis within a developed and ventilating area of the urban environment.
2. The square succeeded in being a location for artistic events in the heart of downtown.
3. The current CSP arena is the most innovative and inspiring design and the work to generate more activity and vitality in the field.
4. The development succeeded greatly in improving the visual image of the square and attracting residents to the area.
5. Bringing more activities to the heart of the arts district, increasing pedestrian traffic, and creating job opportunities in the district.
6. Creating a complementary use of the square with the Eastland Hotel for night activities, and the rights to use 30% of the square for commercial purposes belonging to the hotel.
7. Reinvestment of proceeds from the sale of property for development of the square.

5. Vision statement steps for ETS development:

ETS is a high-quality urban space that can be turned into an attraction when it becomes an arts district. The square space provides an introductory space in front of the museum, and the wall of space is a historical building's character. Enhance the plaza with an array of activities and events from local arts and Culture, promote gathering and fun.

5.1 Society's perception of the development of Tahrir Square and the protection of its history:

Interviews were conducted in 2022 to determine the local community's perception of urban spaces, especially Tahrir Square. 50 interviews were conducted, in which participants included 30 males, twenty females, between the ages of 20 and 60 (Table 1): The interviews covered the following questions:

Q1- The reason for the visit?

Q2-Is the square an attraction for visitors in the downtown area of Cairo?

Q3- What activities do you practice in the region?

Q4 - What are the needs of the population and users in the field?

Q5- The activities that you would like to add in the field?

Table 1. Sample characteristics Source: The researcher

Interviewees				Age				
Residents	visitors	employee	seller	30-20	31-40	41-50	51-60	>60
11	17	13	9	9	13	16	7	5

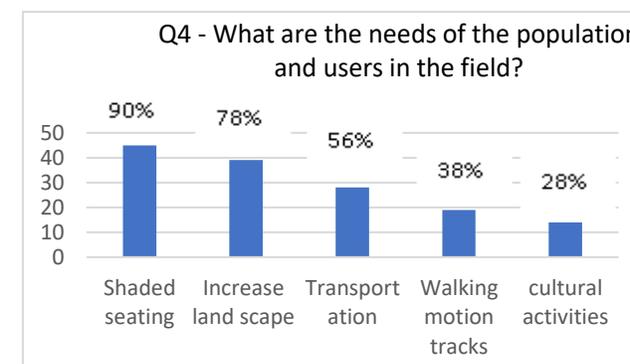
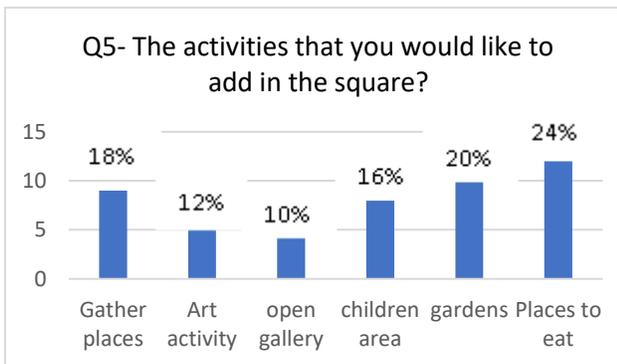
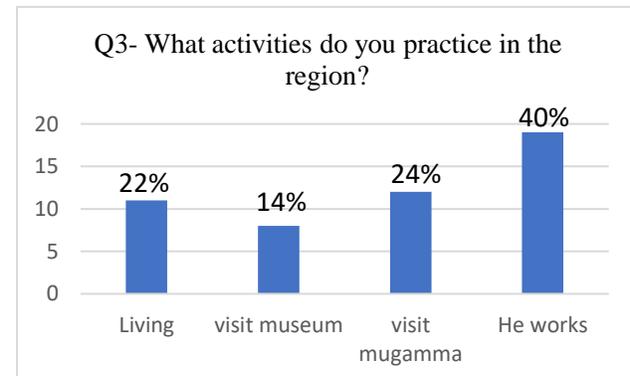
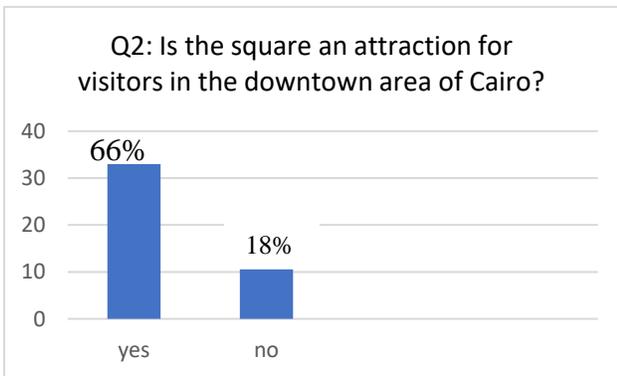
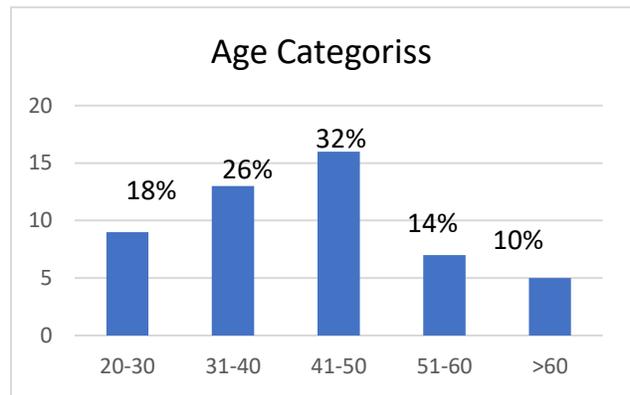
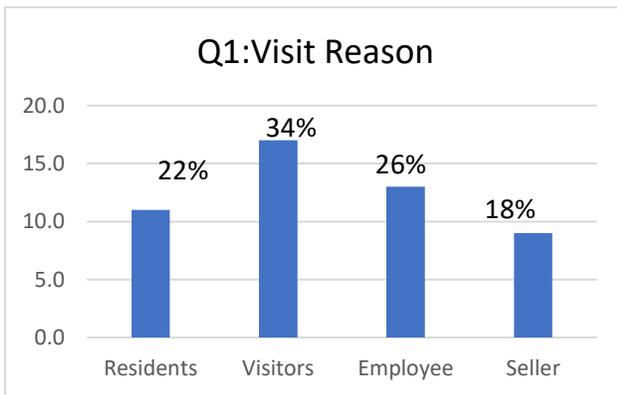


Figure 20: Questionnaire analysis results, Source: The researcher.

5.2 The recommendation for Design criteria because of the visual sense questionnaire:

Recommending the use of the results of developing of the CSP in Portland study, in developing the square overlooking the Egyptian Museum in ETS, developing urban design (public space, streets, transportation, landscaping), infrastructure (economic, social, health, and cultural), and adding elements of entertainment Such as places to eat and drink, art galleries and botanical gardens.

1-Urban Standards:

- Increasing artistic, cultural, and social activities unique to the area and designed for different age groups that can interact in space.
- Use landscape and artistic models to improve the quality of public spaces, and to encourage effective improvement of public spaces.
- The space elements should be in harmony with the surrounding character [3].
- The design of the space should enhance the path for Egyptian Museum, in visual interest for pedestrians and visitors.
- Reduce the density of users to increase the human enjoyment of the space.
- Diversity of space components to create cohesion while providing multiple activities as an attraction to the space.
- The seats must be provided for the place.
- Adding sculptural elements and beautiful paintings to the space for the enjoyment of users, and this increases their attractiveness to the space.
- Banners in space to facilitate access to space and save their time.
- Good lighting in space increases its beauty, attracts users to visit space, and provides a sense of security [1].

2-land scape:

- Increase the Landscape to create a green cover gives a sense of coolness and improves the visual sense of ETS.
- Add trees and plants to shade the places, improve the image of the places and attract visitors.
- When landscape elements are used at flat paved spaces are divided, to attract users to the space [3].

- The use of landscape elements such as gates, lighting, kiosks, and seats in proportion to surrounding buildings' character in the place.
- Determining the locations of street trees in a way that does not obstruct vision and communication between internal and external spaces.

3-Streets:

Expanding sidewalks, organizing car parks on the side of the road, and clearly defining the location of the pedestrian crossing.

- Preventing street vendors from using the sidewalks [2].
- Clarity of the path of pedestrian movement and service areas in the void, and the identification of paths with bushes.
- Service areas may be located within the parking buildings.
- Car park shades with architectural details compatible with the surrounding architectural details.

5.3 Elements of designing Outdoor community spaces in ETS:

Pathways:

- Determine the pathways and direct pedestrians to the museum, and separate different functions in the space.
- Plan for pathways to lead to activities areas.

Seating:

- provide seating areas with shelter for protection from wind, sun, and rain.
- The seating is accessible to everyone, with variety of different sizes, shapes, and arrangements [20].

Shade Shelters:

- Shade is provided by large shade trees, and Built shelters, for achieve shade requirements.

Signs, gates, and fences:

- Signs, gates, and fences help direct people through space, provide information, and define edges of spaces [3].

Focal points and gathering places:

• when creating a focal point for spaces, or an area for gathering, it's a spot for meeting friends, A symbol that denotes a specific activity [21].

Community Art:

• Art helps capture the uniqueness of spaces & it can be an effective process for both artists and humans.

6. Recommendations:

- Imagine urban design of the square while preserving the historical value of the building and its facade due to its importance as an integral part of ETS, and it is difficult to imagine the area without it, as it is one of the huge buildings, and the many openings in them.

- Increasing additional seats, shaded waiting areas, and promotional activities for people, so that the place remains constantly lively.

- Solving traffic problems and reducing the transit area.

7. Finding:

1- For developing places must add some attractions and increase the activity in spaces.

2- Open spaces must have function as industry, housing, public transportation, and entertainment.

3- Must open outdoor art galleries that express the history of the square, for transforming spaces into POS.

5- Community development: create better environment for the people who live, work in place; Well-designed neighborhoods, good schools, sufficient Health services and public services, popular culture, and maintain the values of society.

6- Urban design: Improve the quality of places design; building architecture, open spaces, land use, zoning, Density occupancies, streets layout and traffic flow, cleanliness, Sidewalks, landscaping of streets and environmental quality.

7- Creating a green cover that in addition to bringing coolness, creates a good image of the square, and the variety of trees in spaces.

8- ETS should become a landmark with an adequate design for its historic importance and its function for the future development of Cairo.

Abbreviations:

POS	Positive Open Spaces
ETS	El Tahrir square
CSP	Congress Square Park

Data collection and analysis:

The author confirms that the results presented in this study were prepared for this research, and there is no similarity in research design or results with any other research.

Disclosure Statement: The authors report there are no competing interests to declare.

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