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Towards Sustainable Heritage: Redevelopment of Historical Districts through Place-Quality Matrix

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Place- Quality, Place identity, socio-cultural nodes, urban adaptability, Urban Vitality, Redevelopment of historical districts.

Abstract: The redevelopment of historical districts introduces significant challenges, especially, in balancing heritage adaptability with contemporary urban needs. This research paper explores the redevelopment of historical districts by studying its Place- Quality, focusing on the religious complex in Old Cairo as a case study. The problem addressed is the ongoing deterioration of historical sites due to urban neglect, socio-economic pressures, and inadequate integration of local communities in the redevelopment process. The methodology adopted in this study combines qualitative and quantitative approaches, including field observations, interviews with local community, and urban contextual analysis. Within the framework embraced in the research, study area observations for the physical condition of the religious complex and its surrounding environment and inhabitants and visitors' interviews gather insights from their perceptions and needs. The physical and non- physical aspects are synthesized in the presented Place-quality Matrix to highlight strength and weak points within a holistic approach. The Place-Quality matrix adopted in the research is a concluded collection of aspects from a numerous listing from precedent literature to examine urban form, functionality, ambiance, image and Environmental resilience and adaptability in the selected study area. Consequently, the highlighted aspects in the matrix are reflected in the form of identified items which should be resolved throughout certain potentials to enhance the place-quality and socio-economic and cultural viability while conserving the area's historical significance. The proposed outcomes of this research aim to establish a framework which monitors the Place-Quality attributes which identifies variable socio-cultural aspects in a certain place with cultural significance. By identifying key Place quality attributes for the religious complex and its resilience, the research seeks to demonstrate how these aspects can serve as drivers for redevelopment proposals. The findings are expected to provide actionable recommendations and comprehensive understanding, presented in a form of a design proposal for the place-quality enhancement with reserved cultural identity

1. Introduction

Place -Quality is a multi-dimensional concept encompassing the human spatial fulfilment on the physical, social and physiological level [1]. Through history, the quality of urban spaces was derived

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from its users as the spaces were designed according to their daily routines and essential requirements which made the urban space more functional and resilient. For instance, the Greek agora which was a central node of daily life hosting civic activities from the city market to public elections. Moreover, the Islamic city central node was the congregational mosque plaza that was an icon for urban vitality and liveability as it hosts activities like the Friday market and many daily social activities in the Islamic community [2]. Many urban planning principles emerged in the 20th century that aimed for the place quality enhancement through rational design and functionality yet on the expense of the historical context and the community identity like functionalism and suburbanization that isolated the community from services and open spaces [3]. However, this approach faced criticism for neglecting the social dimension of place quality. Promoting movements that advocated for participatory planning and perceiving the cultural heritage, such as: New Urbanism that promotes community-oriented spaces, Tactical Urbanism that promotes low-cost interventions for improving public spaces and Place-Making the movement that focuses on creating liveable and inclusive public spaces [4]

Historical districts hold immense cultural and historical value, serving as tangible links to a society's past. These areas, often rich in architectural and cultural heritage, are crucial in maintaining a sense of identity and continuity within urban environments. However, the conservation of these historical districts presents a unique set of challenges, particularly when it comes to balancing the preservation of heritage with the demands of contemporary urban life. As cities expand and modernize, historical sites are increasingly at risk of urban neglect and deterioration, and loss, primarily due to urban pressures and lack of a comprehensive approach in the redevelopment processes. The religious complex in Old Cairo serves as an important example of this dilemma. As one of the oldest and most historically significant areas in Cairo, this district is home to a diverse array of religious and cultural landmarks. Despite its importance, the complex and its surroundings have faced ongoing challenges, including urban neglect, socio-economic pressures, and a lack of comprehensive strategies that effectively involve local communities in the conservation and redevelopment efforts. This research contributes to a broader understanding of how historical districts can be revitalized sustainably, ensuring that they remain vibrant centres of cultural identity while adapting to modern urban challenges.

The Study Objective: The research seeks to develop a framework for sustainable heritage redevelopment that prioritizes community involvement and cultural continuity through exploring the potential of redeveloping historical districts - Old Cairo Religious Complex as a case study- through establishing Place-Quality Matrix as a model of investigation.

The main aim: The research aims to propose a schematic redevelopment plan for the study area recognizing the Place-Quality Matrix and how it can act as catalysts for revitalization efforts that are both culturally sensitive and economically viable.

2. The Place Quality Model

The following section presents an explanation of the conceptual framework adopted in this research to apply and redevelop a resilient socio-cultural node, including its proposed categories and sub-categories of a place quality model and its indicators based on literature and previous studies. The place quality model was addressed in literature with a reference to “The Human Preference Framework” and it has a qualitative approach for maximizing the human experience through its spatial attributes: vitality and inclusivity, health and well-being, community and belonging [5]. This framework has intangible attributes that hinder the process of quantifying those attributes. It was repurposed later for innovative clusters [6];

the model consisted of four general domains which are form, function, ambiance, and image. The form and function represent the tangible factors that can be measured and quantified, yet the ambiance and image represent the intangible factors that can be more subjective to human's place experience and perspective. The research will introduce a refined version of the Place-Quality farm work by another tangible factor to the model so it can infuse the environmental approach to this study for more resilient development for place quality within the urban context, as shown in fig 1, as many studies contributed the importance of the environmental aspect for place quality [6] [7].

Figure 1: Place quality attributes, (Authors,2024)

1.1 Urban Form

The city urban characteristics are identified through some factors that will be vary from one place to another according to the city form; in this study the measured factors will be as follows [8]: a. Density: is an objective, spatially based factor; it will be traced in this study through the amount of people using the place and the times/ seasons of congestion. b. Accessibility and Transport infrastructure: they are interlocking factors; they can be traced through the easy accessibility to the place, means of access including services and facilities included in the place and the connectivity with surrounding context [9]. c. Urban Layout: it can be concluded as the urban planning factors such as spatial arrangements that combines the morphology of streets with open spaces and buildings, moving to the urban Fabric of the context [10] , Walkability and way finding in the context which gives a smooth pedestrian experience [11] d. Housing & Building Conditions: it gives a comprehensive understanding of the built environment of the place including the building types, heights , age and the buildings adaptability for adaptive reuse for possibilities of resilient urban development [12].

1.2 Function

The place function is one of the pillars that influences its overall quality and resilience. The research will tackle the place function from a various perspectives such as [6] [9] : a. Users who are the main generator of the whole system, b. Land use and services: which includes the nature of building typologies in the urban context and the availability of services found which affects the overall users and inhabitants experience [13] , c. Economy: the main factor that ensures the overall resilience and sustainability of the context; the availability of local procedures and products and how responsive the local economy to the local community. The availability of local resources that sustains the circular economy [14] , d. Social interaction and Livability: social interaction is a catalyst for urban livability [15] its can be traced throw; how actively the different users and inhabitants of the context interact and participate, how the space promotes art and creativity, The presence of heritage nodes that increase the place livability and how the context inhabitants preserve the local identity and traditional values of the place and finally the Social inclusion of local community in the overall project functioning.

1.3 Ambiance

The Ambience of the place contains many socio-cultural factors that affects the users experience [6] such as: a. Harmony with context, b. Symbolism that includes religious and cultural references [16], c. Cultural Identity as places are shaped from the traditions and values of its inhabitants [17], d. Historical Context as historical events that took place in certain locates leaves an undying ideological impression for the place [18]. e. Collective Memory as utilization and structuring of the place highly affects and reinforces its ideological values and creates memorial imprints [19].

1.4 Image

The research framework will include the seminal work of Kevin Lynch that is influential in urban planning and design. Lynch identifies five key elements that contributes to the way people perceive and navigate an urban space and accordingly creates a legible and navigable place with a significant visual image [20] ; a. Paths: the channels that allow people to move and explore the place, b. Edges: the boundaries and dividers of the place, c. Districts: the medium to large sections of a city where the place belongs, d. Nodes: the strategic focal points that allow navigations and social interaction, e. Landmarks: the external visual references that aides people to navigate their context [21].

1.5 Environment

Environmental conditions can influence the user's place experience tremendously as it is affected by various factors; the research will limit those factors into natural and climatic factors as it is concerned with an outdoor context to create a heathier, sustainable urban space and enhances its overall place quality. The factors are : a. Temperature : as crucial environmental factor as it depends on the seasonal climatic conditions of the levels of temperature change of the place on the micro and macro level which accordingly creates a better thermal comfort for users, b. Humidity: the seasonal level of humidity of the context can affect the overall comfort in the users within the outdoor space, C. Air Quality: the buildings orientations can be affected positively by natural elements as proper air flow and natural ventilation and negatively by human interventions located in the context itself as various types of pollutions, d. Light: the buildings and spaces exposure to natural lighting can affect the users experience as it affects the aesthetical appeal of the space and environmentally as it promotes the human well-being [22].

2.Research Methodology

The study adopts a mixed – methods approach (Qualitative and Quantitative approach) starting with a qualitative approach that includes a literature background including the various categories and sub-categories of a certain place quality and its indicators which contributed to building the study framework. Followed by the empirical study on the chosen field work, "The Religious complex area" that implies a data analysis phase built upon authors' observations for field study and users' survey that helped in generating the quantified results for every quality. The final stage of the study includes a suggested development proposal that highlights the socio-cultural significance of the study area.

2.1. The research framework model

The research used five categories of place quality as mentioned in section 1. Those five categories are Urban Form, Function, Image, Environment and Ambiance. The authors analysed those indicators into sub-indicators Derived from literature in section 1 were then illustrated into a structured interview directed to the current users and observations by the authors from field visits. Finally, the research highlights the result of the

empirical research with certain conclusion of the positive and negative points of the socio-cultural nodes within the **Place-Quality Matrix** of the area with recommendations to enhance the development process as a whole.

Figure 2: Place quality matrix factors and sub factors (Authors, 2024)

3. Empirical Study: Application of Place-Quality Model on The Religious Complex

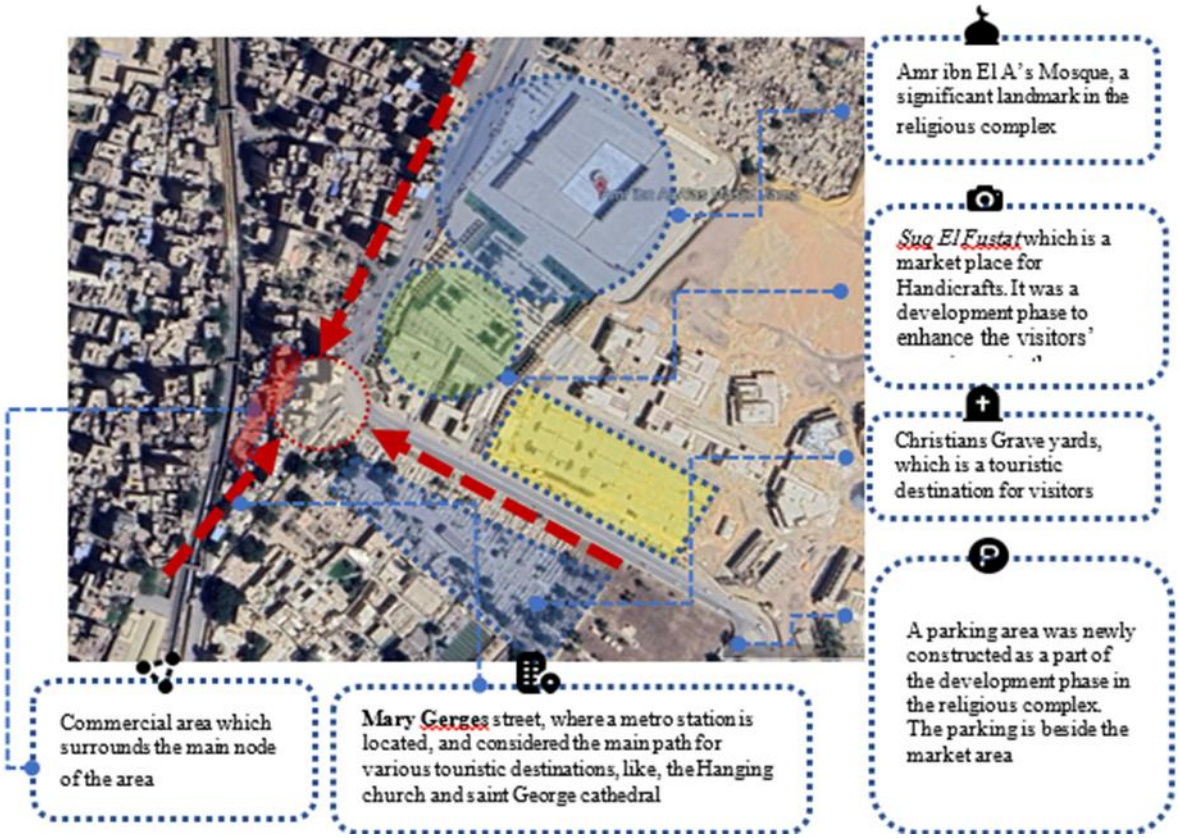

Figure (3): Urban analysis of various spaces and circulation routes of the area (Authors 2024)

3.1 Historical Significance of the Religious Complex

The religious complex in Old Cairo, Egypt, is a historical and cultural place that reflects the rich religious heritage of the region. It includes important monuments such as Amr Ibn El A's Mosque, the first mosque in Egypt and Africa, established in 642 AD [23], the Iconic Hanging church that was built over the ruins of the Fort of Babylon [24], symbolizing the introduction of Islam to the region. The Cathedral of St. George is another unique monument, which considered a central site for the Coptic Orthodox Church. In addition to other important sites such as the Ben-Ezra Synagogue and the Church of St. Sergius and Bacchus, this complex illustrates how Islam, Christianity, and Judaism coexisted in one urban setting [25]. This complex is not only a place of active religious worship but also a living museum of Egypt's architectural, religious, and social history. It remains very much a vivid part of Cairo's cultural and urban landscape and attracts pilgrims, tourists, and scholars as well. That's why the place is chosen to examine its place-quality and resilience throughout the future generations [25] [26].

3.2 Understanding the place urban structure

Figure (3), the diagram presents the urban structure of the religious complex in Old Cairo, with the Amr Ibn Al-Aas Mosque at its center, surrounded by other religious zones such as the Mar Girgis (Saint George) area, which includes important landmarks such as the Hanging Church. The layout highlights the interaction between historical religious sites and the surrounding urban fabric, which consists of residential areas, open spaces, and a commercial zone as well. This commercial area is a crucial economic activity place to visitors and tourists. Streets connecting these zones, varies in width, where the street in front of Amr Ibn El As mosque is around 30-35m, while it narrows down in the Mary Gerges area to reach around 14-16m to be more applicable to pedestrian walk.

3.3 The Empirical research and Place-Quality Matrix.

The Empirical study was conducted to gain insights on the dynamics of the "Religious Complex" in Old Cairo as an urban space and specifically regarding its place quality. Researchers initiated the field study with some observational analysis for the study area and followed that by a structured interview targeting the space users (locals and visitors) of the complex, gathering data on their interactions with the environment and their responses to various features presented previously in the Place quality Matrix which consists of five major factors which are; Urban Form, Function, Ambiance, Environment and Image. The total sample who conducted the interview were 50 participants from Amr Ibn EL A's and Mary Gerges St. area including 30 locals such as inhabitants, shop owners, the permanent police patrol of the area and churches' clerks. The rest of the sample was 20 visitors including Egyptians and foreigner. The two stages of the empirical study intertwined to enable the examination of the presented factors and facilitating an understanding of the community role in the place of study. **The Place-Quality matrix** is divided into two parts, the first part is the factors and the sub-factors, and the second part is the examination of each sub factor which is divided into high, medium and low. As well as a graphical representation for the users' fulfilment score for each sub-category based on their fragmentation. Mapping the results were the low available or N.A received an average from 0% to 35%, medium availability received 36% to 70%, while high availability received 71% to 95%

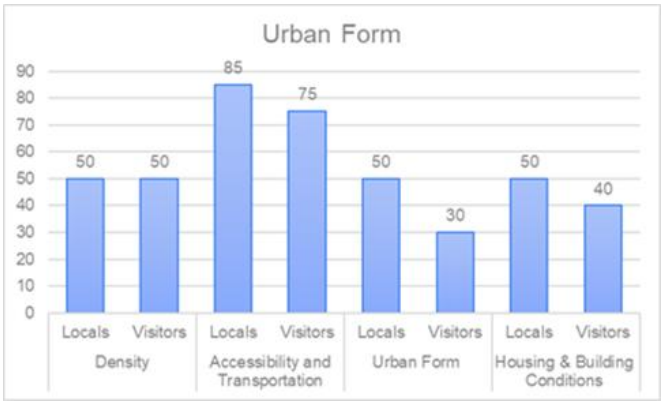

Fig. (4): Urban form Sub-categories Scoring fragmentation (users' interviews feedback), source: Authors,2024

3.3.1 Urban Form

This section presents the examination of the Urban Form factor by analysing its four sub-factors by investigating its previously listed indicators through the Authors 'observations and the conducted interviews during the site- visits. Table (1) and figure (4) shows how each indicator results were obtained and its' implementation level in the study area as well as its average score by locals and visitors.

Table (1): Urban form sub-categories average Scoring and Indicators results references, (Authors, 2024)

Category	Sub Category	Indicators	weak or N.A	Mid	High	Indicators Results' Refrence		
						Locals	Visitors	Researchers
Urban Form	Density	Amount of People using the place				√	√	
		Times of Congestion / Seasons				√	√	
	Accessibility and Transport Infrastructure	Easy Access to place				√	√	√
		Means of Access (Places / Services / Facilities)				√	√	√
		Connectivity between streets				√	√	√
	Urban Layout	Spatial Arrangments : Streets , Scale & Proportions , Blocks Open spaces						√
		Urban Fabric						√
		Pedistrian Movement (Permiability / Way Finding)				√	√	
	Housing & Building Conditions	Building Types				√		√
		Building Heights				√		√
		Building Age				√		√
		Flexibility of Adaptive Reuse (posibility of modification)				√		√

3.3.1.1 Density:

Density as shown in Table (1) scored a mid-level implementation in the study area and 50% by both locals and visitors as shown in figure (3). As the local inhabitants of the place do not create that high density during the year. Yet the locals and visitors' comments highlighted their need for proper congestion regulation for pedestrians and vehicles in official holidays and weekly occasions like Friday prayers, Ramadan night prayers and Coptic celebrations. The traffic density is moderate due to the width of the street, yet the unplanned parking lots creates some congestion along the day. However, Mary Gergeus st. is a pedestrian road so its density is commonly light except for public holidays. There is some traffic during rush hours at the minibus stop in front of Amr Ibn AL's mosque due to minibuses parking. The inhabitants and shop owners mentioned that their high season is winter and most of the area visitors at that time are tourists.

3.3.1.2. Accessibility and Transport Infrastructure:

The study area Accessibility scored an average of high-level implementation in the study area as shown in Table (1) and average of 80% by both locals and visitors as shown in figure (3) as the study area is considered a historical landmark and has clear routes of accessibility.

The main points of accessibility to the area are Mary Gergeus metro station, a minibus assembly point at Amr Abn al A's mosque, besides the car accessibility that ends at Mary Gergeus Street. As for the accessibility to the areas' services and infrastructure there is an easy access to the bazars and coffee shops along the road. The connectivity between the roads is high but on the pedestrian level, yet on the vehicle levels the accessibility ends at Mary Gergeus Street. All the mentioned streets in the context all gather at the central node between Fustat market & the Christians cemeteries.

3.3.1.3. Urban Layout

Urban Layout as shown in Table (1) scored a mid to low level of implementation in the study area and average of 40% by both locals and visitors as shown in figure (3) as the overall urban configuration of the study area is identified as dense and semi-unplanned violations despite the governmental trials of heritage conservation. The spatial arrangement of the area indicates that the proportions vary within the space of Amr Ibn El A's Mosque and the spaces of Mary Girgis streets. Amr Ibn A's portions are wide, and spaces' length exceed the height by three times of the height. While in Mary Girgis area the space declines to be less than one third of the building heights. Also, urban fabric is compact and dense even after development. Moreover, the pedestrian movement before Mary Gergorus Street is limited by undefined sidewalks (interventions and violations by the coffee shops and other shops), yet the streets are clearly straight and the way finding is relatively easy due to the vivid landmarks around the place (mosque, market, cemeteries, churches).

3.3.1.4. Housing & Building Conditions

This sub-category as shown in Table (1) scored a mid-level implementation in the study area and average of 45% by both locals and visitors as shown in figure (3). This sub-category was comprehensively illustrated in figure (5) to show variety of building types, like; residential, mixed use, religious, commercial, there is a richness of building typologies, however, the high interference had resulted in a number of congestions. There is variation of heights, where Amr Ibn A's Mosque area has higher buildings ranging from 4-10 stories, however in Mary Gerges do not exceed 4 floors. There is also a high variation of building ages due to the historic context which is considered a violation and referring to the local's feedback some buildings were demolished due to their violated building heights as it misaligns with the historical identity of the area.

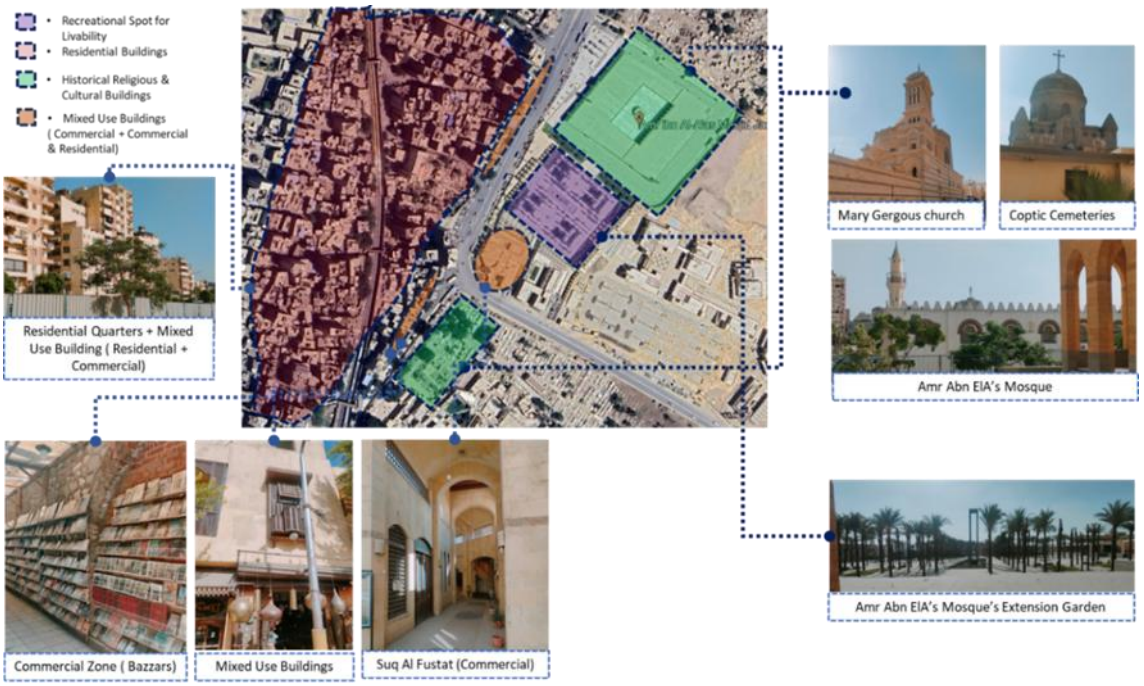

Figure 5: The urban form and surrounding of the selected area, source: Authors,2024

Also, they mentioned that the area doesn't have the any cases of adaptive reuse of buildings yet there is moderate flexibility of development, due to the availability of open spaces. Amr Abn AL's area is already developing due to the presence of a new park extension that was a governmental strategy yet not a public demand. Mary Gergous Street was under development 15 years ago by government as the inhabitants mentioned by paving and reconstruction of boundaries (artistic walls) around the Coptic cemeteries; Locals ensured that such mid-level governmental interventions helped in the overall building conditions' conservation.

3.3.2 Function

In order to examine the place function and its sub-factors and indicators following the same steps. Table (2) and figure (6) shows how each indicator results were obtained and its' implementation level in the study area as well as its average score by locals and visitors.

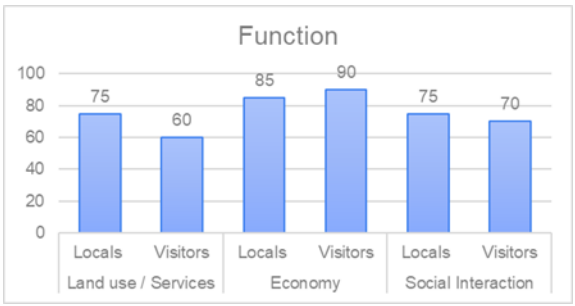

Fig. (6): Function Sub-categories Scoring fragmentation (users' interviews feedback), source: Authors,2024

3.3.2.1. Users:

The fragmentation of users was observed by the researchers and was part of the conducted structured interview. It was concluded that there were three types of Users: (a) Tourists (Majority) (b) Inhabitants, security (permanent police patrol), vendors (mostly from inhabitants), (c) Local Visitors (Minority).

Table (2): Function sub-categories average Scoring and Indicators results references, (Authors, 2024)

Category	Sub Category	Indicators	weak or N.A	Mid	High	Indicators Results' Refrence		
						Structured Interviews		Observations
						Locals	Visitors	Researchers
Function	Users	Types of Users (Demographic Data)						√
	Land Use / Services	Building Typologies & Functions				√		√
		Availability of Services				√	√	
	Economy	Supporting Local Products and Local procedures				√	√	
		Economic responsivness towards local communities				√	√	
		Using local resources such as Buildings , Materials , handcrafts				√	√	
	Social Interaction (Livability)	Acquiring legitimation through the active participation				√		
		Promoting art and creativity				√	√	
		Increasing Liveliness of area around heritage nodes				√	√	√
		Social inclusion of local community in the project functioning				√		
		Perserving traditional values				√	√	

3.3.2.2. Land Use / Services:

The study area services and land use as shown in Table (2) scored a mid to high level of implementation in the study area and average of 67% by both locals and visitors as shown in figure (5) as There are variety of building types such as mixed use, residential, religious and cultural. The locals assured the proximity of all the needed daily services they needed.

As for the areas' services as illustrated in figure (7) there are bazars, coffee shops and small snacks' shops available along the road, some facilities like public toilets are available too inside public buildings like the Coptic Museum, various churches and Amr ibn El A's portable toilets are available in Mary Gerges pedestrian road as well; which were accessible, not perfect in quality yet convenient for visitors as they mentioned.

3.3.2.3. Economy:

Economy as a sub-category scored average of mid-level of implementation as shown in Table (2) as some indicators were weak and others are high and average of 88% by both locals and visitors as shown in figure (6) as the investigations showed that there is a good percentage of local businesses in the Fustat market, also many bazars with Egyptian authentic locally made souvenirs and handmade objects like silver wear, khayameya, sadaf work and books. One of the shop owners mentioned that there is an economic responsiveness towards these local businesses as percentage of 70 % profit comes out of the local handmade products and the bazars mainly from tourists.

As for using local resources such as Buildings, Materials, handcrafts; the shop owners assured that there are few available workshops of copper handmade works available in Mary gergous St. yet most of the local Bazaars in Mary Gerges area and souq el Fustat has authentic Egyptian handmade pieces that are delivered from nearby areas such as Khan El Khalili and Haraneya which has high demand by the tourists and visitors.

3.3.2.4. Social Interaction (Liveability)

Livability of the study area scored mid-level of implementation in the study area as shown in Table (2) and average of 72% by both locals and visitors as shown in figure (6) as the study area provides average livability in normal days, however liveliness around Amr Ibn A's Mosque reaches its pick in religious occasions (Friday, Eid and Ramadan Prayers) as well as the unplanned minibus stops creates an active spot all day long as locals mentioned and as shown in figure (7).

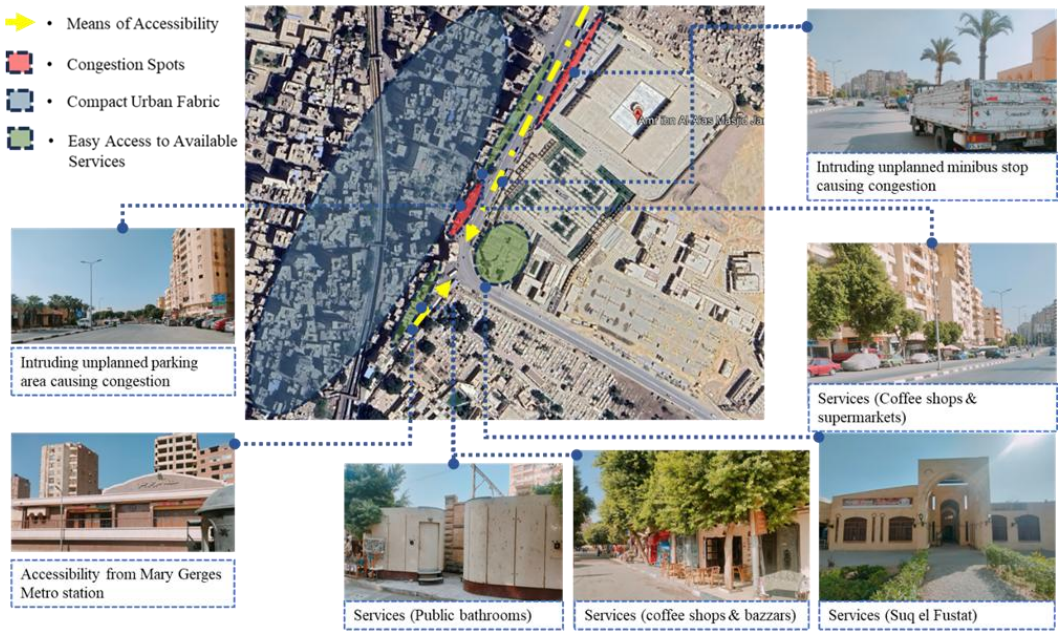

Figure 7: showing the space function, including the space liveability, source: Authors, 2024.

on the other side the permanent police patrol mentioned that the Churches in Mary Gergeus Street closes their doors at 5:00 pm daily and the whole pedestrian walk is closed for visitors which make it less livable at nighttime, unlike the Amr Ebn AlA's Mosque area that is vital all day long. Despite the level of presence of visitors or locals the study area provides a high level of security and safety as locals mentioned. With observations, the

locals are interacting in a very welcoming manner with the tourists and the visitors through their shops and bazars. Moreover, inhabitants and visitors are keen on preserving traditional and religious values of the area by guiding signs of appropriate behaviors and security presence all day to avoid any misconduct or vandalism. The visitors assured their need for the presence of public spaces that can help them sit and rest during their visit to the area also locals highlighted their will to active participation in any future development plan for the area so they can suggest their actual spatial requirements clearly.

3.3.3. Ambiance

This section presents the analysis of the Ambiance factor through the Authors' interpretations to the context in addition the conducted interviews during the site- visits. Table (3) and figure (8) shows how each indicator results were obtained and its' implementation level in the study area as well as its average score by locals and visitors.

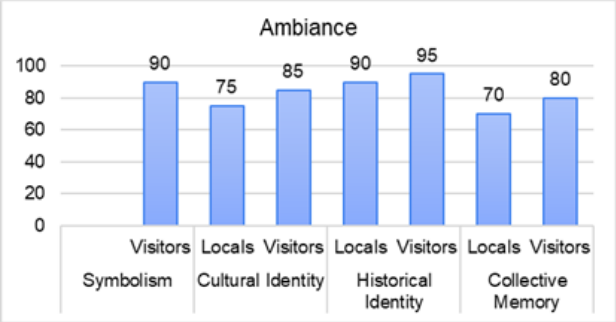

Fig. (8): Ambiance Sub-categories Scoring fragmentation (users' interviews feedback), source: Authors,2024

Table (3): Ambiance sub-categories average Scoring and Indicators results references, (Authors, 2024)

Category	Sub Category	Indicators	weak or N.A	Mid	High	Indicators Results' Refrence		
						Structured Interviews		Observations
						Locals	Visitors	Researchers
Ambiance	Harmony with Nature / Context	Integration with the surrounding Urban Fabric						√
	Symbolism (Religious, ...etc)	Religious Influences , specific meanings , Specific used Symbols					√	√
	Cultural Identity	Cultural Background of the place , Over all ambiance and Vibe				√	√	√
	Historical Influences	Historical Background of the place , Significance and meanings				√	√	√
	Collective Memory & Narrative	The sigificant spots in the space that creates memories				√	√	

3.3.3.1. Harmony with Nature / Context:

This indicator was concluded by the researchers' as it was studied through the maps and the navigation experience of the study area. It was concluded that the whole area is homogenous with the compact urban fabric, however there is low integration in functional connectivity between Amr EbN AlA's area (mosque and street included) and Mary Girgis Pedestrian Street due to the shift in the nature of the street in materiality and vehicle accessibility which gives more security feeling for Mary Girgis st.

3.3.3.2. Symbolism (Religious, cultural …etc):

The study area has many significant religious buildings all buildings have many tangles and intangible symbolism starting from the used decorations and motifs moving forward to the stories behind each building (Babylon Fort, Churches, Cemeteries and Mosque). Visitors especially tourists confirmed their attraction to those symbols and stories that gives the study area a special vibe as shown in figure (8) the indicator scored 90%.

3.3.3.3. Cultural Identity:

The Cultural identity of the study area scored high level of implementation as shown in Table (3) and average of 80% by both locals and visitors as shown in figure (8); the residential buildings are built with reference to the historical and religious context of the area (mashrabeya windows). However, the Fustat market architectural style was highly influenced by the traditional style, also the cemetery walls are redeveloped to continue with the same materiality of Babylon fort and the Arches of Amr EbN Al's and Suq Al Fustat as shown in figure (8) therefore the overall ambience of the area is homogenous

3.3.3.4. Historical Influences:

The locals and visitors are aware of the historical value of the study area as this indicator scored an average of 93% and a high level of implementation based on their testimonies as shown in Table (3) and figure (8). Moreover, by observations, the historical buildings dating from the 3rd century starting by Babylon fort ending with Amr Ebn AlA's Mosque that was renovated and developed along many centuries. There are also historical background charts that explains the history of every church.

3.3.3.5. Collective Memory & Narrative:

Locals and Visitors gave this indicators a mid to high level of implementation as in Table (3) and scored average of 75% as in figure (8). As the locals are already used to the place as they mentioned but the visitors mentioned that visual sequence of the area as illustrated in figure (9) is memorable due to the many significant spots and gives a special ambience starting from Amr EbN AlA's Mosque till the end of the route reaching the Hanging church.

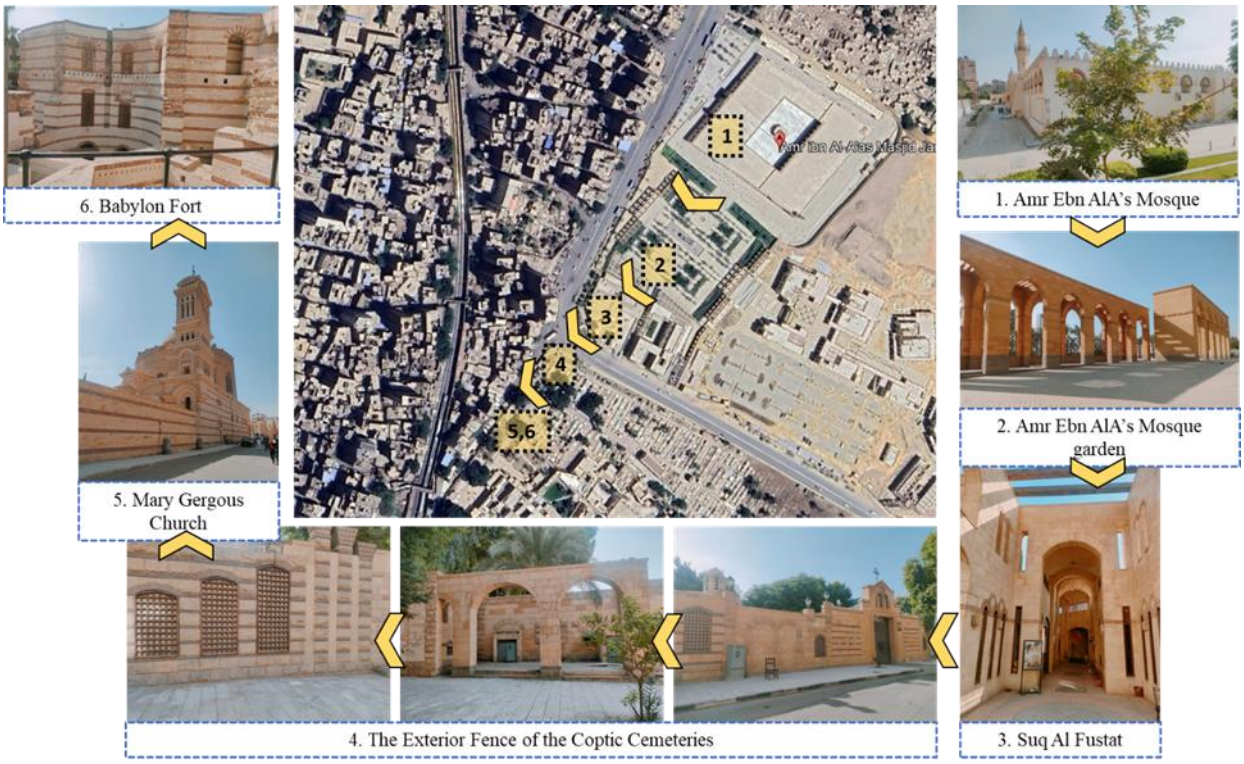

Fig. (9): showing the analysis of the space Ambiance and its historical significance, source: Authors,2024.

3.3.4. Environmental

This part in the study as shown in Table (4) mainly depending on the Authors' visit in various times in September 2024 and the aid of Meteoblue environmental data analysis website [27]. Also, some indicators scorings were concluded approximately from the users' interviews as in figure (10), yet the locals' results are more reliable due to their permanent presence in the study area unlike the visitors.

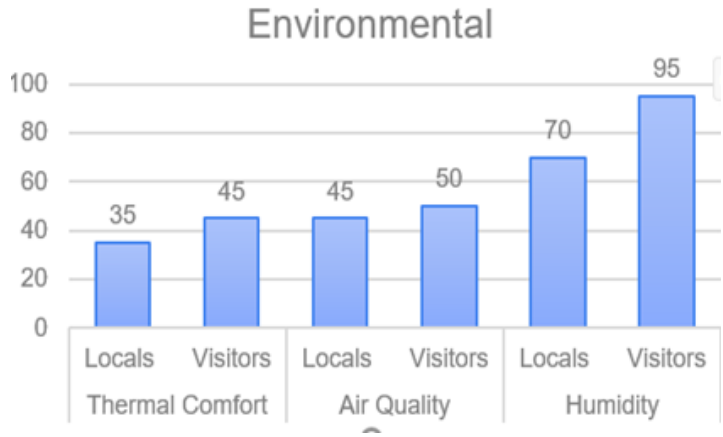

Fig. (10): Environmental Sub-categories Scoring fragmentation (users' interviews feedback), source: Authors,2024

Table (4): Environmental Studies sub-categories average Scoring and Indicators results references, (Authors, 2024)

Environment	Temprature	Thermal Comfort level (Seasonal)				√	√	√
		Levels of Temprature Change (Micro / Macro climate)						√
	Humidity	Level of Humidity (seasonal)				√	√	√
	Air Quality	Building Orientation				√	√	√
	Light	Building Exposure						√

3.3.4.1. Temperature:

Temperature scored a high level of implementation as shown in Table (4) and scored and average of 30% as in figure (10). It was evaluated through the two sub-indicators: thermal comfort and levels of seasonal temperature change in the study area. Locals and visitors evaluated this indicator differently as locals can trace it all year long, yet visitors only have a one-day experience; therefore, it was essential to trace those indicators from a weather mapping tool. As shown in figure (11) the Annual temperature of the study area during year 2024 is moderate most of the year yet it rises in summer season and drops in winter season thus those rises and drops are not in an extreme manner.

On the other hand, from the observation and interviews the thermal comfort is weak due to the high feeling of temperature, especially the walk in Amr Ibn A's area and new Suq of Fustat. High shortage in shaded areas and due to Cairo's dense urbanization, the heat absorbed by buildings and pavement amplifies the temperature compared to surrounding rural areas, especially during summer nights as shown in figure (11).

However, in the pedestrian walk of Mary Girgis street the level of temperature started to moderate due to the presence of vegetation and primitive shading devices.

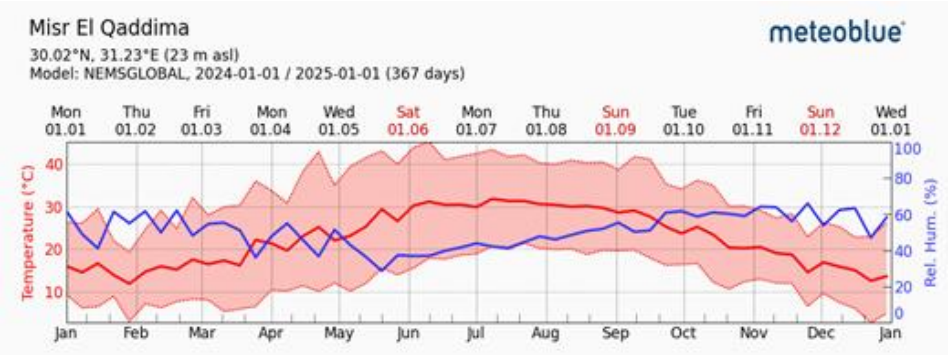

Fig. (11): Annual Temperature and Relative Humidity for Old Cairo Area (2024/2025), source: Meteoblue,2025

3.3.4.2. Humidity

Humidity scored a mid-level of implementation as shown in Table (4) and average of 83% as in figure (10). From the users' interviews they mentioned that they rarely feel humidity all year long, which makes their presence in the study area more comfortable. This comment aligns with the yearly monitor of Humidity levels shown in figure (11) that shows the moderate level of humidity annually. By observing Mary Gerges area, it has narrow streets, enclosed courtyards, and the proximity of buildings in Old Cairo which influenced localized humidity levels. On the contrary from Amr Ibn A's area, it has wide streets appear and vegetation minimizes as shown in figure (13) which cause the increase of level of humidity.

3.3.4.3. Air Quality

The air quality in Old Cairo fluctuates with seasonal changes. According to the temperature, humidity and the annual speed shown in figure (12) winter in the area scores poor air quality due to temperature inversions trapping pollutants, while spring brings dust storms from strong winds and low humidity. Summer's high temperatures promote smog and ozone formation, worsening respiratory conditions. Autumn has relatively better air quality, though high humidity can cause haze. Overall, pollution is highest in winter and spring, requiring dust control and emission reduction measures.

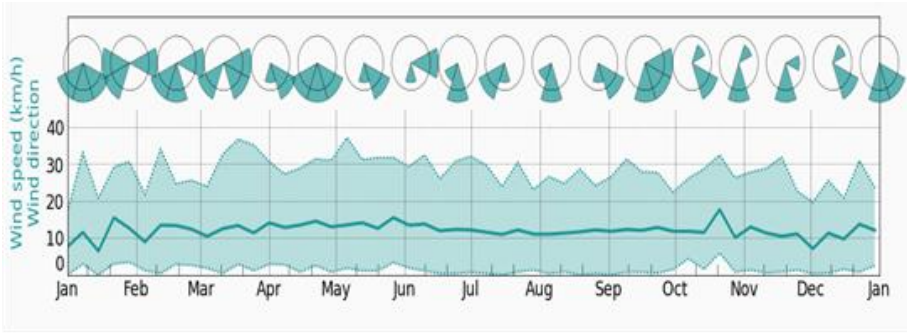

Fig. (12): Annual Wind speed & Direction for Old Cairo Area (2024/2025), source: Meteoblue,2025

3.3.4.4. Light

After observation, the study area exposure to direct sunlight is very high due to lake of shading devices and moderate density of vegetation in the streets as shown in figure (13) yet this indicator can reduce the users' spatial comfort.

Figure (13) showing images of various areas capture in 16th of September at 10:00 am, source: Authors 2024

3.3.5. Image

The study area image ability was investigated primary from the users' comments and elaborated by the authors spatial analysis based on Kevin lynch elements of the city [15]. Table (5) and figure (14) shows how each indicator results were obtained and its' implementation level in the study area as well as its average score by locals and visitors.

Table (5): Image sub-categories average Scoring and Indicators results references, (Authors, 2024)

Category	Sub Category	Indicators	weak or N.A	Mid	High	Indicators Results' Refrence		
						Structured Interviews		Observations
						Locals	Visitors	Researchers
Image	Edges	Type , Scale , Proportion , Enclosure & Containment level				√	√	√
	Nodes	Type , Scale , Proportions , Connectivity with surrounding				√	√	√
	Paths	Type , Scale , Proportions , Finshing materials , shaded /				√	√	√
	Landmarks	Type , Scale , Proportion , Meaning and Historical Value				√	√	√
	Districts	Type , Scale , Proportion , Historical Value						√

3.3.5.1. Edges

Edges had a high level of implementation as shown in Table (5) and average score of 87% by users as shown in figure (14). The users stated that they know their areas' boundaries and they have landmarks that can mark the area beginning and ending.

Correspondingly by observations, the area is surrounded by clear edges from the four sides where the northern edge is Amr ibn Al's Mosque, the Southern Edge is Mary Gergous Street (churches complex), the Eastern Edge: Imam Malik St. and Suq el Fustat and Western Edge: Residential Quarters. The Edges are well defined and clear to the whole spin of the religious complex, yet not defining the main node as shown in figure (15).

3.3.5.2. Nodes

Node had a low level of implementation as shown in Table (5) and average of 43% by users as shown in Fig. (14). By observations; the central node shown in figure (15) which connects the three main streets: Al Imam Malek, Sidi Hasan El Anwar and Mary Gerges, is the connection point between those vital spins is well known however, it's poorly defined as locals stated it's not a named urban square and it's not well planned due to traffic and vehicles dominance.

3.3.5.3. Paths

Paths had a mid-level of implementation as shown in Table (5) and average of 63% by users as shown in figure (14). By observation; as illustrated in figure (15) the main path is the street of Sidi Hasan El Anwar with Mary Gerges is a street with no clear pedestrian walks, which is not appropriate for the primary path. Secondary paths are considered narrow streets within the compactness of the urban fabric. Moreover, Mary Girgis Street is a totally pedestrian path and gated by the police patrol which gives the users a feel of spatial separation between the landmarks of the study area.

The visitors mentioned that they find difficulty moving through the Amr ibn Al's Mosque area with no sidewalks, yet they find it easier and safer in the Mary Girgis Street.

3.3.5.4. Landmarks

Landmark gained a high level of implementation as in Table (5) as the religious complex area is considered a landmark itself. It has two levels of landmarks as shown in figure (15): famous landmarks that are known and easily recognized by all categories of place users such as Amr EbN AlA's Mosque as well as Mary Girgis church and the Hanging church.

The second level of landmarks are known landmarks as they are visually clear such as Suq El fustat and Coptic Cemeteries. Locals and visitors find it easy to navigate the area by its landmarks, so it scored an average of 93% as shown in figure (14).

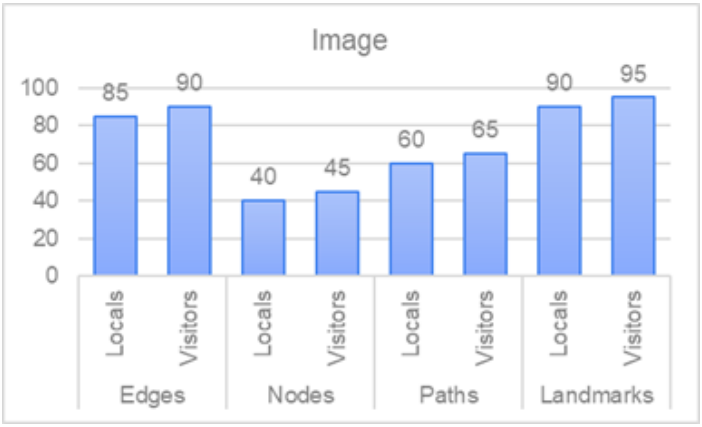

Fig. (14): Image Sub-categories Scoring fragmentation (users' interviews feedback), source: Authors,2024

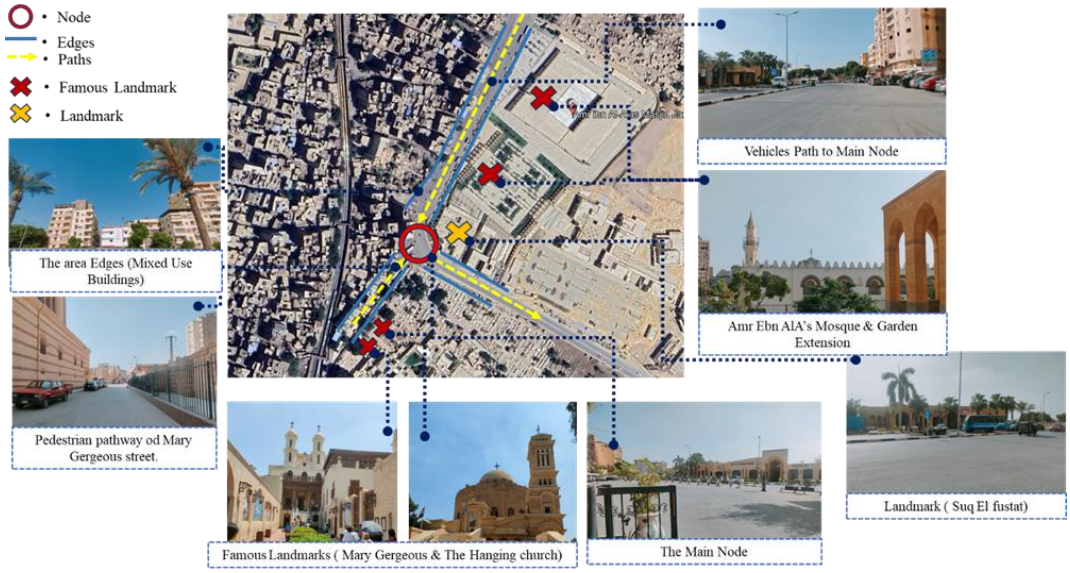

Figure (15): The space image survey and analysis of various sub-factors for the Image, source: Authors, 2024.

3.3.5.5. Districts

By observations, The Religious complex scored high level of implementation as a defined district which significant identity as shown in figure (14) It is a historic district with a compact layout, featuring religious, residential, and commercial structures influenced by historical architectural styles, where towering religious monuments contrast with smaller buildings, and landmarks like Amr Ibn El A's Mosque and the Hanging Church underscore its historical significance.

4. Discussion

As shown in figure (16), The primary results shows that the Category of **Ambiance** (average 75% satisfaction) is the highest factor to be achieved amongst the five pillars of the study, followed by **Function** (68% satisfaction) and **Urban form** (58% satisfaction), on the other hand the **Image** (60 % satisfaction) and **Environmental** (60 % satisfaction) aspects didn't score high points of availability.

Figure (16): The Collective Score of Place -Quality Matrix Categories, source: Authors, 2025.

The analysis of the **Place-Quality Matrix** reveals varying levels of satisfaction across several factors. The **Environmen**t factor, such as, light exposure needs improvement, however, cultural, and symbolic elements which are reflected in the **Ambiance and Urban Form** rank highly in satisfaction. Thus, functioning these gaps can lead to enhanced comprehensive development to the place as a hall. The Environment factor (average 50% satisfaction) received one of the lowest satisfaction percentages, where the sub-factor *light exposure to buildings* received low satisfaction rate of 30%, emphasizing the need for better environmental conditions.

To enhance the level of satisfaction the research recommends.

- Adding shaded areas in the walkway and garden extension.
- Using Cassia Nodosa trees for shade and bright seasonal flowers.
- Using Camphor trees to improve environmental quality and comfort.

In contrast, *symbolism, cultural identity, and historical background* reflected in **the Ambiance** factor, were highly rated, where they reached from 78%

These sub-factors strongly enhance the area's ambiance, achieving the highest satisfaction rate.

The Urban form factor of the area (average 58% satisfaction) shows **moderate** satisfaction in terms of **density** and **accessibility**. Functioning, these issues can improve the functionality and comfort of public spaces. The *density factor* received a moderate satisfaction score of 75% and as a result the research recommends the following.

- Creating ***adjustable spaces*** and *flexible extensions* within the Amr Ibn Al-As Mosque Garden. This would avoid the overflow of prayer gatherings onto the street.

Accessibility and **Transport Infrastructure** also showed moderate satisfaction. Thus, the research recommends:

- Enhancing the urban form by creating a clear, continuous pedestrian pathway from Amr Ibn Al-As Mosque to Suq El Fustat and Mary Gerges Street. These enhancements will improve connectivity and overall satisfaction with the area’s urban infrastructure.

5. Research Results and Recommendations

The linking road between Amr Ibn Al-As Mosque and the Hanging Church presents an opportunity to create a more pedestrian-friendly environment. By focusing on local needs and visitors’

experiences, the area can be transformed into a safe, welcoming, and accessible space for everyone. As shown in Fig. (17), the research proposes the following.

- Encouraging walking and cycling by narrowing vehicle lanes in order to reduce car speeds. This can be facilitated by the following.
- Creating biking *lanes* and constructing *wider sidewalks* for pedestrians and outdoor activities.
- Using *traffic calming* tools like speed bumps, roundabouts, and chicanes to ensure safer and slower traffic flow.
- Adding suitable Paving Materials for Pedestrians and Bikers to use like Basalt Stone.
- Adding *street furniture* such as benches, planters, and bike racks for higher pedestrian services.
- Planting trees and greenery, including an *iconic tree in the central node* for better space identification and shade.

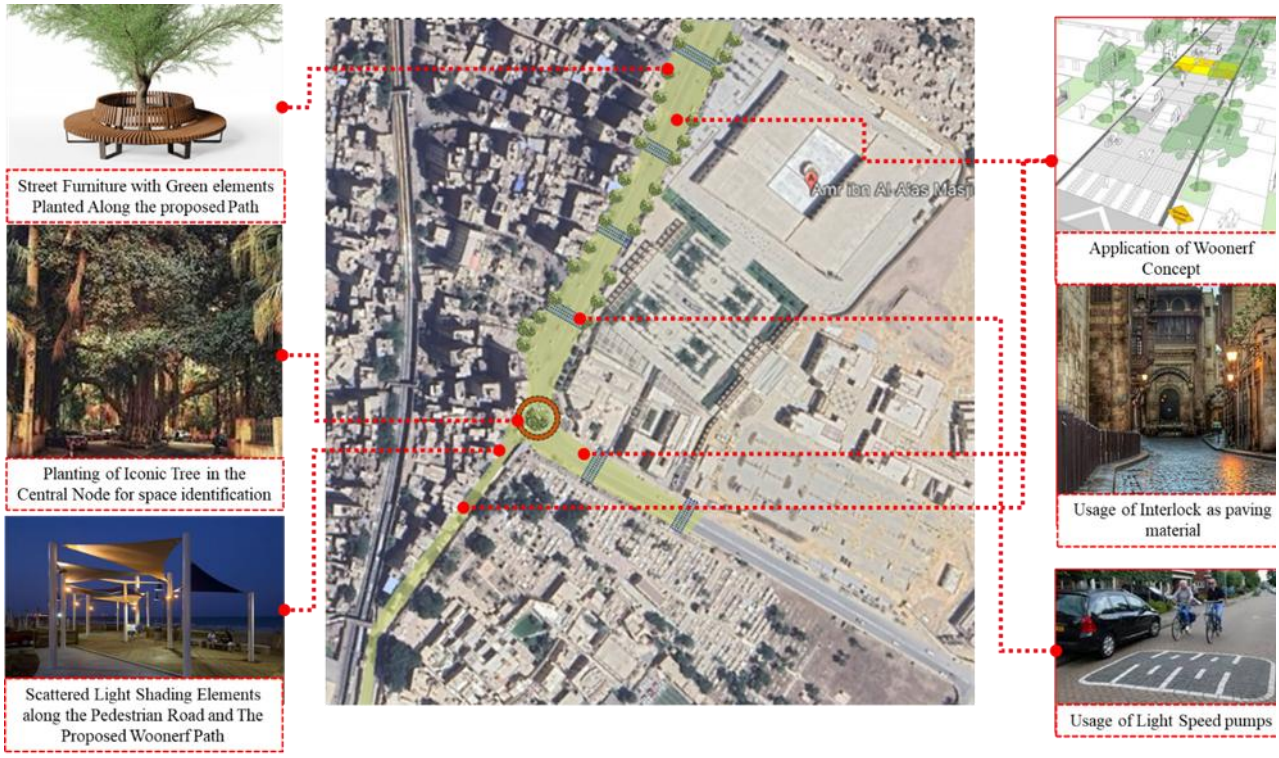

Figure 17: The research proposal (linking roads and the shared space) source: Author, 2024.

The shared space concept [28] is an opportunity for balancing out the physical and social aspects of the living environment as it can integrate the various users of the area, creating a harmonious experience between pedestrians, cyclists, and vehicles. Implementing traffic-calming measures will enhance safety and encourage slower, more mindful movement. That can be implemented by the application of "Woonerf" concept for ***shared spaces,*** as shown in fig.17, to allow pedestrians, cyclists, and vehicles to coexist as it is more than circulation channel, it allows people to walk and socialize with the presence of other vehicles safely.

One of the benefits of the *Woonerf* is the efficient land use, and the easy maintenance and replacement of materials which can be cost friendly [29]

Finally, aesthetic enhancements and community involvement will enhance deeper engagement with space. Moreover, prioritization of pedestrians can reshape the area into a dynamic, culturally enriched, and sustainable urban environment.

7. Conclusions

This research has proposed a framework for sustainable heritage redevelopment by applying the Place-Quality Matrix to the Religious Complex of Old Cairo. The study identified certain factors that contribute to the **quality of place**, highlighting **Ambiance as the highest evaluated aspect**, followed by **Function and Urban Form**, while **Image and Environmental aspects** require significant improvement.

The Place-Quality Matrix revealed clear opportunities for enhancing environmental performance, particularly, in light exposure and thermal comfort. Addressing these challenges through shaded walkways, the integration of shade trees **(e.g., Cassia Nodosa, Camphor)**, and improved microclimate strategies will enhance user experience and sustainability. Furthermore, **urban density and accessibility**, though rated moderately, can be significantly improved through adjustable public spaces, flexible extensions in the ***Amr Ibn Al-As*** Mosque front area, and enhanced pedestrian pathways connecting historical landmarks.

The research highlights the importance of integrating shared-space concepts ("Woonerf") and prioritized pedestrian design principles to create vibrant and inclusive public spaces. Furthermore, the concept allows pedestrians, cyclists, and vehicles to present in the area safely. Consequently, recommended traffic management solutions, widened sidewalks, and vegetation softscape will help transform the area into a dynamic, culturally enriched, and pedestrian-friendly area**.**

This research contributes to a deeper understanding of urban development for urban designers, planners, and researchers focusing on Place-making and sustainable urban development. By identifying spatial and environmental challenges in Old Cairo, the research offers **evidence-based suggestions** that can inform policymaking, public space interventions, and pedestrian-oriented planning**. The schematic plan derived from the Place-Quality Matrix presents an application model for revitalizing historic districts in ways that are economically feasible and sensitive to heritage values.**

In conclusion, **the study demonstrates that sustainable heritage redevelopment requires a balanced integration of cultural continuity, environmental improvement, and community engagement**. The **Place-Quality Matrix** served as an effective tool to guide context-sensitive interventions .This framework offers a transferable model for revitalizing historic districts in a manner that is both inclusive and economically viable.

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الملخص

إن إعادة تطوير المناطق التاريخية يطرح تحديات كبيرة، وخاصة في تحقيق التوازن بين قدرة التراث على التكيف والاحتياجات الحضرية المعاصرة. يستكشف هذا البحث إعادة تطوير المناطق التاريخية، مع التركيز على المجمع الديني في القاهرة القديمة كدراسة حالة. المشكلة التي يتم تناولها هي التدهور المستمر للمواقع التاريخية بسبب الإهمال الحضري، والضغوط الاجتماعية والاقتصادية، وعدم كفاية دمج المجتمعات المحلية في عملية إعادة التطوير .إن المنهجية المتبعة في هذه الدراسة تجمع بين النهج النوعي والكمي، بما في ذلك المسوحات الميدانية، والمقابلات مع المجتمع المحلي، وتحليل السياق الحضري. وفي إطار العمل الذي تبناه البحث، تقوم المسوحات الميدانية بتقييم الحالة المادية للمجمع الديني والبيئة المحيطة به، بينما تجمع المقابلات رؤى من السكان والشركات المحلية فيما يتعلق بتصوراتهم واحتياجاتهم. يتم تلخيص الجوانب المادية وغير المادية في مصفوفة جودة المكان المقدمة لتسليط الضوء على نقاط القوة والضعف ضمن نهج شامل.

إن مصفوفة جودة المكان المعتمدة في البحث عبارة عن مجموعة مستنتجة من جوانب من عدد كبير من الخبراء لفحص الاستدامة الحضرية والوظيفة والصورة والحلول البيئية في المنطقة. وبالتالي، تنعكس الجوانب المميزة في المصفوفة في شكل عناصر محددة يجب حلها من خلال إمكانات معينة لتعزيز جودة المكان والجدوى الاقتصادية مع الحفاظ على الأهمية التاريخية للمنطقة. تهدف النتائج المقترحة لهذا البحث إلى إنشاء إطار يراقب سمات جودة المكان والتي تحدد الجوانب الاجتماعية والثقافية المتغيرة في مكان معين ذات أهمية ثقافية. من خلال تحديد سمات جودة المكان الرئيسية للمجمع الديني ومرونته، يسعى البحث إلى إظهار كيف يمكن لهذه الجوانب أن تعمل كمحركات لمقترحات إعادة التطوير. ومن المتوقع أن تقدم النتائج توصيات قابلة للتنفيذ وفهمًا شاملاً، يتم تقديمها في شكل اقتراح تصميم لتعزيز جودة المكان مع الاحتفاظ بالهوية الثقافية.