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Reviving urban Authenticity within Sabil buildings: Case study Sabils of ALMuiz Street-Cairo

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Abstract: The Sabil is a historical charity water dispensary, an extensively recognized building typology within the Middle East's historic centers. Unfortunately, there are limited research and practices concerned reviving the rich urban character of Sabil buildings. Most of the interventions worked on restoring the historical building or reconfiguring its internal spaces. The study is elucidating this practical and theoretical gap, tackling the disciplines guiding the urban rehabilitation of Sabils. The study is approaching this topic from the Nara document on authenticity perspective. The research method adopted a qualitative approach based on 3 phases. The former performed a dense literature survey investigating the historical database and authentic dimensions of Sabils. It concluded by an analytical structure describing the urban authentic features of Sabil buildings. The second phase adopted a field survey exploring 10 Sabil buildings along Al Muiz Street. The latter designed a Numerical Data Matrix compiling the authentic attributes, indicators, and dimensions within the 10 Sabils. The results are displayed graphically and numerically. The outcomes employed a numerical interpretation for the Data Matrix to reach quantitative values responding to each qualitative dimension. Finally, the research paper concluded with a comprehensive analytical matrix reflecting the impacts of an evidence-based urban rehabilitation practices on enhancing the awareness of the local community and visitors to the urban significance of Sabil buildings. The Matrix offered a blueprint guiding a proactive stewardship for rehabilitating Sabil building's urban settings, facilitating the legibility of historical eras and augmenting the community knowledge base regarding the complexity of Sabils.

1. Introduction

Urban conservation principals have changed in theory and practice over the last 50 years [27]. Nara document in 1994 stated that Conservation of cultural heritage is rooted in the values attributed to the heritage. The ability to understand these values depends on the credibility and truthfulness of their information sources. The document reported that a deep understanding of these sources of information is required for assessing all aspects of

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authenticity, which is considered the qualifying factor of values. It added that the understanding of authenticity plays a key role in all scientific studies concerning cultural heritage inventories. Thus, it is not possible to base judgements of authenticity within fixed criteria. On the contrary, authenticity is encouraged to be assessed and practiced within different cultural contexts to which they belong. Authenticity judgements depend on a variety of information concerning the nature of the cultural heritage and its cultural context, besides its evolution through time [20]. The document affirmed the importance of preserving and facilitating all kinds of information sources revealing the authentic features of urban landscape [14]. The notion of Authenticity has been a leading aspect discussed with in cultural debates [7] as it emerged with the notion of modernity [13]. Although authenticity is a layered concept. It was the heart of the debate between Viollet -le-Duc and John Ruskin, representing the restoration and the anti-restoration movements. The term itself was not mentioned before, until it was discussed in relation to aesthetics and historic values in Venice Charter [15]. Consequently, in 1972 the World Heritage Convention established the test of authenticity as one of the criteria for inclusion in the World Heritage List [31]. The Nara document on authenticity in 1994, empowered the community's role in defining the authentic features and historic values of places (Pendlebury et al. 2009). It had affirmed the need to achieve a shared definition of authenticity through integrating new cultural perspectives with different cultural properties. Despite its shortcomings, the document has been found helpful for evaluating, discussing and reporting on heritage values particularly within interdisciplinary contexts, providing guiding quality to management and conservation treatment decisions [22,7]. In this context the research paper aims to inspect the operational guidelines of the Nara document in practicing urban conservation and rehabilitation programs. It questions the interpretation of the Nara attributes of authenticity within different cultural heritage contexts, investigating the historic water dispensary buildings known as Sabils in historic Cairo.

2. Literature Review

2.1 Nara document and the attributes of authenticity

The operational guidelines for the Nara Document had stated six attributes of authenticity. They included form and design, materials and substance, use and function, traditions and techniques, location and setting and spirit and feeling. These attributes could examine the artistic, historic, social, and scientific dimensions of the cultural heritage [14].

Form and Design: Form gives a meaning to architecture and adds a sign to the landscape. Form is elaborated from the arrangements, and combination of architectural elements creating the mass, plan, space, structure, and style for a building or urban context. It is the result of studied decisions made during the planning process. The primary elements, basic shapes and solids have given a variety of architectural geometries through the history. Those are the main elements shaping space and architectural form. In this sense design is a process of visual creation organizing space, proportion, scale, ornamentation, and materials [3,29].

Materials and substance: substance provides the physical quality of architecture it embodies a sense of timelessness, authenticity and the ability to endure overtime. Substance has resulted from the deposition of physical elements during a period of time with a particular pattern to form a historic property [3]. Materials are influenced by regional geological and topographical character, that shapes the local Knowledge concerning building's climatic treatments utilizing traditional technologies and indigenous materials in harmony with the ensemble (Forsyth 2008; Khalaf 2020). The building materials play a key role in the behaviour of the structures used, where understanding the physical and mechanical properties of these materials is essential to evaluate historical structures [8].

Use and function: The use and function in historic agglomerations is affected by the degree of continuity of original uses in a historic property. A historic area and its surroundings form a coherent whole including buildings and their associated activities. The continuation of original or compatible uses reduces the negative impact on authenticity. The term functional authenticity reflects a continuity of genuine function which is considered an intangible attribute [3,18].

Location and setting: This attribute refers to the physical environment of a historic property, but it is associated with the related events and our intangible values. Location refers to a specific place where a property was built, while the setting recalls the character of the place in which the property played its historical role. Location and setting attributes embody the *Genius loci* providing identity to a place. It involves how the property is situated and its relationship to the surrounding features and urban network. Accordingly, it is essential to preserve the original pattern of streets and palaces, canals, and open spaces [21,3,33].

Traditions and techniques: This attribute embodies the physical evidence of the traditional technologies and building techniques. It provides a clear knowledge of the practiced crafts in a particular culture during a given period in history. It is the living evidence for skillful artesian labor in altering a building, structure, object, or site. It can be expressed in vernacular methods of common traditions or in sophisticated ornamental detailing reflecting innovative period techniques [3,18].

Spirit and feeling: Intangible heritage is aroused by the presence of physical historic scene [3,18], where the spirit of historic settings emerged from the preservation of both the tangible and intangible heritage. This attributes it to the result of deposited meanings, memories events and actions created through history and provided the place with a particular spirit and sensation. This attribute requires specific conservation approaches retaining the origins of the place's existence and its formation genetic order. Preserving the interrelations between the place and its inhabitants [25].

2.2 Authenticity within urban heritage

Authenticity cannot rely only on the integrity of individual buildings and monuments, which was acknowledged during the discussions on the Nara Document. The report recognized the requisite for urban areas to evolve and experience socio-cultural change, where the actions

of urban heritage protection are merged with urban management policies [21]. According to developers, Urban heritage conservation is considered an asset for place making and urban development. In this context, scale is a key factor describing the hierarchy in terms of the size, levels and contextual relations. Urban Heritage is a spatial phenomenon, related to spatial categories such as location, distribution and scale [12]. It offers a significant sense of place, within its particular cultural, social and physical spirit. Urban heritage is understood through an experience value. It is acknowledged by criteria including authenticity, representativity, environment, architectural/artistic quality, identity and technical condition. Understanding the urban heritage is necessary to evaluate and realize heritage attributes as livable and dynamic resources and not only static ones [5].

The notion of historic urban landscape (HUL) has been considered as a tool reinterpreting the values of urban heritage, taking into consideration the broader urban landscape. It responds to the international change towards sustainable development in the governance of historic centers [4]. HUL is concerned with conservation at an urban scale, fusing conservation and planning processes, which was known as the integrated conservation according to the Council of Europe terms. However, the interpretation of the concept of authenticity to the urban spatial scale is problematic due to the challenges of conserving an ever-changing city [21]. Controlling change is still the focus in urban heritage conservation debates aiming to identify the dynamic integrity within the conservation practices [5].

2.3 Significance, Integrity and continuity in HUL conservation practices

Authenticity is a basic indicator assessing cultural values, while integrity is the tool for implementing and assessing a conservation plan. Integrity was defined in the world heritage compendium in 2019 as a measure of the wholeness and intactness of natural or cultural heritage and its attributes. Thus, the main target of conservation plans is achieving the intactness of heritage sites along with the ongoing development of the areas. In this context, integrity of conservation practices aims to assess the extent to which the property retains all the necessary elements expressing its outstanding universal values (OUV) whether they are tangible or intangible. Besides assessing if the intervention is of adequate size in order to convey the property's representation and significance. Moreover, it Assesses the extent to which the property suffers the negative impacts of development or neglection [34].

The concept of integrity has developed to dynamic integrity, following the phenomena of rapid urbanization and cities transformation. It aimed to preserve historic settings from fragmentation, degeneration and subtraction of significance. The HUL approach offered tools for managing the urban World Heritage Sites under emerging forms of development pressures, urging change of use and urban configuration. In this context, practitioners are facing the complexity of urban heritage, which is composed of layers of significance of different scales overlapped in time and space. Subsets and fragments that are not necessarily having a special continuity but offer significant relations among them. Significance in this context refers to a synthetic representation expressing the continuity of heritage meanings in a changing context. Conservation practices shall adopt the concept of continuity associated

with ideas of sequence, flow, wholeness, cohesion and interrelationship to merge fragments of different times as records of memory through a chronological reading [23,32]. Continuity enables the transition of knowledge from the past to present generations, without cancelation, while enabling the emergence of new meanings. Conservation practices face serious challenges in filling in the gaps between historic subsets and preserving visual integrity within a changing urban condition [35,30].

Currently the notions of authenticity are at stake within practices of conservation [13]. In some cases, urban designers and city administrators are concerned about creating an enjoyable urban experience for users rather than focusing on the authentic features of the historic urban landscape [27,36]. It is challenging to identify and maintain authenticity, integrity and continuity in urban heritage. However, these concepts are opened to interpretations within in different cultural settings. The diversity of sites and wide variety of influences on them offer individualized approaches for preservation [2].

2.4 Historic Cairo and Sabil building typology

Accordingly, the research paper is investigating the aforementioned notions within Sabil the building. It is a historical charity water dispensary building an extensively recognized typology within the Middle east's historic centers. The study is performing its exploration within Al Muiz Street in historic Cairo in Egypt. Historic Cairo is considered one of the richest historic centers in the Africa and the Middle east region. It holds heritage sites of remarkable cultural significance dating back to the Fatimid, Ayyubid and Mamluk Eras. The United Nations Educational, Scientific and Cultural Organization (UNESCO) nominated historic Cairo as a World Heritage Site in 1979. Henceforth, conservation and rehabilitation projects were assigned to regenerate the historic centre and enhance the living conditions of its local community. The latest was the United Nations development program (UNDP) initiative, which focused on Al-Muiz Street; as the main spine extending north–south the Fatimid capital, holding rich architectural, cultural and social potentials, besides its economic activities as crafts and industrial workshops [16].

Urban heritage spines denote distinctiveness and diversity through a closely entwined network of interrelations. These spines represent a holistic perspective towards the cultural heritage landscape. The significance of the traditional urban fabric is recognized from the collective visual perception of its historic monuments as well as urban patterns [9]. Al Muiz Street holds a unique cultural ensemble of diversified typologies of Sabil buildings perceived through recognized patterns deposed over different time periods [16].

Sabils thrived under the rule of the Mamluks in Egypt and prolonged during the ottoman era. It emerged as a charitable water storage and dispenser, serving passers-by with fresh-cold water. Sabils were first attached to religious and public buildings, afterwards, they had been constructed as separate structures. They are usually associated with a charity educational place called ''*Kuttab''* on its second floor. The Sabil is a building that serves pure drinking water throughout the year, particularly during low Nile River water levels. This building typology usually overlooks active streets to serve water to a wide range of

passers-by. The architecture of the *Sabil* relied on storing water in large underground cisterns collecting water during Nile floods [26]. The building falls under the charity facilities, of significant inspiration due to its functional, aesthetic, and urban symbolic roles [28]. It took different forms according to its construction time period and location. Sabils hold a distinguishing architectural style overlooking the street, identified with their significant urban façades. The Kuttab plays a key role in creating the urban audiography of the historic quarters in this era [1]. Cairo once had over three hundred Sabil buildings forming a significant morphological characters within the compact urban fabric. Unfortunately, some *Sabils* decayed by time and lost the guiding signs informing of their origins and components [26].

2.5 Urban role and configuration of Sabil buildings

The design of Mamluk Sabils of the 16th and 17th century was dominated by square or rectangular layouts. During the Ottoman empire after the second half of the 18th century, Sabils adopted circular forms transforming their configurational display within the compact tissue. Almost 63 Mamluk Sabils are extant, while only 7 Ottoman ones survived. Although the Mamluk period rooted the main architectural as well as urban features of Sabil buildings, the Ottoman dispensaries developed the building typology to provide a wider range of charity water basins regardless of its disposition from the street. They are adopted circular layouts dominated by dense Rococo decorations. However, the Mamluk period identified the local style for Sabil buildings and influenced its architecture years after the Ottoman rule. Hence, it is quite common to find a mixed typology merging the Mamluk and the Ottoman features together in one Sabil. The Sabil building is relatively small in scale, but it acquires sophisticated architectural proportions related to both, the human and the urban scales [9].

The disposition of Sabil buildings is corelated with the significant irregular pattern of Historic Cairo's urban fabric. Sabils are located within active streets at deviation points, corners or adjacent to open spaces, impacting a wider urban sphere. It generated a sequence of visual signs guiding the journey along the old center [16]. Furthermore, the urban form of Sabils played a key role in generating a unique socio-cultural relation along their edges. Where, the rounded corner inhabiting dispensary windows overlooked the urban space. It enabled passers-by to transit and gather, respecting the convention stating that the center of urban spaces belongs to passers-by, not to the buildings. This traditional built form produced a unique mixed-use pattern engaging different levels of the community. It increased the feeling of membership and connected the people with a continuing dialogue [19].

Previous research affirmed the fact that Sabil buildings played a vital role in offering order and measure to the organic urban fabric. The allocation of Sabil buildings indicated the extent of walkability limits for users extending between 100 and 150 m. They played a comparable role to that of the school in the modern planning for residential neighbourhoods.

Consequently, it is fundamental to reveal the capacity of Sabil buildings to lead cultural landscape changes, towards a conscious recognition for the endogenous urban patterns [9].

2.6 Urban Authentic features of Sabil Buildings

The Sabil is a two-or three-story building. It adopted different sizes due to the different land areas dedicated from beneficiaries to build water dispensaries. The first floor is placed underground and used for storing Nile water. The second is slightly higher than the street level and inhabited the Sabil's main room (known as the dispensary room) serving cold and fresh water. The third floor adopted the Kuttab or the school. The following paragraphs will briefly discuss the main features identifying the urban authenticity of Sabil buildings.

The cisterns: The cistern is a water tank located at the basement of each Sabil building. It has different sizes following the charitable building area. The underground tanks are yearly maintained to ensure year-round water availability for passers-by. The Cistern has three openings. The first is accessible from the street level and dedicated for water supply. The second is half circular, embedded in one of the water tanks walls, and connected to the dispensary room for water supply. The last opening is bigger in scale designed for maintenance and cleaning. It is linked to the dispensary room and connected with a staircase to the underground water tanks. Some Sabils are having wells as their source of water instead of storage tanks [28]. Cisterns had taken fixed rectangular or squared shapes. They are covered with shallow domes carried on arches resting on pillars [26].

Dispensary room: It is considered the Sabil's main room reflecting its architectural style and time period. It was subject to various artistic influences, and the incoming external inspirations. The dispensary room displayed the principal difference between the Mamluk and the Ottoman Sabils, where the former is distinguished by a regular geometry, while the latter is dominated by curved walls. The dispensary room is the most functional part of the building, where passers-by used to drink water. It is designed at the same street level or slightly higher to enhance its durability and facilitate the drinking process. The dispensary room is the most decorated space in the whole building. It is distinguished by its decorated ceiling and colored marble flooring. It had a water purification feature called the *Shazrwan* or the *Shanashen.* It is composed of a slating marble board with octagonal or circular marble columns used for water cooling [28].

Dispensary windows: The dispensary windows are designed according to the golden ratio. They followed vertical dominance and distinguished themselves with dense decorations to attract people. The windows, where water basins are located, are considered the outlets serving the public with water. They vary in number and size from one Sabil to the other. Usually, they are rectangular openings protected with steel and copper bars, that are usually fixed at the exterior walls. But sometimes the grid-bars are intruded into the interior plane of the exterior walls, to enable the placement of drinking cups. Each window served a marble basin, adopting rectangular, circular or elliptical shapes. The year 1744 witnessed the transformation from the local Mamluk style to the Ottoman, where the windows shape adopted a half-circular arch [28].

Raised terrace: It is an elevated platform, a semi-private space apart from the street intended for Sabil users. It is considered a transition zone aiming to guarantee safety for the users. Unfortunately, many terraces decayed over time due to the changing levels of streets [28]. The raised terraces carried urban values, they enabled social interaction and built a mutual relationship between inhabitants and their physical surroundings [19].

Third floor (Kuttab): It is one of the most important Sabil components. The Kuttab is used for educational purposes to supplement charity building. It is extended from the dispensary room in the case of the Mamluk Sabils. But the Kuttab in the Ottoman Sabils is located on the second floor. It took on a rectangular shape, with a gallery overlooking the main street composed of arches mounted on poles. On top of the Kuttab mass, there is a wooden sunshade holding wooden arches and columns, protecting users from the sun [28].

Decoration and Ornaments: Ornamentation took different typologies including geometric motifs, vegetal ornaments and Arabic calligraphy. The geometric motifs adopted linear forms and basic shapes, this type had been widely used and developed to reflect the Islamic artists' skills. It was used in decorating windows, doors and flooring with different materials. The vegetal ornaments were used at the beginning of the 18th century, as newly exported motifs from the European Renaissance period. The architecture of Sabil buildings was inspired by Rococo and baroque ornamentations in most of the wooden ceilings. Arabic calligraphy was a distinctive decorative technique in the field of architecture as it generated different scripts with varying styles. It was used in the Sabil building to determine the name of the founder and the construction date. Moreover, calligraphy was used to decorate the frontal façade, defining the function of the building and stating prayers for its founder [28].

Unfortunately, there are limited research and practices concerned reviving the rich urban character of Sabil buildings. Most of the interventions worked on restoring the historical building or reconfiguring the internal spaces for inhabiting new functions in the cases of adaptive reuse. The study is elucidating this practical and theoretical gap, tackling the urban rehabilitation of this historical building of rich urban character. It aims at revealing the hidden historical and urban relation between Sabils of different eras but holding particular spatial continuity. It targets the interrelationships merging fragments of different times as records of memory. Enabling visitors to experience the multi-temporality arising in historical centers enhancing the historical consciousness of people towards their cultural landscape [11].

3. Research Method

The scope of this study focused on detecting the authentic urban features of Sabil buildings. It identified the historical background of each monument based on its contextual specificity, using Al Muiz Street as a case study. Al Muiz Street is a historic commercial street. It holds a unique cultural ensemble of diversified typologies of Sabil buildings perceived through recognized patterns deposed over different time periods. This rich agglomeration would

facilitate measuring the urban authenticity of the building typology. The research aimed to enable a better legibility and identification of the authentic features of the building typology within different eras, while offering a conscious understanding for the chronological layers in sophisticated historic centers. The research method adopted a qualitative approach inscribed in three different phases. **The former** performed a dense literature survey for scientific research papers and conservation charters discussing the concept, role, components and authentic features of Sabil buildings in historic Cairo. **The second** undertook a field survey to the Sabils of Al Muiz Street. The survey explored 10 Sabil buildings along the street. They included Sabil and Kuttab Nafisa Al-Baydaa, Sabil Mohammad ali in al- Aqqadin, Sabil Al Ghuri, Sabil and Madrassa of Al-Ashraf Barsbay, Mosque and Sabil Kuttab of Shaykh Ali al Mutahhar, Sabil Kuttab Khusru pasha, the complex of Sultan al Mansour Qalawun monument, Sabil Muhammad Ali in Al Nahhasin monument, Sabil Kuttab Abdal Rahman katkhudha, the mosque and Sabil- Kuttab of Sulayman Agha al Silihdar. Accordingly, the Study offered a comprehensive description for each case and concluded by an analytical structure classifying the urban authentic features of *Sabil* building typology according to the Nara attributes of authenticity focusing on materialistic attributes. Eventually, the **latter phase** designed a Numerical Data matrix displaying a cross-case comparison between the 10 *Sabils,* highlighting the urban authentic attributes, indicators, and dimensions following the attributes of authenticity reported by Nara document.

3.1 Site survey

The outcome of the site survey is based on the author's recorded observations from a site survey that took place on the 28th of June 2024, guided by a dense literature review. The survey started from Bab Zeweila the southern gate of the old city walls of historic Cairo and ended by Bab Al Futouh the northern gate as shown in fig. (1). The first Sabil building to be explored was that of *Sabil and Kuttab of Nafisa Al-Baydaa*, a recorded monument no. 358. It was built in 1211 AH/ 1796 AD. This *Sabil* is located by the end of al-Muizz Street and facing Al-Muayyad Shaykh mosque in Al-Ghawriyya historic quarter. Nafisa Al Baydaa was the founder of the charitable complex including a *Sabil* and *Kuttab* (orphans' school) and a commercial caravanserai. The complex was built on a large piece of land at the corner of Sugar Street, that was famous for its sweets and pastries. The Sabil is considered one of the distinctive designs of the Ottoman style as indicated on the marble slab above the façade's central window. It is semi-circular with three copper windows tied with semi-circular arches and separated by marble columns. The Kuttab is located on the second floor of the *Sabil*. It is designed by a wooden gallery topped by three semi-circular arches. The Sabil and Kuttab are crowned by two decorated wooden eaves. The whole monument was restored in 1998 by the American Research Centre in Egypt [1].

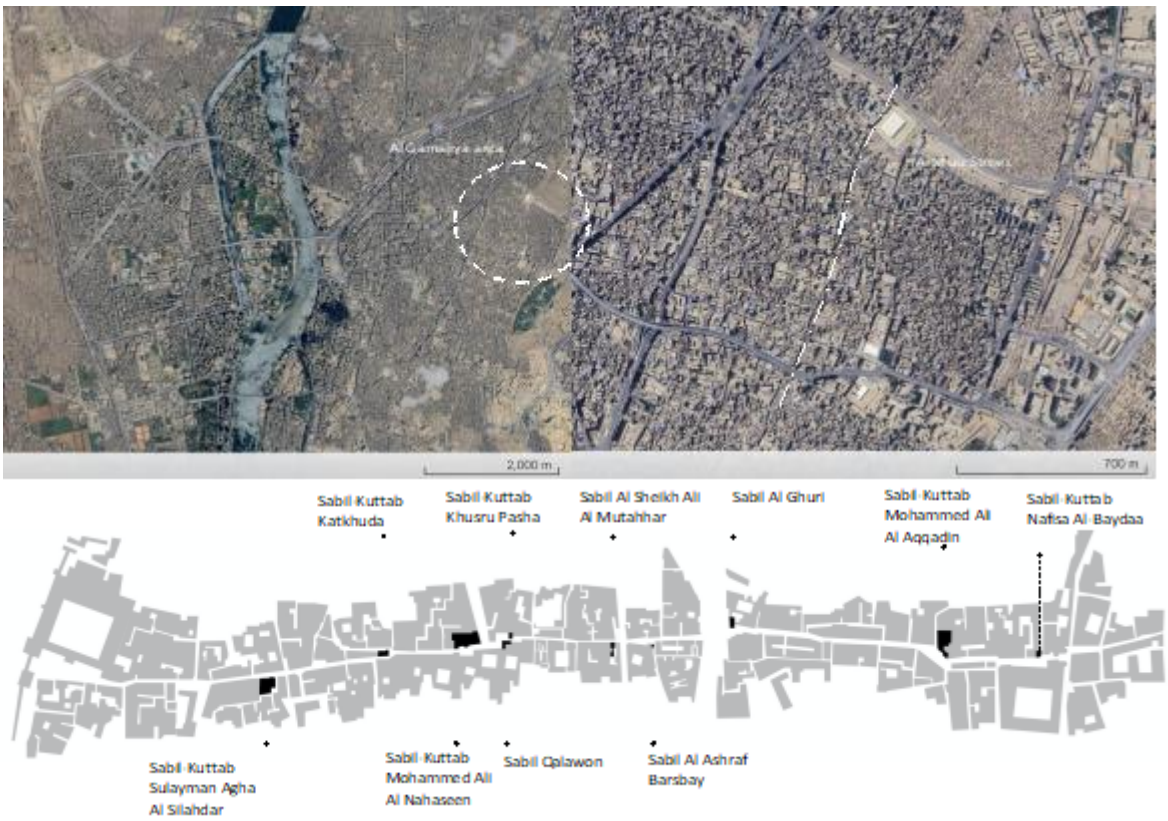

Fig. (1) shows on the top-left google earth images for Historic Cairo Highlighting Al Gamalia rea where Al Muiz Street is located, on the right the figure shows the location of the street in Al Gamalia district, the images are retrieved on 05/05/2024. Below the figure shows the Sabils located along Al Muiz Street. Source: Author, based on [17].

The second Sabil building is that of Mohamed Ali in Al-Aqqadin. It was built by Muhammad Ali Pasha the founder of modern Egypt in 1236/1820. It was a charity event in memory of his son Ahmed Tusun pasha [26]. The monument is located at the head of AlRum alley branching from Al- Muizz Street. It has been located in an active and livable commercial area for about two hundred years. Consequently, the *Sabil* drew large number of thirsty passers-by specially that it is located at one of the deviations in Al Muiz Street, which enriches its visual perception as a landmark. The *Sabil* was built to secure storing fresh water all through the year. The water is stored in the lower cistern that is considered one of the largest remaining cisterns in Cairo. It has a depth of 9 meters and a capacity of 455,000 liters, enough to fill a million and a half cups of water. The monument is characterized by the Ottoman style of construction influenced by European arts in the seventeenth and eighteenth centuries. This was reflected in the dispensary room which is recognized by a circular façade with copper windows tied with semi-circular arches. While the room is dominated by a dome with floral and vegetal decorations that are visible from the street level. The upper *Kuttab* space is devoid of decorations reflecting its practical purpose. Its rooms are supported by rectangular windows securing natural light and ventilation required for the educational functions [26]. The construction is dominated by wood, copper and while marble.

The third Sabil is Sabil Al-Ghuri. It belongs to the Mamluk period. The Sabil is a supplementary function, placed in the Funerary complex of Sultan Qansuh-Al Ghuri. It is

located at the intersection between Al Muiz Street and Al-Azhar Street in a very dense commercial area. The complex was built between 1503 and 1505. It is extended to both sides of Al-Muiz Street. The mosque and the school are built on the western side, while the khanqah-mausoleum-Sabil-kuttab are built on the eastern side of the street. The complex's opposing facades are set back forming an urban square. It is semi-enclosed from one side by the protrusion of the Sabil-kuttab, and from the other side by the projection of the minaret of the school. The Sabil-Kuttab Al Ghuri owned three identical stone facades. The dispensary room is shaped by three rectangular windows veiled with iron grill, where the marble sinks are attached. The windows are topped with three rectangular marble eaves, crowned by a remarkable frieze decorated by calligraphy ornaments. The *Kuttab* is situated on the second floor. Each façade is designed by two arches separated by a central marble column. The *Sabil's* roof is crowned by a wooden cantilever, distinguishing the ending of the Sabil mass.

The fourth is the Sabil of Al-Ashraf Barsbay, monument no. 175. The Complex belongs to the Mamluk period. Its founder is Al- Sultan Barsbay. It was built in Al-Nahhasin quarter in 1432-3. The complex has two street facades, as it is located at the intersection between Al Muiz Street and Jawhar Al Qaaed Street. The Sabil's dispensary room overlooks Al Muiz Street through a large rectangular window screened with copper grill bars and inhabits the dispensary marble sinks serving passers-by. The Kuttab is dominated by wooden structure involving the upper galley with its arches, wooden handrails and decorated roof top [1].

The fifth is the Sabil-Kuttab of Shaykh Ali Al Mutahhar, monument no 40**.** The monument dates back to the year 1157/1744. It is dedicated to Shaykh Ali Al Mutahhar. The founder of this establishment is Al-Amir Abdulrahman Katkhudha, one of the followers of the sheikh. The Sabil was built using the Mamluk style. The Sabil's main room is distinguished from the street by a recessed semi-circular arch bordered by two marble columns. The recess includes a semicircular arched window screened with an ornamented copper grill where the dispensary marble sink is located. The *Kuttab* block inhabits the space above the *Sabil*. It overlooks Al Muizz Street through a gallery of five arches topped by two wooden eaves [1].

Sixth is the Sabil- Kuttab Khusru pasha, monument no. 52. Its founder is Khusru pasha an Ottoman governor. The Sabil-Kuttab it is an independent charitable structure that was built in 1535. It is situated against the facade of Al-Salih Nagm al Din Ayoub between the minaret and the mausoleum. The Sabil is perceived as an extruded mass from the complex's façade of which it is not a part. Thus, it encloses an urban space that is considered a transit point for passers-by. This urban space serves the deviation of Al Muiz Street and enables the monument to act as a landmark and enrich its visual perception. Its architecture is close to that of Al-Ghuri complex particularly in its protrusion from the main facade of a complex into the thoroughfare. It indicates the dominance of the Mamluk architectural style, and the planning disciplines of the Ottoman period. The Sabil is overlooking the street from two facades, each is opened to the street via a rectangular iron grill window. The Kuttab inhabits the second floor. It is distinguished from its double arched wooden gallery, crowned with a wooded eave [24,6,1].

The seventh is the Sabil of the Complex of Sultan Al Mansour Qalawun, Monument no. 43. The funerary complex stands in Al Muizz Street opposite to Al Salihiya historic school. It was built by Al Sultan Qalawun. The complex is composed of a hospital, a domed mausoleum and a school, besides a covered market and a *Kuttab* but they fell into ruins. The complex did not include a Sabil but during the reign of Sultan Al Nasir Muhammad Ibn Qalawun, the drinking water channel for animals was replaced with a Sabil. The *Sabil* is accessible from stairs leading to the dispensary corridor below the street level [1].

The eighth is Sabil Muhammad Ali in Al-Nahhasin monument no. 402. The monument was built in 1244/1828-9 by Muhamed Ali Pasha Al-Kabir as a dedication to the memory of his son Ismail pasha. It is situated in a rich urban setting, at the intersection between Al-Muiz Street and Beit Al-Qadi Street in Al-Nahhasin quarter. It is facing an urban space created from the recess of the school of Al Nasir Mohamed Ebn Qalawoon from the street line. The recess formed a transit space for passers-by, which enhances the visual perception of Sabil's architecture dominated by classical ornamentations. The dispensary room is the most decorated component. It has a circular facade lifted above 5 marble circular steps. The room is shaped with 4 half circular arched windows separated by marble columns. The dispensary windows are veiled with remarkable cast brass, decorated with vegetal ornamentations. The arched windows are decked with four marble rectangular eaves embellished with calligraphy ornaments. The dispensary room is crowned by a wooden frieze decorated with golden baroque ornaments and surmounted by a non-functional handrail. The *Sabil's* annex spaces are simpler in their decorations. Their façade is composed of a series of half circular arched recesses with rectangular windows having remarkable metal screens of geometrical patterns. The *Kuttab* is situated on the second floor, it is composed of a simple façade with wooden rectangular windows. On top of the façade there are brightly coloured Kufic inscriptions for Quran verses and information about the construction processes of Sabil. The whole façade is crowned by a stone girder highlighting the skyline of the building [1].

The nineth is Sabil Kuttab Abdal Rahman Katkhudha Monument no. 21. The monument's construction dates back to the year 1157/1744. It was built by Abdulrahman Katkhuda, a Mamluk prince. The Sabil lies on a triangular site formed by the splitting of Al-Muizz Street into two branches. Its location serves as a visual focus along this major spine. The Sabil-Kuttab was built using the Mamluk Egyptian style. It is a free-standing monument, acting as a strong landmark achieving the maximum visibility in Al Muiz Street. The building has three identical facades with equal lengths. Each holds a half-circular arch based on two marble columns. In the middle of the half-circular protrusion is a big window covered by a remarkable copper mesh with holes designed for passing water cups. The window is bordered by two marble columns. The windows are lifted on two half-circular steps serving people's privacy while drinking along the public street. The *kuttab* room is built on the second floor with a wooden gallery composed of five semi-circular arches. It is topped with two half circular stone arches with wooden decorations. The whole structure is decorated with double wooden eaves [24,1].

The tenth is the Sabil-Kuttab of Sulayman Agha Al-Silihdar monument no. 382. The Mosque and Sabil-Kuttab of Solayman Agha El-Silihdar is situated along Al Muiz Street and northward Darb El-Asfar alley. The Sabil is in parallel to the street. It is flanked by the *Kuttab,* and not on top of it like most of the *Sabil* buildings. The monument is constructed of stone with white marble cladding at the dispensary room. The facades are dominated by the Ottoman baroque style. It resembles that of Sabil Ismail Pasha in Al-Nahaseen quarter. The dispensary room is the most decorated component. It has a circular facade shaped by four half circular arched windows separated by marble columns. The dispensary windows are screened with decorated cast brass and decked with four marble rectangular eaves embellished with calligraphy ornaments. The *Sabil* is crowned by a wooden frieze decorated by baroque ornaments. Its annex spaces and the *Kuttab* are composed of a simple façade with a series of rectangular windows screened with metal vegetal decorations. On top of the façade there are brightly coloured Kufic inscriptions for Quran verses and information about the construction processes of the Sabil [1].

3.2 Analytical structure reporting *Sabils* urban authentic features

The research method synthesized the components of the *Sabil* building typology through an analytical structure classifying its urban authentic features according to the Nara attributes of authenticity as shown in fig. (2). It described material and immaterial qualities. The former concerned design and technique, while the latter involved spiritual feelings and intangible assets. The design attributes included location and setting, describing the urban disposition, urban facades, relation to the street and historical stratifications. It also included form and design, which concerned the architectural style, planimetric form and dispensary windows indicators, defining the form and design attribute. The use and function attribute is classified by supplementary or primary uses. The tradition and technique attribute involved water storage, conveyance and infiltration besides the natural light and ventilation indicators. Furthermore, it included the material and substance attributes, considering the materials used in the monument's main components like the dispensary room and windows, besides the space dedicated to the *Kuttab*. Although the paper focuses on materialistic values, the analytical structure offered a general understanding of immaterial qualities. It included the intangible assets offered by Sabil building typology, influencing its context and inhabitants. This attribute involved the urban audiography presented in the sound escape created during the dispensary services. Furthermore, *Sabils* offered serenity, comfort and sanctuary particularly in public spaces. Eventually the research method would practically examine the validation of the proposed analytical structure in Al Muiz Street, exploring the six attributes of authenticity within the ten aforementioned *Sabil* buildings.

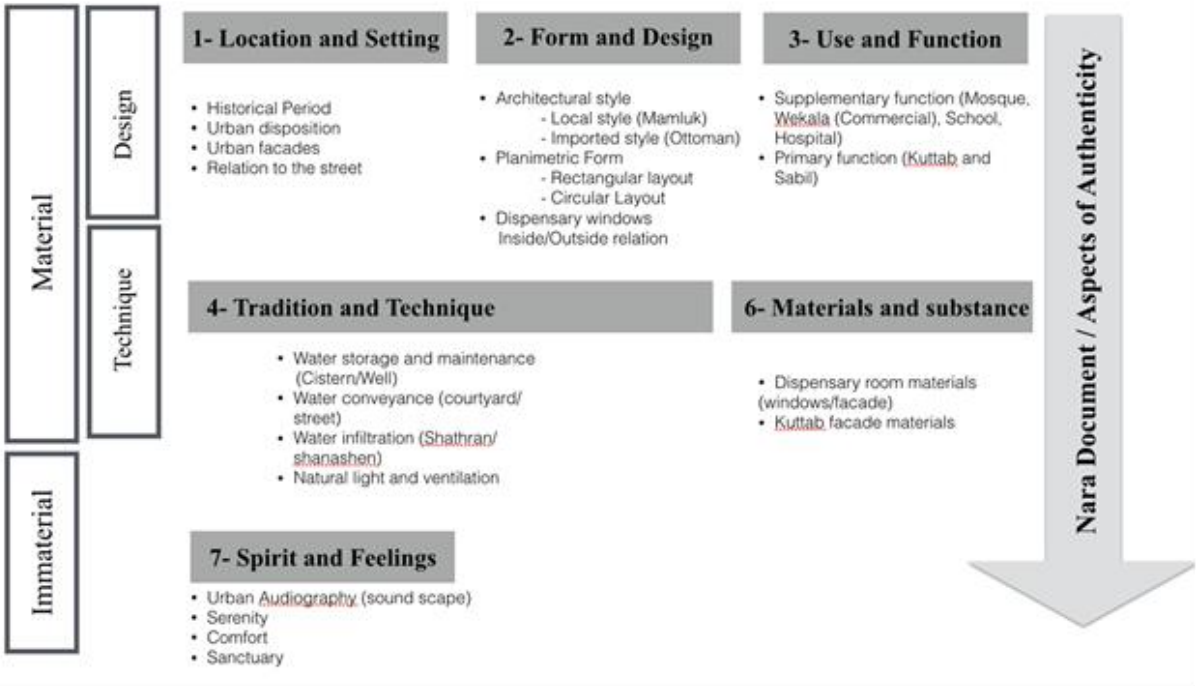

Fig. (2) shows an analytical structure describing the urban authentic features of Sabil buildings following the Nara authentic attributes. Source: Author based on the Nara document on authenticity

3.3 A Numerical Data Matrix Displaying Sabils urban authentic dimensions

Finally, the research method designed a Numerical Data matrix synthesizing both the derived theoretical data and field surveys. The produced matrix involved the urban authentic attributes, indicators, and dimensions of the ten examined Sabil buildings. The matrix was based on an analytical grid displaying a graphical representation for the different Sabils following the attributes of authenticity reported by Nara document, as shown in fig. (3).

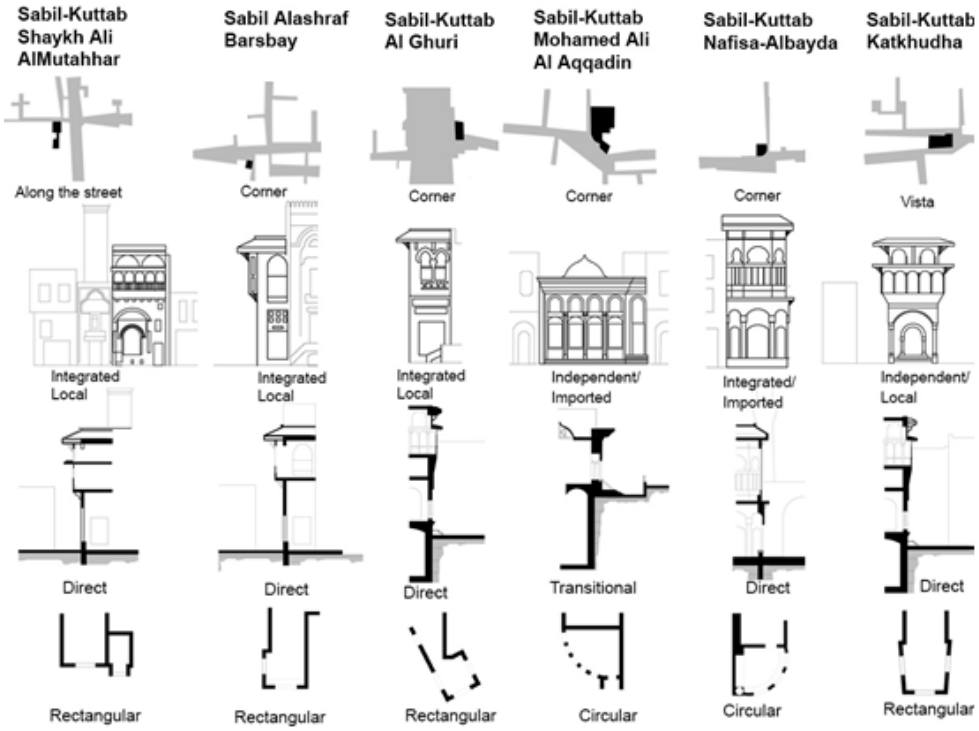

Fig. (3) shows an analytical grid displaying a graphical representation for the different Sabils Source: Author

The Matrix assigned a numerical value for each dimension and executed a cross-case comparison between the *Sabils*. The Numerical Data matrix presented a powerful communication tool distinguishing the repeated patterns and correlations and facilitating the visual comparisons between Sabils of different urban settings. The Data matrix was composed of three main components. The former represented the Nara attributes of authenticity. The second introduced the indicators and dimensions, while the latter offered a numerical classification for the 10 Sabil buildings following the assigned values.

Table (1): shows a Numerical Grid Matrix for the physical attributes and indicators of authenticity. Source: author

Sabil Sulayman Agha Al Silahdar	Sabil Katkh-uda	Sabil Mohamed Ali AlNahasin	Sabil Qalawon	Sabil Khusru Pasha	Sabil Sheikh Ali AlMutahhar	Sabil AlAshraf Barsbay	Sabil Al Ghuri	Sabil Mohamed Ali Al Aqqadin	Sabil Nafisa Al Bayda	Indicators/ Dimensions	
2	**1**	**2**	**1**	**2**	**1**	**1**	**1**	**2**	**2**	**Historical Period** 1 Mamluk 2 Ottoman	**Location and setting**
1	**3**	**2**	**2**	**2**	**1**	**2**	**2**	**2**	**2**	**Urban Disposition** 1 Along the street 2 Corner 3 Vista	
1	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**Urban Facade** 1 Integrated 2 Independent	
2	**1**	**2**	**2**	**1**	**1**	**1**	**1**	**2**	**1**	**Relations to Street** 1 Direct 2 Transitional	
2	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**Architectural style** 1 Local 2 Imported	**Form and design**
2	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**2**	**Planimetric form** 1 Rectangular 2 Circular	
2	**1**	**2**	**3**	**1**	**1**	**1**	**1**	**2**	**2**	**Dispensary Windows** 1 3or <3 2 >3 3 Not detected	
1	**2**	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**Function** 1 Supplementary 2 Primary	**Function**
1	**2**	**1**	**3**	**2**	**2**	**2**	**1**	**1**	**1**	**Water Storage and Maintenance** 1 Cistern 2 Well 3 Not Detected	**Tradition and Technique**

2	**3**	**1**	**3**	**3**	**3**	**3**	**2**	**2**	**3**	**Water conveyance** 1 Street 2 Inner court 3 Not detected	
2	**3**	**3**	**3**	**1**	**3**	**3**	**1**	**3**	**3**	**Water infiltration** 1 Shathrwan 2 Shanashen 3 Not detected	
2	**3**	**1**	**3**	**3**	**3**	**3**	**3**	**2**	**3**	**Natural Light/Ventilation** 1 Skylight, windows 2 Courtyard, windows 3 Windows	
2	**1**	**2**	**4**	**1**	**1**	**3**	**1**	**2**	**1**	**Dispensary room** 1 Stone/Marble/Brass bars 2 Marble/ Wood /Brass bars 2 Stone/ Wood/ Brass bars 4 Not detected	**Material and substance**
1	**1**	**1**	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**Kuttab Facade** 1 Stone /wood/ glass 2 Not detected	

4. Results and discussion:

The research results are displayed graphically and numerically. The outcomes employed a statistical interpretation for the graphical analytical grid to reach quantitative values responding to each qualitative dimension as shown in Table (2). Regarding the location and setting attribute, the results showed that 50% of the Sabil buildings were built during the Mamluk period, while the other half belonged to the Ottoman era. They occupied distinguished locations along the street, where 70% of the selected sample occupied street corners. But Sabil Katkhuda was distinguished with its panoramic prospect occupying two corners, as shown in fig. (3). The remaining 20% are situated at active spots along Al-Muiz Street. The urban facades of the investigated *Sabils* were mainly integrated with bigger complexes including mosques or caravanserais, hospitals or schools. Only the Ottoman *Sabils* adopting the exported architectural style owned independent urban facades, except Sabil Nafisa Al Baydaa, which is integrated with a remarkable Caravanserai. The statistical analysis showed that 70% of the Sabil-Kuttab buildings adopted integrated urban facades, while 30% owned independent ones. Mostly the Mamluk Sabil buildings occupied a direct relation with the street with a percentage reaching 60%, but the Ottoman ones adopting the exported style designed an elevated transitional space separating users from the street. They occupied 40% of the tested sample as described in fig. (4).

Considering the Form and design attribute, the results affirmed that the Mamluk Sabils adopting the local style represented 60% of the tested sample, while 40% adopted the

Ottoman exported style. The study noted that some Sabil buildings were constructed during the Ottoman period but were dominated by the Mamluk architectural style. This justifies the numerical variation with the historical period statistics. The planimetric form was one of the main features differentiating between the local and exported styles. The rectangular planimetric forms occupied 60% of the Sabils belonged to the Mamluk architectural style, while the circular ones occupied 40% of the tested Sabils belonged to the Ottoman architectural style. The form and number of dispensary windows were also strong indicators distinguishing the local from the exported styles and could be easily recognized by passers-by. Results affirmed that the Mamluk Sabils owned 3 or <3 dispensary windows, while the exported style designed the dispensary rooms with more than three windows, reporting 40% and 50%, respectively. Concerning the use and function attribute, the Sabil-Kuttab building typology was mainly a supplementary function in all cases adopting the local Mamluk style. But it represented the primary function in the Ottoman buildings, reporting 60% and 40%, respectively as shown in Table (2).

Table (2): shows a structured interpretation for the physical attributes and indicators of authenticity, besides a numerical analysis for the dimensions of authenticity described in Fig. (3). Source: author

Nara Attribute	**LOCATION AND SETTING**								
Indicator	**Historical Period**		**Urban disposition**			**Urban Facade**		**Relation to Street**	
Dimensions	Ottoman	Mamluk	vista	corner	street	independent	integrated	Direct	Transitional
Percentage	50%	50%	10%	70%	20%	30%	70%	60%	40%
Nara Attribute	**FORM AND DESIGN**				**USE AND FUNCTION**				
Indicator	**Architectural style**		**Planimetric Form**		**Dispensary windows**			**Function**	
Dimensions	local	Imported	Rectangular	circular	3or<3	>3	Not-detected	supplementary	primary
Percentage	60%	40%	60%	40%	50%	40%	10%	60%	40%
Nara Attribute	**TRADITION AND TECHNIQUE**								
Indicators	**Water storage**			**Water conveyance**			**Water infiltration**		
Dimensions	Cistern	Well	Not detected	Inner courtyard	Street	Not detected	Shathrwan	Shanashen	Not detected
Percentage	50%	40%	10%	30%	10%	60%	20%	10%	70%
Nara Attribute	**TRADITION AND TECHNIQUE**								
	Natural light/Ventilation								
Dimensions	Skylight/ Windows		Courtyard/Windows				Windows		
Indicators	10%		20%				70%		
Nara Attribute	**MATERIALS AND SUBSTANCE**								
Indicators	**Dispensary Room Facade/Windows**					**Kuttab Facade**			

Dimensions	Stone/ Marble / Brass bars	Marble/ Wood / Brass bars	Stone/ Wood/ Brass bars	Not Detected	Not Detected	Stone /Wood/ Glass
Percentage	50%	30%	10%	10%	10%	90%

The tradition and technique represented one of the most remarkable attributes reflecting the advanced technologies of the Sabil buildings. The site survey confronted visual barriers, which stood against reporting some information concerning the technological aspect. The missing information was reported as not detected values. The results affirmed that 50% of the *Sabils* employed cisterns for water supply, while 40% adopted wells. The water conveyance took place whether from streets or inner courtyards through visible openings to the passers-by. Sabil buildings used water infiltration techniques, adopting the *Shathrwan* during the Mamluk period and the *Shanashen* within the Ottoman era, reporting 20% and 10%, respectively. Since the Sabil-kuttab building typology is a limited structure in terms of scale, particularly during the Mamluk period, the natural light and ventilation techniques were achieved through dispensary windows and the upper galleries of the Kuttab, representing 70%. During the Ottoman period Sabil-Kuttab buildings became standalone structures occupying larger land plots. They required additional natural light sources; accordingly, they used inner court yards along with windows or skylights with windows, reporting 20% and 10%, respectively as shown in fig. (4).

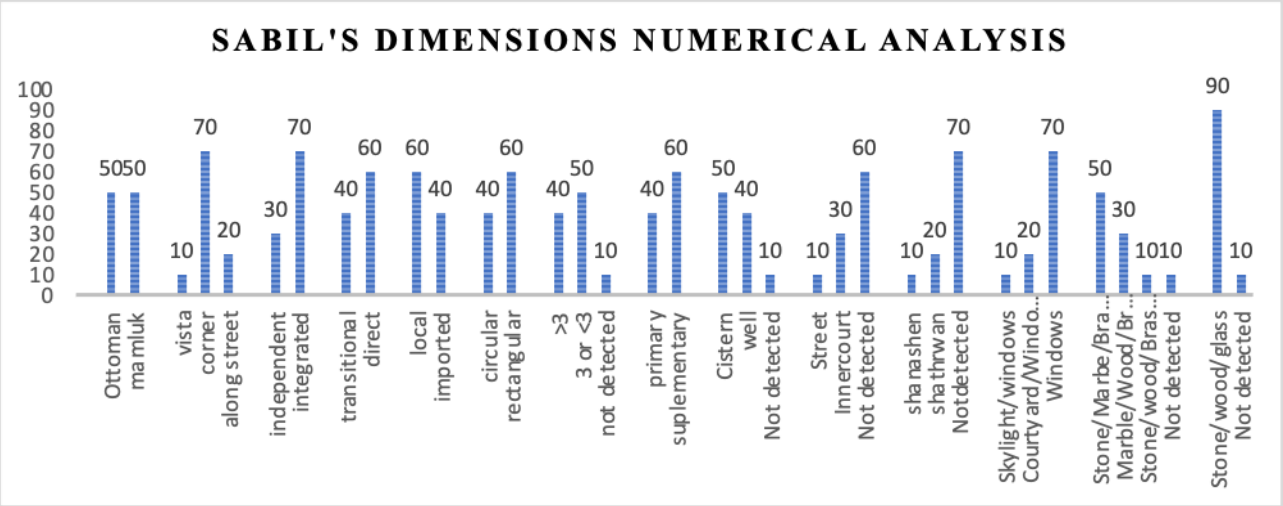

Fig. (4) shows a bar-chart representing the numerical analysis for the Sabil's dimensions following the Nara attributes, Source: author.

Regarding the materials and substance attributes, the results revealed that 60% of the Sabils belonging to the Mamluk period, were constructed using stone and marble in the dispensary room, and they used stone and wood with glass windows for the Kuttab spaces. But 30% of the Sabils, were constructed using Marble and wood for the dispensary room, while wood, stone with glass windows were used in the Kuttab and representing the Ottoman style. Generally, all the Sabils' dispensary windows were veiled by brass grill.

Finally, the research paper concluded with a comprehensive analytical matrix reflecting the impacts of evidence-based urban rehabilitation practices (based on the Graphical Matrix) on enhancing the awareness of the local community and visitors to the urban significance of Sabil buildings. The Matrix is considered a conceptual blueprint interlinking the theoretical base, the methodological approach, and the findings throughout the research. It is a narrative articulating the relationship between the different sectors of research, facilitating the legibility of the outcomes. The Matrix is composed of 5 columns as shown in Table (3). The first column is composed of the 5 mentioned attributes of authenticity. The second involved 12 different indicators explaining the 5 attributes. The third offered 24 dimensions representing the 12 indicators. The fourth theorized the impacts of framing the previous dimensions within an evidence-based rehabilitation practice. This section introduced 38 impacts reflecting the evidence-based practices for urban rehabilitation to Sabil buildings. The last column introduced the references supporting each section. The concluding comprehensive matrix offered a conceptual structure answering the main research question. It offered a blueprint guiding a proactive stewardship for rehabilitating Sabil building's urban setting, aiming at facilitating the legibility of historical eras and authentic features. Moreover, it acted on augmenting the community knowledge base regarding the complexity of Sabil buildings infrastructural, charity, and educational roles in the historic urban landscape.

Table (3) Offered a comprehensive analytical matrix explaining the impacts of evidence-based urban rehabilitation actions following the attributes of authenticity in Sabil buildings, Source: author

Nara Attributes	Indicators	Dimensions	Evidence-based Rehabilitation Impacts	References
Location and setting	Historical Period	• Ottoman • Mamluk	*Differentiating the urban settings of different eras would:* • Enhance the local knowledge of the visitors and local community towards the historical eras of Sabil buildings • Improving the legibility of the historical place. • Enhance the physical and cultural quality of the urban space	[3,814,5]
	Urban disposition	• Vista • Corner • Along the street • Relative distance with the former and latter Sabils	*Highlighting Sabil's Urban disposition would:* • Refer to the role of the Sabil within its historical urban setting. • Reinforce the intangible values • Recall the historical character of the place. • Enhance the urban journey through a sequence of visual signs • Enhance the understanding of the original urban patterns.	[16,5]

Nara Attributes	Indicators	Dimensions	Evidence-based Rehabilitation Impacts	References
			• Understand the order and measure of the urban setting.	
	Urban Facade	• Independent • Integrated	*Elucidating the urban role of Sabil buildings within its urban fabric would:* • Reflect how far Sabil was engaged within different community levels. • Reflect the flexibility of scale and use • Reflect the existing skillful artesian labor and the economic condition. • Reflect the architectural design richness in distinguishing educational and water charity functions. • Offer a strong reference for urban dimensions, measures and order structuring and influencing the street facades. • Enhance the urban Continuity and the street's skyline.	[19,3,18,5,2,1]
	Relation to the street	• Direct • Transitional	*Underlining the relation to the street would:* • Recall and preserve a physical historic scene. • Preserve the spirit and feeling of each Sabil • Highlight the operational dimensions concerning water supply facilities. • Reflect the urban safety within the street	[25,3,18,28,5]
Form and design	Architectural style	• Local • Imported	• Enhance the local awareness towards the endogenous character of Sabil buildings • Differentiating the imported features • Reflect the existing skillful artesian labor and the economic condition.	[3, 8,14,5]
	Planimetric form	• Rectangular • Circular	*Reflecting the different planimetric form within the urban space design would:* • Enhance the local knowledge of the visitors and local community towards the historical eras of Sabil buildings • Improving the legibility of the historical place. • Enhance the physical and cultural quality of the urban space	[3,8,14,5]
Use and function	Dispensary windows	• 3or<3 • >3	*Reflecting the number of dispensary windows would:* • Indicate the urban/social role of the	[19,18,3,5,2]

Nara Attributes	Indicators	Dimensions	Evidence-based Rehabilitation Impacts	References
			Sabil. • Offer a population estimation for the area. • Reflect the functional importance of the street and relative building. • Reflect the historical era of the Sabil.	
	Function	• Supplementary • Primary	*Highlighting the functional hierarchy of Sabil buildings would:* • Enhance the awareness regarding the unique mixed-use pattern engaging different levels of the community • Reflect the rich socio-cultural activities hosted along their edges • Reflect the functional flexibility of the Sabil building that is compatible with educational/ religious/ Commercial or health facilities	[19,3,18]
Tradition and Technique	Water storage and maintenance Water conveyance	• Cistern • Well • Street • Inner court	*Highlighting the outlets for water storage and conveyance from the street level would:* • Enhance awareness regarding the infrastructural complexity of Sabil buildings. • Enhance the legibility of the historical water storages and conveyance techniques. • Stimulate the visual imagination for the hidden underground infrastructures like wells and cisterns.	[35,30,27, 36,28,26]
Materials and substance	Dispensary room(facades/windows) Kuttab Facade	Stone, Marble, Wood, Brass bars Wood, Stone, Glass	*Employing the same local materials and techniques within urban and landscaping facilities would:* • Enhance the awareness of the visitors and local community with the endogenous materials and building techniques. • Enable the transition of knowledge from the past to present generations • Preserve the visual integrity within a changing urban condition	[35,30,10]

The paper aimed to investigate and detect the indicators and dimensions of urban authenticity related to Sabil buildings employing theoretical references, field surveys and analytical matrices. It concluded by a comprehensive analytical matrix explaining the

impacts of an evidence-based urban rehabilitation actions following the attributes of authenticity in Sabil buildings. It would play a key role in facilitating the legibility of the overlapped layers of significance at Al-Muiz Street in terms of time and space. It acted as a tool for nominating the most suitable approaches for Sabils' rehabilitation and urban conservation programs. The studied indicators and dimensions would display a historical continuity between Sabil buildings of different eras. The Matrices and the statistical interpretations offer a possibility to fill the gaps between historic fragments, while preserving the visual integrity along the historic street. Eventually, the article participates in the interpretation of authenticity within Cairo historic center. It responds to the challenges reported by the Nara document, opening up the interpretation of authenticity within a diversity of sites experiencing a variety of influences. The research paper offers a methodological approach that could be adapted to individual cultural heritage cases. It is an approach offering a blueprint for practitioners, guiding the rehabilitation of historic urban landscape, following conservation charters and international agreements concerning cultural heritage conservation practices.

5. Conclusions

The Nara document on authenticity highlighted its importance regarding the management and conservation practices of cultural heritage contexts. But the document did not offer a clear definition of the qualities of authenticity. It affirmed the need to achieve a shared definition of authenticity based on different cultural contexts with individualized properties. Thus, the research is participating in this mutual responsibility aiming to interpret the concept of authenticity within Cairo's historic center, responding to the challenges reported by the Nara document. The study focused on detecting the authentic urban features of Sabil buildings along Al Muiz Street in historic Cairo, where the Sabil is one of the most prevalent building typologies in the Middle east's historic centers. The research method followed a qualitative approach. It was based on site visits exploring the 10 Sabil buildings situated along Al Muiz Street. Moreover, it executed a dense literature survey reporting the authentic urban features in each Sabil. The study identified the different indicators and dimensions measuring the six attributes of authenticity reported by the Nara Document. Accordingly, it designed an analytical structure classifying the urban authentic features of *Sabil* buildings focusing only on the materialistic and physical attributes. The research method concluded by a Graphical presentation and a Numerical Data Matrix synthesizing both the derived theoretical data and field surveys. It presented a cross-case comparison between the 10 *Sabil* buildings. Both outcomes aimed at distinguishing the repeated patterns and correlations while facilitating the visual comparisons between Sabils of different urban settings. Eventually, the study performed numerical and statistical interpretations for the Data Matrix detecting the dominant dimensions of authenticity in Sabils urban settings. The numerical findings are organized in tables and conveyed through graphical bar-charts to

facilitate data communication and systematic comparison. It aimed to reach quantitative values reflecting the qualitative dimensions.

Regarding the location and setting attribute, the results showed that 50% of the Sabil buildings were built during the Mamluk period, while the other half belonged to the Ottoman era. Sabils mostly occupy street corners. The urban facades of the investigated *Sabils* were mainly integrated with bigger complexes including mosques or caravanserais, hospitals or schools. Mostly the Mamluk Sabil buildings occupied a direct relation with the street, while the Ottoman ones designed an elevated transitional space separating users from the street. The study noted that some Sabil buildings were constructed during the Ottoman period but were dominated by the Mamluk architectural style, which justifies the numerical variation with historical period statistics. The planimetric form was one of the main features differentiating between the local and exported styles. The rectangular planimetric forms occupied 60% of the Sabils belonged to the Mamluk architectural style, while the circular ones occupied 40% of the tested Sabils belonged to the Ottoman architectural style. The form and number of dispensary windows were also strong indicators distinguishing the local from the exported styles and could be easily recognized by passers-by. Concerning the use and function attribute, the Sabil-Kuttab building typology was mainly a supplementary function in all cases adopting the local Mamluk style. But it represented the primary function in the Ottoman buildings, reporting 60% and 40%, respectively. The tradition and technique represented one of the most remarkable attributes reflecting the advanced technologies practiced within Sabil buildings. The results affirmed that 50% of the *Sabils* employed cisterns for water supply, while 40% adopted wells. Regarding the materials and substance attributes, the results revealed that 60% of the Sabils belonging to the Mamluk period, were constructed using stone and marble in the dispensary room, and they used stone and wood with glass windows for the Kuttab spaces. But 30% of the Sabils, were constructed using Marble and wood for the dispensary room, while wood, stone with glass windows were used in the Kuttab and representing the Ottoman style. Generally, all the Sabils' dispensary windows were veiled by brass grill.

Finally, the research concluded by a comprehensive analytical matrix explaining the impacts of evidence-based urban rehabilitation actions following the attributes of authenticity in Sabil buildings. The matrix discussed the impacts of elucidating the aforementioned dimensions within the urban rehabilitation approaches, techniques, tools, strategies, or operational procedures. It offered a blueprint guiding a proactive stewardship for rehabilitating Sabil building's urban setting, aiming at facilitating the legibility of historical eras and authentic features. Moreover, it acted on augmenting the community knowledge base regarding the complexity of Sabil building's infrastructural, charity, and educational roles in the historic urban landscape. Future research is encouraged to delve into studying different practical experiences in urban rehabilitation of cultural heritage buildings to detect specific tools and techniques fulfilling the aforementioned impacts, while elucidating Sabils authentic dimensions and indicators.

The Matrices and the statistical interpretations offered a possibility to fill the gaps between historic fragments, while preserving the visual integrity along the street. It responded to the challenges reported by the Nara document, opening up the interpretation of authenticity within a diversity of sites experiencing a variety of influences. Although the research participated in the interpretation of authenticity within Cairo historic center, it offered a methodological approach that could be adapted to other individual cultural heritage cases worldwide. It is an approach offering a blueprint for practitioners, guiding the rehabilitation of historic urban landscape, following conservation charters and international agreements concerning cultural heritage conservation practices.

The research paper offered an opportunity to better understand the authentic urban features of Sabil buildings, adopting a precise multi-temporal reading for the historical landscape. It emphasized the responsibility of urban rehabilitation practitioners in enhancing the historical consciousness of people towards their cultural heritage contexts. The study aimed at facilitating the legibility of the multi-temporal historical eras following the urban and architectural features. Even though the study results focused only on Sabil buildings, the research method could be generalized and employed within different historical buildings of spatial and temporal relations.

Competing interest Statement

Author has no competing interests to declare

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