



## Evaluation of heritage building rehabilitation in Egypt : The case study on Wakala Al-Ghouri

Review  
Article

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### Keywords:

Conservation, evaluation, rehabilitation, reuse.

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### Abstract

Many heritage buildings express and embody the values and culture of the society in a particular period. It is also characterized by steadfastness and continuity, as it is an existing material fact that imposed its acceptance by society. Recently, many attempts to preserve the heritage have appeared. Rehabilitation is one of the most important policies adopted by the state to preserve heritage buildings, as it works to protect and sustain the building practice and integrate it with society instead of being a closed landmark. The problem of the study is the failure of some rehabilitation projects of heritage buildings, especially in choosing the suitable use, which leads to a loss of identity and value despite the efforts made, but it needs conscious and systematic organizing processes to lay scientific and organized foundations to deal with archaeological buildings. The research aims to study and analyze the Al-Wakalah Al-Ghouri Rehabilitation Project, which is one of the largest projects implemented in Al-Darb Al-Ahmar. The research examined them from two perspectives: physical and functional, based on questionnaires to assess the standards taken from the foundations and requirements of the rehabilitation policy. The study concluded that the physical rehabilitation achieved its goal, while the project was unable to choose the suitable function of the building, and a proposal was submitted for the new use (heritage hotel) according to the results of the surveys.

## I. INTRODUCTION

Heritage buildings express the identity of countries and their cultural heritage, and their great importance must be preserved and invested in the best way. Or flexibility starts from maintaining the building without making any changes to it for renovation and modernization, and this is determined according to the building's classification, value, and surrounding conditions.

Heritage rehabilitation is a wise investment for tourism growth because the existing buildings constitute an outstanding resource that must be taken care of and preserved while trying to improve them. Due to the general trend of tourism growth and the economic benefits it generates, it is now necessary to strike a balance between heritage rehabilitation and tourism development.

The reuse of heritage buildings is one of the most important methods of the rehabilitation policy, but sometimes it is done without taking into account the nature of the heritage building and its special circumstances, which wastes its value and distorts it.

This paper aims to evaluate one of the most important rehabilitation projects, Wakala Al-Ghouri, according

to several criteria related to choosing a suitable use and architectural suitability that does not conflict with its nature and model, as well as criteria related to economic and tourism aspects.

## 2. THE METHODOLOGY

To achieve the objectives of the study, the research uses four research methods:

First, the theoretical approach is an explanation of the concept of rehabilitation of heritage buildings, its objectives, and criteria.

Secondly, the analytical approach is a study and analysis of the rehabilitation project of Wakala Al-Ghouri, from a physical and functional point of view.

Third, the deductive approach is about deducing the bases and criteria upon which the evaluation studies of rehabilitation projects are based.

Fourth, the applied approach is about applying the foundations and criteria to the project to rehabilitate Al-Ghouri Agency, evaluating the project, clarifying the extent of its success, and developing a proposal to reuse it in a suitable use.

## 2. LITERATURE REVIEW

### 2.1. Rehabilitation

The definition of rehabilitation according to the secretary of the interior's standards for rehabilitation, Rehabilitation is defined as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values"<sup>[25]</sup>.

Rehabilitation is based on the individual needs of each historic place no two are the same. Rehabilitation strives to bring heritage sites into the modern world without damaging any historic elements. The distressed structure needs to be brought in line, level, and the required strength so that it can be put into service without endangering its safety and utility<sup>[14]</sup>.

The methods of rehabilitation policies in dealing with heritage buildings can be classified into two groups, each of which represents a direction that reflects a concept of the value of the building, either physical or functional. The first group includes policies of protection, preservation, conservation, repair, and consolidation, which usually reflect the utilitarian value, and the second group includes the policy of reuse which reflects the moral value of heritage building.

Due to the importance of the reuse method in the rehabilitation policy, most international conferences on heritage preservation covered particular specifications for the proper uses of heritage buildings when reusing them as a method of preservation. They all generally agreed that the proper usage of historic and heritage buildings is what does not contradict the nature of the building.

The most popular uses in the rehabilitation of heritage buildings are as follows:<sup>[3,4,33,36]</sup>

**Residential buildings:** One of the best ways to preserve heritage buildings from deterioration is to restore them and employ them as hotel buildings according to hotel standards. Undoubtedly, this use means maintaining them in a good condition permanently.

**Museums:** This use depends on the size of the spaces for heritage installations, which often contain spaces that allow for a redesign of the museum, as well as the historical and heritage features and ambiance that the place has.

**Cultural functions:** These include seminar centers, cultural lectures, fine arts exhibitions, folk art centers, vocational education institutes, traditional crafts education centers, applied and plastic arts centers, and others.

**Restaurants:** Investors prepare, restore and maintain old heritage buildings traditionally, to allocate them as restaurants where traditional foods are served.

#### 2.1.1. Rehabilitation objectives

The rehabilitation objectives were numerous, the main objectives can be summarized as follows:

##### 1. Objectives related to the heritage building<sup>[4,10,15,28,31]</sup>

- Preserving heritage and architectural values.

- Raise the level of real estate and tax value of the rehabilitated buildings.

- Achieving the highest levels of maintenance.
- Providing the structural safety of the heritage building.
- Creating a kind of permanent supervision.
- Providing Auto-Conservation for the building.

##### 2. The Economic objectives<sup>[17,27,32,36]</sup>

- Opening a new investment activity, which achieves the objectives of the economy.

- Achieving benefits for workers, providing a rewarding return, a high and distinguished standard of living, and developing their capabilities and technical expertise.

- Take advantage of the place's reputation and history in the promotion and marketing processes.

- Reduce operating costs by taking advantage of the nature of old buildings and their potential to provide energy for heating and air conditioning.

- The exploitation of the old building increases its financial value due to the location of the building itself.

##### 3. The Social objectives<sup>[6,19,36,37]</sup>

- Developing national awareness to preserve heritage buildings.

- Achieving social national belonging by focusing on symbolic value.

- Upgrading the general taste of individuals in terms of raising citizens.

- Preserving the historical character of the city and consolidating national pride.

- Establishing associations and civil groups for maintenance and preservation.

- Create a link and communication between the building and its users.

- Preserving the expertise and skills of craftsmen who can deal with such materials and such arts.

#### 2.1.2. Rehabilitation guidelines

The rehabilitation guidelines are divided into two parts. The first is related to the physical aspect, which includes the type of building, materials used, plan form, technical studies, financiers, structural and architectural studies, and methods of rehabilitation. The second is related to the functional aspect, which includes choosing a suitable function for the building, through the reuse method of the rehabilitation policy the following is an explanation for them:

##### 1. Guidelines of physical aspect<sup>[2,4,8,21,23,34]</sup>

- Defining each heritage building as a physical record of its time, use, and location while not adding elements or incorporating features from other heritage buildings that did not exist before to avoid creating a false sense of historical development.

- Replacement of the ancient building's lost components depends heavily on documentation and visual proof. Also, the specific elements of the personality must determine their contribution to the heritage value of the building.

- In order to maintain the hi property's original character, new neighbouring construction must stand out



from the current structure while also being in scale, size, and mass harmony with it.

- Attempting to preserve the historical building's original identity by limiting the removal of historic components and elements.

- Keeping the physical character of the historic building by avoiding the inclusion of modern architectural components.

- Many architectural features would need to be replaced if they were completely destroyed. In this situation, the new element must match the original in terms of design, color, substance, and texture.

- Repair standard components instead of replacing or changing them when they are badly damaged and cannot be restored with new components identical to the original shapes, materials, and characteristics of the same components if there is sufficient physical evidence. If not, make it consistent with the character of the historic building.

- The use of cleaning chemicals that could harm historical features is forbidden.

- Perform any necessary chemical or physical treatments with the utmost care.

## 2. Guidelines of functional aspect<sup>[4,9,18,31,33,38]</sup>.

- The character-defining aspects and their contribution to the heritage building value are determined, as well as the heritage value of the historical location.

- The new function must be consistent with the composition and architectural character of the heritage building, and the area surrounding needs this function.

- The suitability of the building architecturally by studying and analyzing the elements, shapes, and sizes of the internal spaces with the shapes and sizes of the spaces required to achieve the elements of the new employment to accommodate the capabilities of the historical building.

- The structural suitability, which is the proportionality of the proposed use of the heritage building with the structural system used in building the building, and that the density of users in the heritage building as a result of the proposed use is within the permissible limits of construction.

- The choice of the new function of the building should be based on the social, cultural, or economic return it represents so that the building becomes a source of financial resources and the continuity of maintenance work that ensures the sustainability of conservation operations.

- Attracting private investment by making a reasonable profit from the proposed use of these buildings for their ability to finance maintenance and restoration work.

### 2.1.3. Rehabilitation criteria

What determines the success or failure of the rehabilitation plans for heritage buildings is the extent to which they can achieve a set of criteria that can be divided into two types, one of them is specific to the physical condition and the other is specific to use. The following is an explanation of the most important criteria.

#### 1. Criteria of the physical aspect

- Preparing studies related to the project's objectives and difficulties, and a historical description of the location, importance, and value of the building must be documented with scientific references, drawings, and photos for all stages that the building has gone through.

- Clarify all modifications in terms of construction method and materials used that occurred in the building in each historical era and prepare studies related to documentation and field raising.

- Evaluation Preparing architectural studies, which consists of analyzing all building elements, including facades, walls, ceilings, floors, and openings, and trying to reach their original image.

- Preparing construction studies through an integrated plan with the proposed architectural solution for re-employment, and remedial methods must be studied with their advantages, disadvantages, and costs, and then choose the suitable method.

- Preparing architectural studies, which consists of analyzing all building elements, including facades, walls, ceilings, floors, and openings, and trying to reach their original image.

- Preparing construction studies through an integrated plan with the proposed architectural solution for re-employment, and remedial methods must be studied with their advantages, disadvantages, and costs, and then choose the suitable method.

- Preparing interior design studies, taking into account the new function in terms of design requirements, in terms of furniture, acoustics, and the use of decorative models.

- Preparing studies for complementary works that express the level of services due to their significant influence on architectural studies, construction, or interior architecture, including all lighting, sanitary, and mechanical works.

#### 2. Criteria of the functional aspect

- The choice of the new function of the building should be based on providing a social, cultural, or economic return so that the heritage building becomes productive for financial resources and for the continuity of maintenance work that ensures the sustainability of conservation operations.

- It provides the structural strength of the heritage building commensurate with the durability of the building with the new function, to provide the building with the requirement of sustainability, which is a major requirement in rehabilitation projects.

- A new use must be chosen that is sustainable with the heritage value of the building and meets the requirements of the modern era by designing the interior spaces and studying the external perimeter of the building during the preparation of rehabilitation plans.

- The same specifications for the new use should not be available at close distances in what is known as scarcity of use, otherwise the impact of this on the success of the project and the failure to achieve the best from it.

- The use must be chosen according to the building’s space, its spaces, and its location so that it does not need to make any addition to the building, or the perfect match between the building’s space requirements and the requirements of the new use.

- The new use should raise the state's infrastructure, create new job opportunities for young people, and develop specialized programs to market it globally and locally.

- The new use, in addition to raising the economic situation and standard of living, should increase job opportunities, decrease maintenance costs, and develop a plan to self-finance the building. This will increase the value of the tax property as well as ensure that no large initial financing is required.

- The new use should contribute to the local community's tourism growth while improving tourism marketing possibilities and tourist attractions.

### 2.2. Tourism development

Macintosh defines tourism development as: “Part of a comprehensive development plan, to be shared and shared between the public and private sectors each having certain parts of the project. The government supplies infrastructure services, such as transportation and water, and the private sector provides superstructure such as: hotels, restaurants, marketing areas, recreational facilities, etc. Because the Macintosh tourism development is a joint responsibility between the public and the private sector”<sup>[42]</sup>.

The relationship between heritage and heritage preservation resulted from the need to find ways to deal with and protect heritage areas, and therefore rehabilitation policies are the solution. The development of tourism as a result of upgrading tourism as an activity into a well-thought-out and planned project.

### 3. THE CASE STUDY (WAKALA AL-GHOURI)

The wakala can be defined as a type of building that first appeared in Egypt in the Fatimid state, and it is an integrated building to serve trade and merchants in safely selling their products in the presence of an agent for them in the sale of goods.

It is classified within the civil buildings as multi-purpose service buildings according to the following activities: A place to display various goods<sup>[15]</sup>, a place of residence for merchants on the upper floors<sup>[43]</sup>, A place for conducting business deals between merchants in the wakala courtyard<sup>[22]</sup>, and The wakala was also used to distribute goods to markets<sup>[30]</sup>.

There are many reasons for choosing Wakala Al-Ghouri to study, including:<sup>[26,32,33,43]</sup>

A. The reason for choosing the most important is that it is one of the few agencies that has preserved large parts of them without being demolished, and it is a complete model of what the agencies were in the Mamluk era, and they are the last things that were built in it.

B. It is evidence of the progress of Arab architecture in presenting a model for a small housing unit on two

and three floors whose area does not exceed 31 m<sup>2</sup>. It is considered an open exhibition of mashrabiya art, as it abounds with about 29 sculptures in addition to stone in the design, as it provides a model for the overlap of the Mashrabiya with stone in one fabric.

The building has many values, and they can be explained as follows:

**Table 1:** Explain the different values<sup>[24]</sup>.

VALUES	EXPLANATION
Historical value	It was built more than 500 years ago, and it is the last thing that was built in the Mamluk era. It is one of the most representative buildings of this era <sup>[40]</sup> .
Symbolic value	The building is linked to the personality of Sultan Al-Ghouri, who was known for his love of luxury, sophistication, and transcendence <sup>[43]</sup> .
Functional value	In the past, it was a place for storing and displaying goods and housing for merchants. At present, Tanoura parties are held as a kind of heritage revival <sup>[42]</sup> .
Urban value	The building is located in the Al-Ghouriya area, which gained its name from Sultan Al-Ghouri, which is a heritage area and contains many buildings from several eras <sup>[43]</sup> .
Architectural value	The building reflects the characteristics of the Mamluk style, as it was built according to the philosophy of Islamic architecture, with openness to the interior and climatic treatments that take into account the local environment <sup>[42]</sup> .

It is necessary to adapt the new use to the historical and artistic value of the building, so the original uses are the best uses to achieve this condition, where the character of the building and its architectural formation is related to the period in which it was built, as well as expressive of the purpose for which it was built and suitable to its value. As for the use of heritage buildings in a manner that is consistent with their value and character, it achieves the continuity and success of this use in the long term. As for its use for purposes that conflict with its value, even if it has a high return, it will fail because it leads to the destruction of its value. Therefore, use must not conflict

with everything that exists, exists and has value.

### 3.1. Historical background

It was established by a Circassian Mamluk, Al-Ashraf Abu Al-Nasr Qanswa Al-Ghouri, who ruled Egypt from 1911 to 1911, with an area of 1600 m<sup>2</sup>[7]. It is located on Muhammad Abdo Street (tablita street) which branched from Al-Azhar Street in Al-Gamaliya District<sup>[39]</sup>. It is located at the end of Al-Ghouri Street at its intersection with Al-Azhar<sup>[32]</sup>.

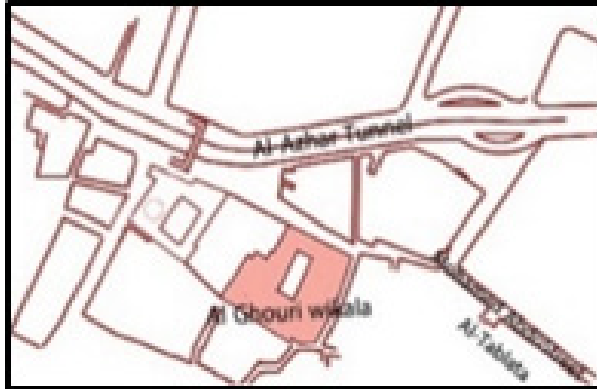


Fig. 1: The location of wakala Al-Ghouri<sup>[11]</sup>.

Over time, Wakala Al-Ghouri was neglected and remained without care or maintenance until its condition worsened and cracked, which led to the imposition of protection on it by the Department of Antiquities Conservators, and it was registered with the number 64<sup>[40]</sup>. The following is an explanation of the stages it went through:

1. The wakala went through a lot of changes, the first of which was by the Authority for the Preservation of Islamic and Arab Antiquities in 1882 AD, when a plan was submitted to control and confiscate the wakala, and nothing remained of the documents except for the wakala's photographs taken in 1909 AD, which recorded its condition at the time. However, there is a difference between its image and the current reality, but many of its architectural details remain<sup>[20]</sup>.

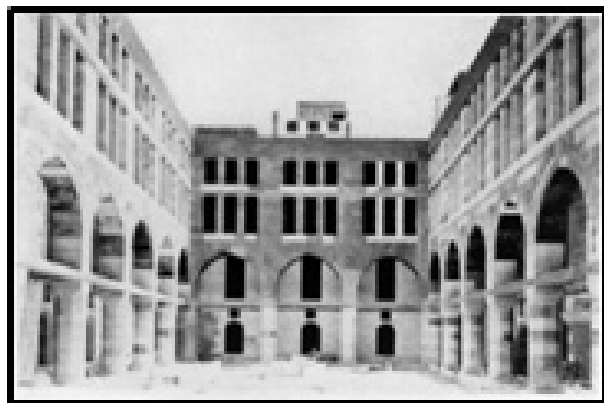


Fig. 2: Front facade of the inner courtyard during the initial restoration process<sup>[29]</sup>.

2. The wakala was restored and renovated in 1346 AH - 1926 AD, and the date was found on a stone in the inner facade of the entrance, while the dilapidated parts were built on the upper floors in the residential part with red bricks and the ceilings were placed complete with concrete ceilings that still exist until now, with the creation of An internal wooden staircase connects the first floor to the upper floor instead of going up through a separate external door<sup>[29]</sup>.



Fig. 3: Front facade of the inner courtyard during the initial restoration process<sup>[29]</sup>.

3. Al-Wakala was restored from 2000 to 2005 AD, and Wakala Al-Ghouri opened its doors again as a heritage site and as a cultural center that presents Tanoura performances and art galleries and contains a theater. Residential roles were also exploited and rented to artists<sup>[40]</sup>.

### 3.2. Rehabilitate Project of Wakala Al-Ghouri

Al-Ghouri wakala opened its doors as a heritage and cultural site working for cultural and human development in the Islamic Cairo region after the rehabilitation process<sup>[4]</sup>.

#### 3.2.1. The Objectives of the Baron Palace rehabilitation project:

1. The main objective of the wakala's rehabilitation is to preserve it as a valuable building.
2. Preserving the heritage and architectural values of the building.
3. Achieve economic investment from it by reuse it.
4. Preserving the urban environment of a special character.
5. Achieving national and social belonging.

#### 3.2.2. The committees of the Baron Palace rehabilitation project:

The Wakala rehabilitation project started according to the first phase of the plan drawn up by the Ministry of Culture to restore historic Cairo.

The Leadership Committee involved are divided into:

1. Project owner: The Ministry of Culture, the Cultural Development Fund.
2. Project funder: The Egyptian government and

other contributors include the European Union, the American Research Center, and the Aga Khan Fund.

3. Project Consultant: Arab Consulting Engineers Office Muharram Yakhoum.

4. Project Implementer: The Arab Contractors Company and Quartet union, engineering projects and pioneers.

All architectural spaces of the building will be analyzed and the restoration work and new use of each of them clarified.

### 3.2.3. Description of the building

The building consists of a group of elements, which are as follows:

#### 1. The entrance

The wakala has three entrances, first the main entrance: it is located in the middle of the main facade, and it is two floors high with an arch at the end of the muqarnas. Wooden door topped by an ornate lintel<sup>[1]</sup>. Secondly, the first sub-entrance: It is the entrance to the tannery, which is in the main facade on the left. It is made of wood on a long vestibule covered with a long vault, to which eight doors open, and each door leads to an entrance with a vaulted ceiling<sup>[43]</sup>. Finally, the second sub-entrance: this entrance is located at the far-left end and has stairs to access the upper floors, which are designated for accommodation to provide privacy. It is a rectangular wooden door<sup>[15]</sup>.

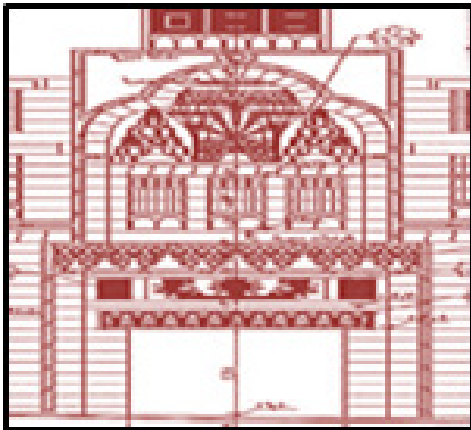


Fig. 4: The main entrance of wakala<sup>[24]</sup>.

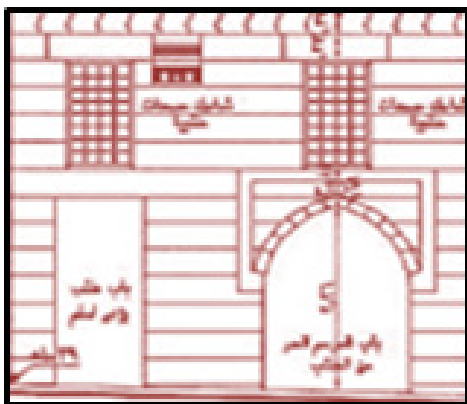


Fig. 5: The first and second sub-entrance<sup>[24]</sup>.

#### 2. The Courtyard

It is a rectangular open courtyard with four corridors surrounding it. The corridor to the southeast and northwest of the courtyard each have eight arches and rest on pillars. While the "southwest" and "northeast" overlook the courtyard with a three-arched arch<sup>[42]</sup>.

In the past, the goods were brought into the courtyard and stored in the stores, and there was a mosque in it because the merchants did not leave Al-Wakala, but this mosque has disappeared, and it has an octagonal fountain, which was used for ablution. But it is not used now<sup>[43]</sup>.

All housing units on the upper floors overlook the inner courtyard, which confirms the principle of openness to the interior as the source of ventilation for crops and housing units<sup>[22]</sup>.



Fig. 6: Section in the Courtyard of Wakala Al-Ghuri<sup>[24]</sup>.

#### 3. The store vaults

It is located on the ground floor and the first floor, and it consisted of stores, and there were 28 stores on the ground floor and 27 on the first floor<sup>[1]</sup>.

Its entrance is of famous red and yellow stone, and the door and windows are of brown wood<sup>[43]</sup>.

It is covered with a semi-circular stone vault to lighten the loads on the foundations, and it differed in the interior spaces. In the spaces overlooking the main facade, there were windows on the facade and another above the door. But the internal crops had only one window above the door, and it was used for lighting and ventilation<sup>[42]</sup>.

The ground floor was used as stores for ceramic works and other spaces used as a permanent exhibition of traditional and plastic arts, accommodation for the cleaning workers by proxy, the headquarters, and ceremonies of the Assala Association, carpentry workshops, and toilets.



Fig. 7: Clarification of store vaults<sup>[12]</sup>.

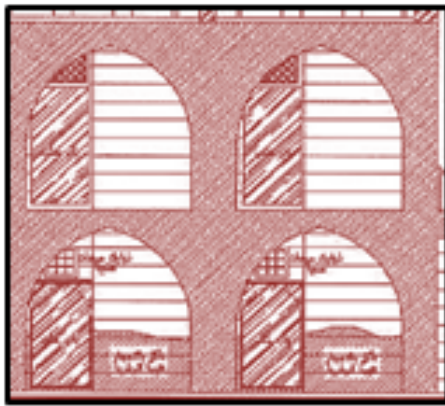


Fig. 8: A section in the basement warehouses from the inside<sup>[24]</sup>.

#### 4. The tannery

It is a place where the yarns are dyed attached to the wakala. It has housing units for its workers. It is accessed from the first sub-entrance. It consists of eight rooms overlooking a small courtyard that was used to dry the yarns<sup>[43]</sup>.

Its entrance, which is located in the main facade on the left, is made of the famous red and yellow stone, and the door and windows are of brown wood<sup>[42]</sup>.

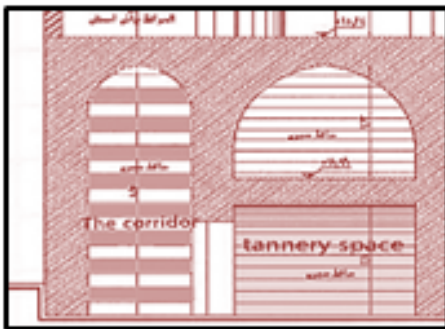


Fig. 9: A section in the tannery<sup>[24]</sup>.

#### 5. The residential apartments

The residential rooms consist of three levels, two levels, and between them a stolen floor. The first level is used to receive guests and house servants. The second level (the stolen floor) contains a store, kitchen, and bathroom (service area) and the third level is used for the residence and accommodation of the merchant and his wife<sup>[42]</sup>.

The residential rooms provide the privacy of the merchant, with the presence of wooden mashrabiya with small openings on the third level, while the windows on the first level are large openings and solid wooden covers that open upwards to allow the merchants to see the plate, and the second level the openings are grilles made of wood and do not open and help in entering a large amount of lighting<sup>[33]</sup>.

The number of these rooms is 30, 10 of which overlook the main facade of the wakala and 20 overlook the courtyard<sup>[43]</sup>.

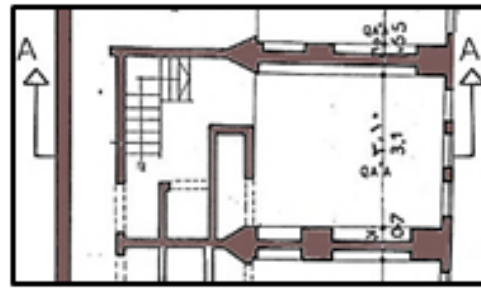


Fig. 10: Plan of the ground floor in the residential unit<sup>[24]</sup>.

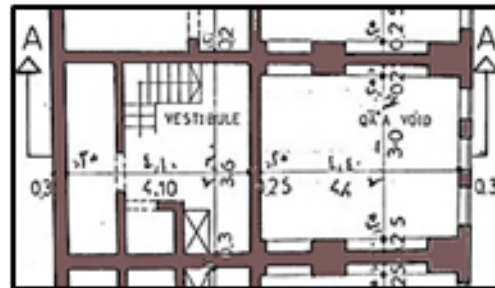


Fig. 11: Plan of the first floor in the residential unit<sup>[24]</sup>.

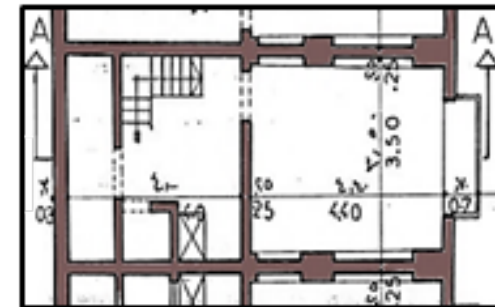


Fig. 12: Plan of the second floor in the residential unit<sup>[24]</sup>.

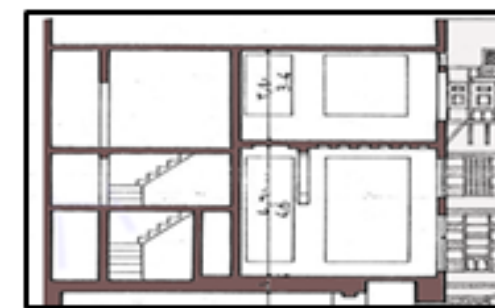


Fig. 13: Section of the residential unit<sup>[24]</sup>.

#### 3.2.4. Rehabilitation Process

1. Treating facade cracks by strengthening and providing treated wood against rotting and decomposition across the entire width of the wall and filling the facade cornices thoroughly with lime mortar, the threshold is cleaned and the spaces between the units are well filled with a cured cement mortar. The door wood is cleaned and

painted against damage and moisture, damaged parts are restored, and the necessary hardware is installed.



Fig. 14: Clarification of the three entrances to Wakala Al-Ghouri<sup>[43]</sup>.

2. Treatment of moisture and salts in the walls, remove dilapidated floors and add new floors of the same type. Filling cracks with cement-lime mortar containing additives to prevent shrinkage, strengthening them, and furnishing them with rot-treated wood over the entire width of the wall are all ways to treat cracks.

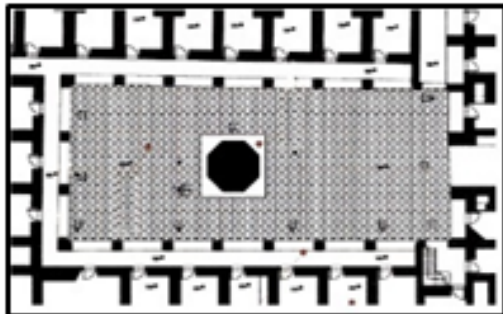


Fig. 15: The Courtyard of Wakala Al-Ghouri<sup>[24]</sup>.

3. Re-use the ground floor as stores for ceramic works and other spaces used as a permanent exhibition of traditional and plastic arts, the residence of cleaners, the headquarters and celebrations of the Asala Association, carpentry workshops and toilets, and the reuse of the first floor is administrative offices, computer room, stores, the office of the security supervisor, the protocol department, the general supervisor and the association Arts and Artistic Perspective and the National Society of Fine Arts<sup>[7]</sup>.



Fig. 16. The basement warehouses from the inside<sup>[43]</sup>.

4. The tannery has become the property of the Al-Asala Association to display its products, sponsoring traditional crafts and arts that have disappeared or are on the verge of extinction, as it includes at least 20 traditional crafts<sup>[40]</sup>.

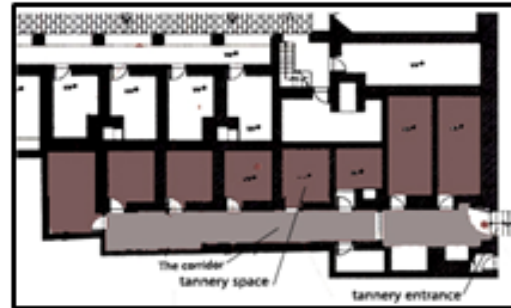


Fig. 17: The plan of the tannery<sup>[24]</sup>.

5. The wooden ceilings of the unit were restored, the walls were treated against the base, the salts were removed, the missing parts were completed, and the floors were maintained<sup>[43]</sup>. The Ministry of Culture rents out housing units for artists, which has led to the rooms being turned into private property for them, and the Ministry of Antiquities has no possibility of supervising them<sup>[35]</sup>. Repairing fractures and strengthening them, replacing damaged bricks with new flooring made of the same material. Salts and dampness have been removed from internal and external walls.



Fig. 18: The inside of residential rooms<sup>[13]</sup>.

### 3.2.5. Evaluation of the rehabilitation project for Wakala Al-Ghouri

The evaluation process is divided into two stages. The first is related to the building's physical condition, such as the restoration and maintenance of walls, floors, and ceilings, as well as the complementary works they contain, such as lighting and drainage. Second, there is the functional aspect.

#### 1. First: The physical rehabilitation of the building

One of the most important reinforcement operations that took place in the project is strengthening the facades, treating walls, cracks, and worn-out floors, and dealing with dilapidated ceilings. This study deals with the stages of material consolidation in Wakala Al-Ghouri.

#### A. Walls reinforcement

There is a crack in the wall of wakala that goes through



the residential part that was reconstructed in the initial restoration process, so it was treated by filling it with sheets of foam and then painting it with polysulfide after cleaning. And the part of the entrance, which represents a structural hazard, was installed during the restoration with a steel pillar, the dilapidated shoulder was demolished and a new one was built of red bricks<sup>[20]</sup>.



Fig. 19: Clarification of the crack in the entrance wall and the new brick shoulder<sup>[13]</sup>.

Dismantling the dilapidated stone courses and replacing them with others of the same type as the main stone, cleaning all the external walls, and changing the damaged ones<sup>[5]</sup>.

The narrow and capillary cracks are cleaned with compressed air, sprayed with water, and filled with lime mortar to a depth of 5 cm. According to the instructional studies, deep cracks are restored using a double of completely dry hardwood, its sector 4 \* 4, with a length of not less than a meter, and it is treated against decay, moisture, and insects<sup>[20]</sup>.



Fig. 20: Narrow, and deep crack after restoration<sup>[13]</sup>.

Strengthening walls in skylights and corners, treating cracks, internal and external facades, and studying how to connect walls in corners<sup>[20]</sup>.

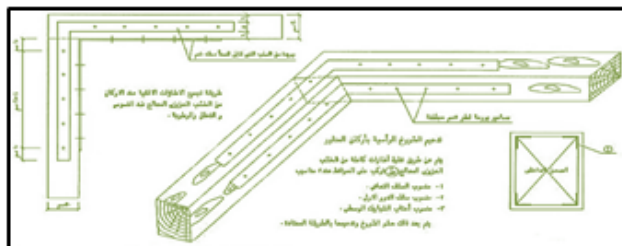


Fig. 21: Strengthening walls and corners<sup>[13]</sup>.

All the arabesque wood, which is mashrabiya windows, and doors, was cleaned mechanically and painted from the inside. It was noticed during the painting that the wood was thirsty, which indicates that it had not been painted for a long time<sup>[5]</sup>.

### B. Floors reinforcement

Strengthening the foundations and studying the groundwater level and its distance from them<sup>[20]</sup>.

The toilets in the residential units are maintained and a new drainage network was made it was found to be deteriorated, so the plan that was implemented was: dismantling the devices and floors, making a method of insulation in the entire bathroom, covering the floor, and installing the feeding and drainage connections for the basin only, without installing the toilet<sup>[15]</sup>.



Fig. 22: The toilets in the residential units<sup>[13]</sup>.

Designing new electrical distribution panels and installing them in places according to the distribution of loads in the network, removing high electrical connections, current switches, and sockets, designing electrical connections network from PVC plastic pipes, using a buried electrical network, and choosing a cover for sockets, switches, and connections from fiber that matches the color of the stone<sup>[5]</sup>.



Fig. 23: New electrical distribution and installation<sup>[13]</sup>.

### C. Ceilings reinforcement

Repairing the dilapidated reinforced concrete in the ceiling, as the iron in it is irregular and the rebars are corroded and the white parts are falling off. It is restored by removing the layer of whiteness, and the concrete cover, then sanding the existing iron, then building and adding iron according to the construction drawings<sup>[20]</sup>.

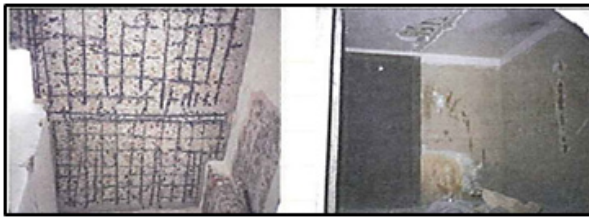


Fig. 24: Reinforcing decayed concrete<sup>[13]</sup>.

The vaults were restored and strengthened, salts and sediments were removed from them, isolated, and re-painted again using supporting pillars<sup>[20]</sup>.

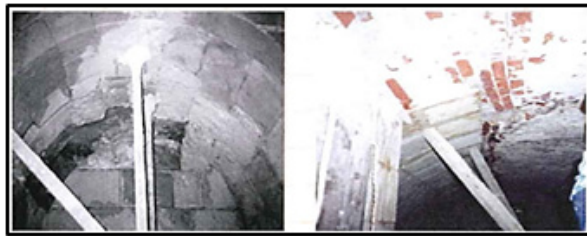


Fig. 25: Clarification of vault repair<sup>[13]</sup>.

The ancient wooden ceilings that still exist in some housing units on the second floor were restored and repainted, and the stone and concrete ceilings were restored after rebuilding them in the first restoration phase<sup>[20]</sup>.



Fig. 26: An explanation of the different types of ceilings after the restoration process<sup>[13]</sup>.

In an analysis of the previous information, the wakala's physical rehabilitation was evaluated in accordance with the requirements, standards, and stages of the rehabilitation projects mentioned above.

Table 2: Evaluation of the rehabilitation project from a physical point of view<sup>[24]</sup>.

Physical criteria for Rehabilitation		Fulfill	Failure	
Information collection stage(Preparation of studies)	Study the objectives and difficulties of the project	√		
	Study the location, importance, and value of the building		X	
	Define documentation methods and techniques	√		
	Make a work plan and schedule a feasibility study	√		
Documentation stage (technical studies and the current situation)	General description and architectural documentation	√		
	Structural system	√		
	Soil testing		X	
	Funding sources	Government(public)	√	
		local and international bodies	√	
		Individuals / Investors		X
	Technical studies (maintenance and restoration of structural and architectural elements)	Layout	√	
		Foundations	√	
		Walls	√	
		Floors	√	
		Facades	√	
		Ceilings	√	
		Openings	√	
Interior design (furniture)		X		
Sanitation		√		
Air conditioning and lighting		X		
Rehabilitation stage	Used policies	Conservation	√	
		Restoration	√	
		Consolidation	√	
		Repair	√	
		Protection	√	
		Preservation	√	



Through analyzing the wakala's physical evaluation, which is represented in all elements of the building's physical state, including its structural and architectural components.

The evaluation concluded that the project achieved its first objective, which was to efficiently rehabilitate from a physical perspective. The second objective, reuse, will be examined in the paragraphs that follow.

2. Secondly: the functional rehabilitation of the building

The researcher evaluated the functional aspect by comparing the uses that meet the needs of the region and work on tourism development while preserving the value of a heritage building. The assessment is made on a multipoint basis as shown in the following table, depending on the results of questionnaires by heritage professionals and others by residents of the area containing the case study.

**Table 3:** A comparison between different uses in terms of functional criteria for the rehabilitation process<sup>[24]</sup>.

Functional criteria for Rehabilitation		heritage hotel	Museum	Cultural function	Restaurant
Factors related to the building	Preserving the value of the building (aesthetic and symbolic)	●	◐	◐	◑
	Suitable to the importance of the building	●	◐	◐	○
	Suitable to the building's history	●	◐	◑	○
	Achieving the principle of the scarcity of use (lack of activity in the vicinity)	●	◐	◐	◑
	Exploiting the potential of the surrounding area	●	◐	◐	◐
The suitability of the new use to the terms of reuse	Suitability for the reason for the original establishment of the wakala (functional suitability)	●	◑	◑	○
	Compatibility of use with the surrounding environment	◐	◐	◐	○
	Suitability of the wakala's architectural elements (such as decorations, and decorative elements...)	●	●	◐	○
	Suitability of the wakala's internal spaces (spatial fitting according to the space's size and use...)	◐	◐	◑	◑
	Congruence between the building's space requirements and the use requirements (no resort to island modifications))	◐	◑	◑	◑
	Suitability of the wakala's structural elements (such as foundations, and columns...)	◐	◑	◐	○
	Maintaining and not changing the structural structure	◐	◑	◐	◑
	Adaptation with the wakala's environmental foundations (such as lighting, ventilation...)	●	◐	◑	◑
	Suitability of social factors	●	◑	◐	◐
	The ability to implement the proposal	●	◐	◑	◑
Economic development	The possibility of creating job opportunities	◐	◐	◐	◐
	The possibility of control and supervision by the government	●	◑	◐	◐
	Preserve the building from deterioration and reduce maintenance costs	●	◐	◑	◑
	The possibility of self-financing the wakala	◐	◑	◑	◐
	No need for large start-up funds	◑	◐	◐	◑

	Increasing opportunities for intervention and financial support for non-governmental organizations	●	◐	◑	◒
	Raising the economic situation and standard of living	●	◐	◑	◒
	Increasing the material return and increasing the tax value of the property	●	◐	◑	◒
Tourism development	Achieving more tourism marketing opportunities	●	◐	◑	◒
	Achieving more tourist attractions	●	◐	◑	◒
	Participation in the tourism development of the surrounding community	●	◐	◑	◒
Table Key					
●	◐	◑	○		
Excellent	Good	Average	Poor		

#### 4. Results

Analyzing the results of the questionnaires, It was found that the use of the wakala in the function of the heritage hotel outperformed the other functions by 85%, as the heritage hotel was able to maintain the aesthetic and symbolic value of the wakala and take care of the area and work to raise the standard of living unlike other uses and its inability to control the external environment.

The hotel kept the historical aspect of the building and worked on restoring it while the rest of the uses neglected it. The use of hotels was preferred for the scarcity of wakalat and hotel buildings, unlike the rest of the activity spread in the area. One of the most important reasons for choosing the hotel use is due to the fact that it is the use of the old wakala.

The hotel kept the original uses of the rooms and spaces while changing some of the uses in a way that does not contradict the structural system. The cultural center and the hotel also maintained the structural system in different proportions.

The hotel maintained the architectural system more with attention to the architectural elements and worked to highlight and preserve them, unlike the rest of the activities that neglected them.

The hotel maintained the external environment and tried to change it to suit the hotel and visitors and meet their needs and the needs of the population in terms of development and increasing income and standard of living.

Transformation into a heritage hotel that gives the government the right to control and supervise it, and works on continuous maintenance, reducing its expenses and protecting it from deterioration. External participation is increasing due to the financial value of the project. The hotel also needs a larger number of workers compared to the present time.

The hotel's use emphasizes the availability of financial

needs because it is considered an investment project with a high economic return compared to the rest of the activities and the lack of income generated by them. And because of the financial return from the hotel compared to the rest of the activities, the project can be self-financing

The function of the hotel has increased tourism marketing as a result of the multiplicity of elements and spaces in it and considering it as a tourist attraction, and the tourist attraction in the hotel has increased because it is not limited to art lovers only.

The following is a suggestion from the researcher for the ground and first floors to reuse the wakala as a heritage hotel:



Fig. 27: Plan of reusing the wakala's ground floor as a heritage hotel<sup>[24]</sup>.



Fig. 28: The plan of reusing the wakala's first floor as a heritage hotel<sup>[24]</sup>.

## 5. Conclusion

The research concludes that the rehabilitation of heritage buildings represents the best available means to resort to, as it ensures the continuity of the survival of heritage buildings with their architectural and technical details of the building and stops neglecting and stopping the processes of deterioration and damage to those values, and it must be carried out by specialized studies and documents, taking into account the application of all foundations and standards and objectives related to the rehabilitation policy to avoid undesirable consequences.

Al-Ghouriwakala is one of the most important heritage buildings in the Mamluk era, which was rehabilitated and turned into a cultural center. By studying the project's rehabilitation, it was found that the rehabilitation of the material aspect of restoration and maintenance of building materials, facades, floors, etc., has achieved its goal in a large proportion despite the project's neglect of maintenance and follow-up after implementation. Now it needs maintenance due to the presence of some signs of damage. On the other hand, the project failed to achieve the functional aspect, and therefore, to use the building for functions (such as the Tanoura shows) that do not fit with its value and history, and to rent it to some artists for a symbolic financial return. This did not help to achieve the required financial return until it was unable to finance the self-maintenance of the building.

The study clarified the trade-off between a set of uses according to several criteria, the most important of which is, first, the optimal choice of the new use in a way that

does not contradict the value and identity of the building and is compatible with the structural structure, internal spaces, and decorations. In achieving the upgrading of the surrounding environment, the heritage hotel was chosen according to achieving the largest number of these criteria.

## 6. Recommendations

A. Developing the concept of preserving heritage buildings that are limited to restoration and maintenance to the rehabilitation method, which adds a proposal for a modern function that is compatible with the historical value and the interior design of the building and is beneficial to the culture, social and economic level and achieves integration into contemporary life.

B. Rehabilitating heritage buildings and using them for purposes that serve the community and provide benefit to it and encourage community interest in conservation and employment projects.

C. The necessity of the commitment of the responsible authorities to the general and scientific foundations that govern the principles of preserving and restoring architectural heritage facilities.

D. Taking into account the realization of an economic return to continue financing the maintenance work, often the best economic use is the original use of the building, which reduces the work of converting the building to suit the new use and leads to an acceptable economic return that covers the cost of its maintenance.

E. Adoption of success and failure criteria for rehabilitation projects of buildings of heritage value, with the need to design a tool to assess the social and economic impact of conservation.

F. Interest in spreading awareness of the importance of heritage through effective community participation in the project stages and assisting and supporting NGOs in preparing development plans.

G. Marketing the restored heritage buildings for tourism with interest and targeting of local tourists and provision of tourism services.

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