Factors Affecting the Adaptive Reuse Process for Historical Buildings in Kurdistan Region
An analytical study of Qubahan School as Historical Case Study

Armange Ismael Barakat[1] - Assist. Lecturer
Wafaa Anwar Goriel[2] - Assist. Lecturer

[1,2]Architecture Department, College of Engineering, University of Duhok
armange.barakat@uod.ac, wafaa.anwar.sulaiman@gmail.com
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Abstract

Identifying the conditions and the considerations in a selection of compatible new use for historical building in Kurdistan region in general and for Qubahan school especially considered an essential need to get a full understanding of the research problem which represented by the lack of specific studies about adaptive reuse proposal for the school. Additionally, Department of Antiquities in Duhok doesn't have the future plans for reusing this historical building. Adaptive reuse as a process after Conservation phase for any Historical building consider the main tool to retain and preserve the significance of existing heritage fabric, buildings' characters. And as known it applies to places a new use and continuing use. In this way, there is necessary to establish some basic criteria and specific guidelines for the reuse of historic buildings in Kurdistan region, especially for Qubahan School. Accordingly, this paper focuses on studying the factors that affect the reusing process of Qubahan School. Also, this paper aims to explore the possibilities of adaptive reuse of this historical school as a part of the rehabilitation process, which is managed by Department of Antiquities. To achieve this aim, this study adopted the analyzing method of Qubahan School in two levels: the first level is an Analytical survey related to the cultural, site, environmental, and architectural characteristics. at the second level comes the Space syntax analysis on functional layout of building to define the role of spatial configuration and to specify how the new use effect by space spatial characteristics. This study gives a vision about the importance of Adaptive Reuse Process as a component of the environmental development, social and economic benefits for society and individuals, basically, it is a live example of Inheritance the traditions and culture continuously for any related places.

Keywords: Adaptive Reuse, Qubahan School, Historical Buildings, spatial configuration.

1. Introduction

Adaptive reuse developments can provide great benefits to the community, especially when the building reflects the history of the city. Qubqhan School is an Islamic Kurdish building; the ruins of the school are located in Amediya citadel in Duhok Province. It gives a good evidence about an important historical period. Thus, appears a need for studies that should debate the adaptive reuse of Qubqhan School. The basic theme of the current research is discussing the factors that affecting the process of Adaptive reuse and try to set some criteria can be adopted in choosing the compatible use. In this way this study suggests some new uses for the school, which is based on the results of the case study analysis.

1. Literature review

This study tries to review a group of studies and proposals that addressed adaptive reuse process of historical buildings in general.

Mücahit Yıldırım and -Gizem Turan study addressed the challenges associated with the compatible reuse and most appropriate reuse approaches for commercial and community development. Its method of analyzing sustainable development activities involving the traditional houses of Sanliurfa in Turkey (Yıldırım and Turan, 2012).

While Avakyan study tried to identify the reasons behind the typical adaptive reuse outcomes in New York and compare them to Pittsburgh, where various factors have permitted churches in to be used for community development, neighborhood regeneration, and commercial establishments.

Özen and Eyüce, mentioned that one of the main factors affect the adaptive reuse is the space

configuration beside other important factors, Adaptive reuse concerns with space properties and their relationships in the configurationally system, and the degree of compatibility of new use with its requirements for adapting the original spatial configuration. (Eyüce and Ahmet Eyüce,2010). Another study by Robert and his colleagues that concerned with spatial layout and its effect on the choosing the new use in Common Army Building Types, it focuses on the Adaptive reuse for different buildings, taking in consideration the potentials of the spatial layout. (Robert, A., Young, PE. Michael, M., Woods, A., Monsos, M., and Julie, W., RA, 1998).

Another study for Langston, identifies buildings suitable for adaptive reuse, and ranks them according to their real potential to communities, and helps facilities managers to target their resources better and make contributions that are more substantial to Hong Kong's net worth (Langston, 2008).

While Freschi and Maas study tries to give, differentiate between two ideal types of re-use, simple re-use and adaptive reuse. Simple re-use is the resumption of the previous use of an item without a strong change of purpose(s). An item employed again because it is readily available and can be easily used. Usually the re-user does not want the re-used element to be specifically recognized as having been re-used. Adaptive reuse is not merely the repetition of a previous use; it implies more than an item just being used again (Freschi and Maas, 2017).

According to the previous studies, the research recognizes many factors that affect the process of selecting an adequate re use of historic buildings: cultural, site, environmental, architectural, functional, financial, Political, social, economic considerations.

Each of these factors have a sub variable that affect the adaptive reuse type. The current study will address the five factors in the coming steps in the practical part as shown in the following table:

2. Research problem, objective and method

The current research addressed the problem of Adaptive reuse as a process after Conservation phase. it is considering the main tool to retain and preserve the existing heritage fabric, the research problem represented the lack of specific studies about adaptive reuse proposal for the Qubahan school, additionally, department of Antiquities in Duhok doesn't have the future plans for reusing this historical building. Research objective is to establish some basic criteria and specific guidelines for the Adaptive reuse of historic buildings in Kurdistan region. In addition, to explore the possibilities of reuses this historical school as a part of the rehabilitation process. This study adopted the analyzing method of Qubahan School in two levels: first, is an Analytical survey related to the cultural, site, environmental, and architectural characteristics, second, run the Space syntax analysis on functional layout of building to define the role of spatial configuration and to specify how the new use effect by space spatial characteristics.

4. Case study analysis: Qubahan School

Analysis is in two levels:

4.1. The first level: Analytical survey

4.1.1. The second level: Space syntax analysis on functional spatial layout

- Heritage Value of the building:
  Historical sources did not give accurate information about the history of school. However, some sources seed that the school, has built in the second century AD, as well as with a very late period of the Emir Badinan (1480 – 1534) or (1524-1573) or 1573 to 1584 but other sources linking the beginning of the school in the tenth century. (To Tonna, p213, 1990) see figure (1)

- Possibility of Loss building identity:
  One of the authorities aims of the conservation process is to preserve the identity of the building by retain the architectural elements, building construction, materials. (Department of Antiquities /Duhok)

- Historical incidents associated to the persons and the building
  Label Qubahan had been in many manuscripts and old books which existed in the school library, such as a manuscript Esaad in Fiqh and a manuscript Imam al-Nawawi in Fiqh, or name Qubahan Maybe came from Vibrio on pollinator letter, the weighting label following the example like of (Quba Mosque) the first mosque in Islam. (Carl Novjak, p.p245-250 2011).

4.1.2. Site Constraints, which include

- Building location
  Qubqhan school is located, at 920 m North West from eastern Amadiya entrance,

positioned on the terrasse edge below the steep South East slop of the valley stretching between the hill of Bses(1920m) and the rocky plateau on which the town is laid (Raeed s. Ahmed al-nummans.2017). Figure 2.

- Characteristics of surrounding building
  a) The wide green valley surrounds the Amadiya plateau on the north and the west sides with river Ribari as it's the axis. Figure 2

  b) Old Use : Historical school. (Department of Antiquities /Duhok)

  c) Surrounding urban fabric: the forest Surrounds the school from all sides. See figure 3 (Researchers)

  d) Capacity of existing parking: there is no existing parking. (Researchers)

  e) Infrastructures and available services: the site has equipped with source of electricity and water resources. (Department of Antiquities /Duhok)

  f) Accessibility: the site can be accessed through the road that branching the Sulaf resort and Amadiyah. See figure 3 (Researchers)

4.1.3. Environmental characteristics, which include

1. Building construction
   The structure type of the school is a combination among the bearing wall system, Islamic arches, and domes, which adopted in that period. As shown in Figure 4 (Researchers)

2. Building's Materials
   The materials that previously used were brick, stone and in the present, the concerned authority try to use a similar material in the conservation process. As shown in the figure 5 (Department of Antiquities /Duhok)

3. Damage of the building's elements. See figure 6.

4. Durability of the Physical structure for the building:
   the existing structure does not efficient enough, it needs Special treatment to preserve it and used it in the future. (Researchers)

5. Change & modifications in the original building:
   There is no any change or modifications on the original building. It is under the conservation process in the present time. (Researchers)

6. Using hybrid materials:
   Only on the level of mortar, they are use the lime mortar, which is stronger than the old clay mortar (Department of Antiquities /Duhok)

4.1.4 Architectural characteristics, which include

- Architectural significance:
  The school gives a good evidence about an important historical period has been associated with Islamic architecture in general and Kurdistan architecture especially. (To Tonna, 1990)

- Architectural form:
  The architecture of Qubqhan School is an original Islamic architecture, its style is Ayoubi pattern, and it has all principles of Islamic architecture in interior elevations (rhythm, symmetry and Proportionality) and the Kurdish architect deals successfully with the functional and special requirements of school. (Raeed s. Ahmed al-nummans.2017). See figure 7

- Building size
  The school building occupies an area of land nearly rectangular shaped in length (34.75 m) and width (24.30 m) shall be the total area (about 844 .425 m) as well as the area around the school, which covers (1810 m 2) It's a region that dedicated to the exploration work in the future. Figure7 (Department of Antiquities and researchers' documentation)

- Interior of the building
  The school consists of a medial courtyard fraught with suits and other facilities spread over two floors, consisting of chambers in the East and West sides as well as the entrance on the west side, and Ewan in the northern side that borders by the chamber of each side, either the south side is the mosque, which preceded by a gallery overlooking the courtyard.

a) The entrance leads to vestibule which dimensions (2, 80 × 2, 50 m). figure 8.1
b) Mediates the school, open rectangular courtyard its dimensions from north to south

(14.25 m) from east to west (13 m) thus a total area (185.25m^2 Figure 8.2)

c) - East side of school: This side has five chambers, four of which are similar dimensions (3 × 2, 80 m)
d) Figure 8.3
e) West side of school: The west side has many facilities and staircase to the top floor.
f) The rooms are located all on the left of whom to interred school, the large rectangular room with dimensions (4 ×3m).
g) All the rooms in this side built by stones& plaster and ceilings arched with stone and stucco, with an average height (3.70 cm). Figure 8.4
h) The staircase of school, is located to the right side of the entrance of school with dimensions: length (1.80 m) and width (25 cm) and height (25 cm). Figure 8.5
i) Qubahan school – Manara see figure 8.6
j) North side of school, this side includes a large on Ewan_Antiques by the chamber each side. The iwan is located in the middle of the side with rectangular shape, capacity of its opening (3, 70 m) and depth (5.25 m) topped arch slightly tapered and its height (4.60 m). Figure 8.7
k) South side of school, the school's mosque located in this side. Which consists of a chapel winter (8, 40 × 8 m) and summer chapel. Figure 8.8.

4.2. Space syntax analysis of Qubahan School includes:

4.2.1 DepthMap and Visibility Graph Analysis

4.2.2 Justified Maps (Mean Depths)

The visual graph analysis intends to meet the spatial configuration needs of the old building to improve the spatial requirements of the new uses. Space syntax analysis theory and methodology used to be another effective factor to define the role of spatial configuration and for Hillier and his colleagues, it is a method to deal with spaces and how people interact within the space, and their engagement reflected in it, in addition, the chosen new use effect by spatial characteristics of the building.

Visibility graph Analysis (VGA) run by DepthMap software on building level, as an application for the space syntax theory and works Concurrently with spatial configuration to analyze the syntactical properties for each space.

VGA Analysis conducted on Qubahan school to measure the syntactical properties, which are "Connectivity: measures as number of immediate neighbors that are directly connected to a space"., 'Integration [HH]' is "described the average depth of a space to all other spaces in the system and ranked from the most integrated to the most segregated". 'Depth' between is "defined, the least number of syntactic steps in a graph that are needed to reach one from the other. While 'Mean Depth' is a "It describes the average depth of a space to all other spaces in the system. (Klarqvist, 1993: 2, Turner, 2004). Syntactical properties indexes for Qubahan School used:

- Connectivity
  For Ground floor, the visual lowest value is (22) and the Highest visual value is (3134), For first floor, the visual lowest value is (10) and the Highest visual value is (488).

- Integration [HH]
  For Qubahab School Ground floor, the lowest visual value is (3.93) and the Highest visual integration value (19.009), For first floor the visual integration lowest value is (2.33) and the Highest visual value is (8.06), accordingly, it noticed that the ground floor and nearest to the south part of the building is visually integrated more than other parts and for the first floor the most integrated area is the corridor that links all the spaces, and for both floor the blue area represented in the space of the east and west sides of the school.

- Mean Depth
  For Ground floor, the lowest visual value (1.52) and the Highest visual value (3.53). For first floor, the visual lowest value is (2.02) and the Highest visual value is (4.53). see Figure (10), Figure (11), Table (2).
  The results of Connectivity and Integration Values show that the (courtyard and the south side of the school) in the ground floor have the highest Connectivity value and highest integration value. While the lowest Values of Connectivity and integration for the spatial Configuration of the spaces found in the first floor.

4.2.3. Justified Maps (Mean Depths)

A Tree diagram 'justified Map' or 'justified permeability Map' related to the selected space and its depth to rest spaces in the configurational system, and how each space related to other according to direct or indirect accessibility to it and through their entrances, this graph gives a real impressionistic about how each space is

shallow` or deep in the system (Hillier & Hanson, 1984)

For Qubahan School, Justified Map drawn for both floors to reveal the adjacency relationship between spaces and how these spaces connected to each other. The diagram represented with circles and lines by giving a number for each space and starting with entrance (no=0) and the lines represents the inter relation, the graph shows that the ground floor is 'shallow' and more integrated and vice versa less integrated with deeper spaces in the first floor. Figure (11).

4. Factors evaluation to choose the new use:

The following table (3) is filled, according the analytical survey (site visiting, observation, antiquities department interview) and Space syntax analysis.

The effect value has been coded with proposed range (25% -100%) to explain the extent of the sub variable achievement as exists, this reflect its effect. As shown below.

(No effect, Feeble Effect 25%, Medium effect 50%, Strong effect 75%, Very Strong effect 100%).

In table 3 the research concluded the strongest factors that affect the adaptive reuse process.

5. Discussion of Case Study Results

The results of the case study come from the analytical survey part and

Space syntax analysis on functional spatial layout at the second part. As follows:

The results of an analytical survey part show that:

- For the cultural characteristics, the variable of Heritage Value of the building, has a strong effect with rate 75%. While each of (Possibility of Loss building identity, and Historical incidents associated to persons and building) have a feeble effect with rate 25%.
- The results of the Site characteristics show that the variables of (building location, Characteristics of surrounding buildings and Surrounding urban fabric come at the first level and have very strong effect equal to 100%. At the second level each of (infrastructure, and accessibility) have medium effect with rate 75%. While the building type equal to 50%. The variable of Capacity of existing parking has no effect.
- For the environmental characteristics, at the first level comes the variable of durability of Physical structure with strong effect with rate 75%. At the second level comes each of (Building construction, building's Materials, and Damage of the building's elements) with medium effect equal to 50%. While each of (Change & modifications in the original building, using hybrid materials) have the feeble effect with rate 25%.
- While Architectural characteristics, the variable of (Interior details of the building) has the very strong effect with rate 100%. In addition, the variable of (building size) has the strong effect with rate 75%. While each of (Architectural significance, Architectural form) have a medium effect equal to 50%.
- The results of Space syntax analysis on functional spatial layout shows that:
- Qubahan Spatial configuration easy recognize and high clear of destination for the spatial configuration,
- The results of syntactical Properties show that the (Connectivity, Integration) these variables have strong effect equal to 75%. While the variable of mean Depth has a feeble effect with rate 25%.
- the results of the Justify map show that, in the ground floor, the central courtyard (node -1) is the major space, easy cognitive by users that connected all spaces (nodes) and distribute the users to other nodes. while at the first floor the stair (node-16) considers the only node has limited choices to reach other spaces.

6. Study Scope of the Affecting Factors

The process of choosing the new uses for Qubahan School is related to many factors that affect the building. The study will adopt the strongest effect factors include: the cultural characteristics the (variable of Heritage value of the building). For the Site characteristics (building location, Characteristics of surrounding buildings, Surrounding urban fabric, infrastructure, and accessibility). For the environmental characteristics, (the variable of durability of Physical structure and building construction). Architectural characteristics, the variable of (Interior details of the building, the variable of building size). From the functional

spatial, the chosen variables are (Connectivity, Integration) as a shown in Table 3 above.

7. The Proposed of New use for Qubahan School

This study has reviewed many studies that addressed the Adaptive Reuse Process and chosen the new use that compatible with the spatial of Historical building.

For 'Tiesdell' mentioned that the new uses should be classified to three types "cultural tourism, housing, and commerce/industry"

While Pimonsathean classified the new use according to the financial income to the "Active and Passive use" Active use such as restaurants, retail shops,and passive use such as museums, libraries, galleries. (Tiesdell as cited in Pimonsathean, 2002).

Table 4 and table 5 are clarifying the suitable size of the spaces and the types of function, in the proposed new uses according to the Qubahan school layout and the main impact factors that affect the adaptive reuse process to give a clear vision for the stakeholders (Antiquities department) to make an appropriate decision.

Accordingly, the study gives suggestions of the new uses depend on three criterions: first, the most effective factors (site, Architectural, functional) characteristics, second the previous classification of the studies of a more appropriate use. Third, make a comparison between the layout of Qubahan School with the typical space program of theses uses Passive use (Library, Museum and Art Gallery), Active use (Café/Restaurant, Guest house/ Motel). As shown in the Table 4 and Table 5.

8. Conclusion and Recommendations

This study gives an image about the significant of Adaptive Reuse Process especially the school considers a vivid example of Inheritance the traditions and culture continuously in Kurdistan Region, which needs a precise and an efficiency work. It concluded that there are many impact factors that participate in choosing the new uses and those factors have different effect, where, the study based on the strongest effective factors, which include site, functional, Environmental, cultural and Architectural Characteristics.in this way the study gave different appropriate use which were (passive- Museum/Art gallery or Active- Café/Restaurant) and compatible with origin and Retain the original Plan.

This paper recommends that the Department of Antiquities /Duhok adopt the current study to reach the right choosing the appropriate uses of Qubahan School in the future.

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العوامل المؤثرة في عملية إعادة الاستخدام التكيفي للمباني التاريخية في إقليم كوردستان
دراسة تحليلية لمدرسة قبهان كحالة دراسية تاريخية

أرمانج إسماعيل بركات[1] - مدرس مساعد
وفاء أنور كورئيل[2] - مدرس مساعد
[1,2]قسم الهندسة المعمارية ، كلية الهندسة ، جامعة دهوك

المستخلص

ان تحديد الظروف والعوامل المؤثرة في اختيار الاستخدام الجديد المتوافق للبناء التاريخي في إقليم كردستان بشكل عام ولمدرسة قبهان بصورة خاصة يعد ضرورة لفهم مشكلة البحث والتي تمثلت بالافتقار إلى دراسات محددة حول إعادة الاستخدام التكيفي للمدرسة كمقترح معتمد ، اضافة الى ذلك عدم امتلاك دائرة الآثار في مدينة دهوك اية خطط مستقبلية لإعادة استخدام هذا المبنى التاريخي.

ان اعادة الاستخدام التكيفي تعتبرعملية ضرورية تلي مرحلة الحفاظ لأي مبنى تاريخي ، والتي تعتبر الأداة الرئيسية للحفاظ والابقاء على أهمية النسيج التراثي وخصائص المباني. وكما هو معروف انه يطبق على المباني اما باستخدام جديد اواستخدام مستمر. وبهذه الحالة ، من الضروري وضع بعض المعايير الأساسية والمبادئ التوجيهية المحددة لإعادة استخدام المباني التاريخية في إقليم كردستان وبالاخص لمدرسة قبهان . وفقًا لذلك ، يركز هذا البحث على دراسة العوامل التي تؤثر على عملية إعادة استخدام مدرسة قبهان . لذلك تهدف هذه الورقة البحثية إلى استكشاف إمكانيات إعادة الاستخدام التكيفي لهذه المدرسة التاريخية كجزء من عملية إعادة التأهيل التي تديرها دائرة الآثار ، ولتحقيق هذا الهدف فقد اعتمدت هذه الدراسة طريقة تحليلية لدراسة مدرسة قبهان وذلك على مستويين : المستوى الأول عبارة عن مسح تحليلي يتعلق بالخصائص الثقافية والموقعية والبيئية والمعمارية. في المستوى الثاني يأتي تحليل البناء التركيبي للفضاء لتحديد دور التركيب الفضائي وتحديد كيفية تأثير الاستخدام الجديد من خلال الخصائص التركيبية الفضائية. ان هذه الدراسة تعطي رؤية حول أهمية عملية اعادة الاستخدام التكيفي كعنصر من عناصر التنمية البيئية والمزايا الاجتماعية والاقتصادية للمجتمع والأفراد ، هو مثال حي للموروث والتقاليد والثقافة بشكل مستمر لأي مكان.

الكلمات المفتاحية: إعادة الاستخدام التكيفي ، مدرسة قبهان ، المباني التاريخية ، التركيب الفضائي.

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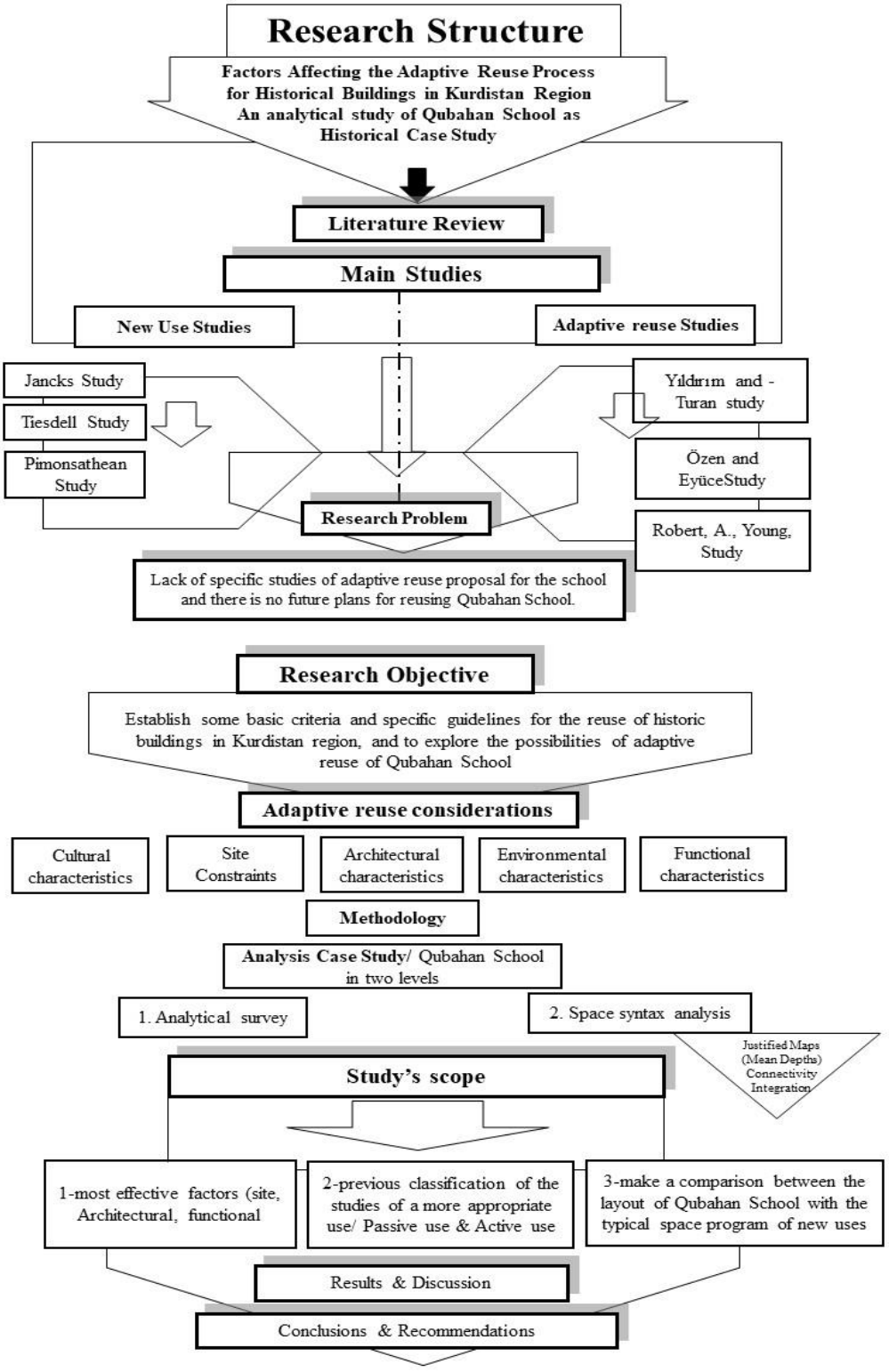

Research Structure
Factors Affecting the Adaptive Reuse Process for Historical Buildings in Kurdistan Region An analytical study of Qubahan School as Historical Case Study
Literature Review
Main Studies
New Use Studies
Adaptive reuse Studies
Jancks Study
Tiesdell Study
Pimonsathean Study
Yıldırım and - Turan study
Özen and EyüceStudy
Robert, A., Young, Study
Research Problem
Lack of specific studies of adaptive reuse proposal for the school and there is no future plans for reusing Qubahan School.
Research Objective
Establish some basic criteria and specific guidelines for the reuse of historic buildings in Kurdistan region, and to explore the possibilities of adaptive reuse of Qubahan School
Adaptive reuse considerations
Cultural characteristics
Site Constraints
Architectural characteristics
Environmental characteristics
Functional characteristics
Methodology
Analysis Case Study/ Qubahan School in two levels
1. Analytical survey
2. Space syntax analysis
Justified Maps (Mean Depths) Connectivity Integration
Study's scope
1-most effective factors (site, Architectural, functional
2-previous classification of the studies of a more appropriate use/ Passive use & Active use
3-make a comparison between the layout of Qubahan School with the typical space program of new uses
Results & Discussion
Conclusions & Recommendations

Figure 1: Qubahan history. (Source: Department of Antiquities /Duhok).

Figure 2: Qubqhan location. (Source: http:// Iraq map .org google earth 2017).

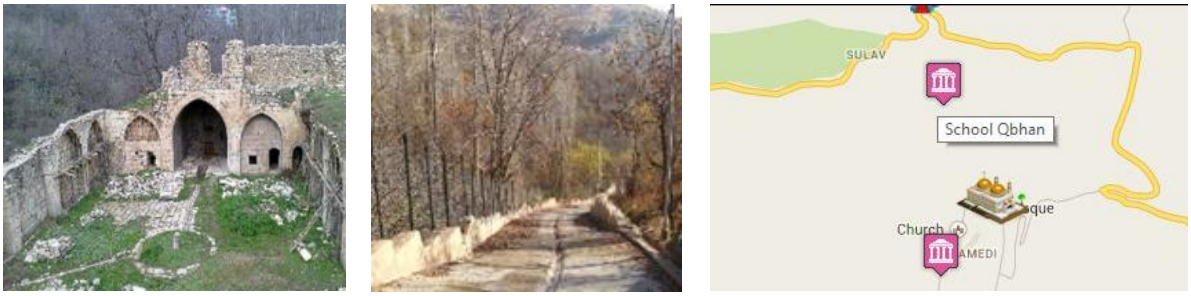


Figure 3: land use and Accessibility (Source: Department of Antiquities /Duhok).

Figure 4: building construction (Source : researchers).

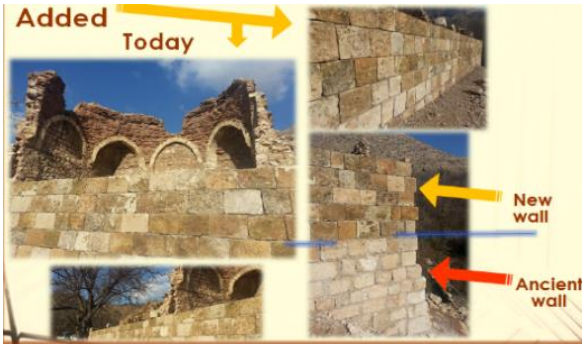


Figure 5: Building's Materials (Source: Department of Antiquities /Duhok).

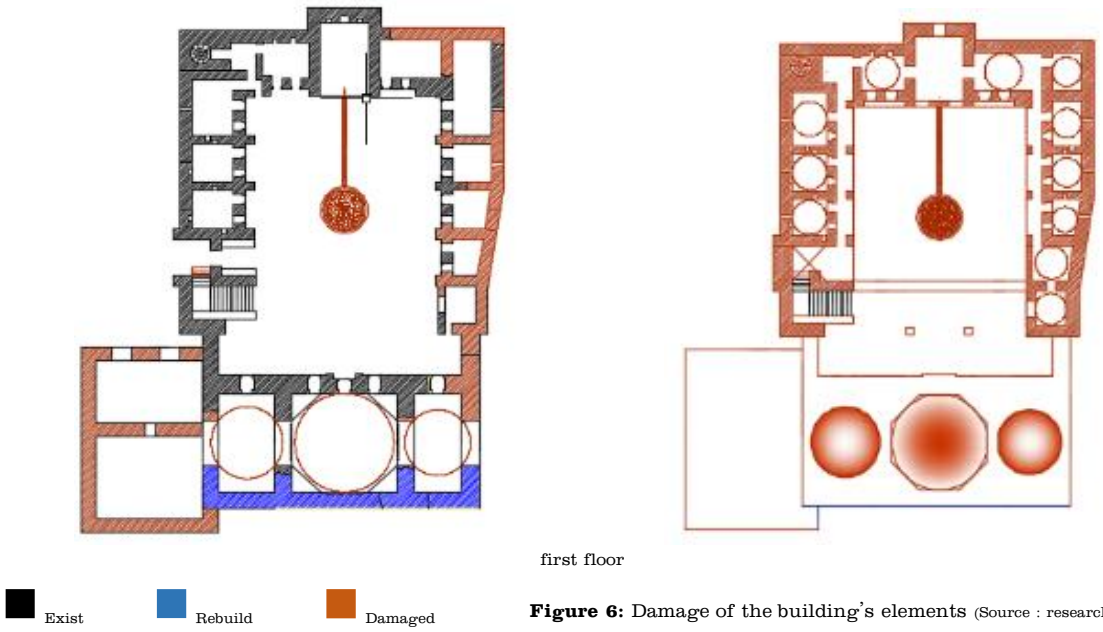
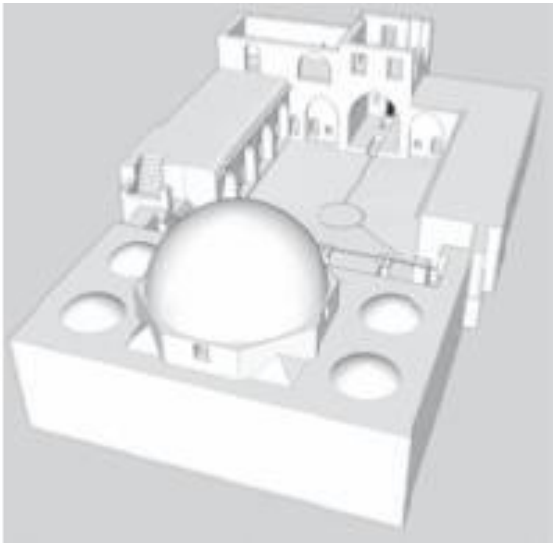
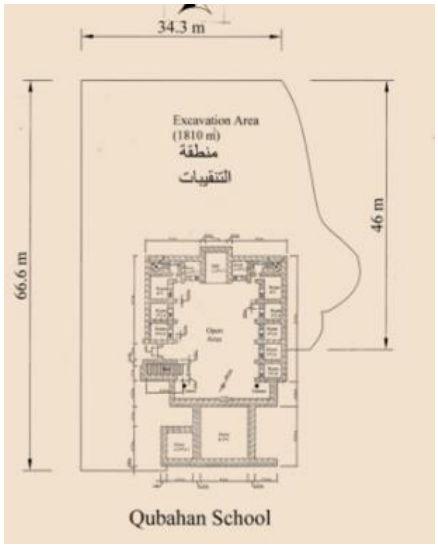


Figure 6: Damage of the building's elements (Source : researchers).



The school (Source: Carl Novjak, and Nermin Ali, 2011)



school area (Source: Department of Antiquities /Duhok)

Figure 7: Architectural characteristics.

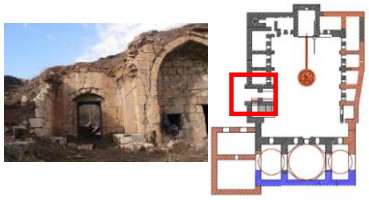


Figure 8.1:entrance

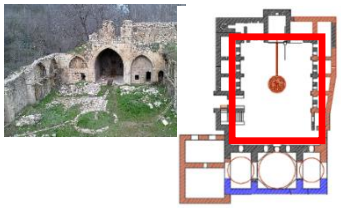


Figure 8.2 courtyard

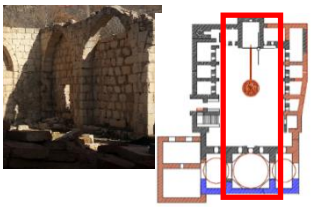


Figure 8.3 east side

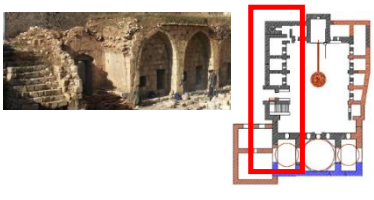


Figure8.4:west side

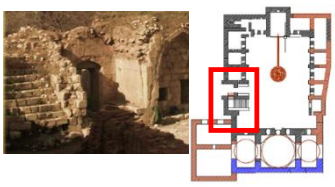


Figure8.5: staircase of school

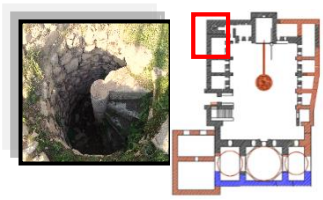
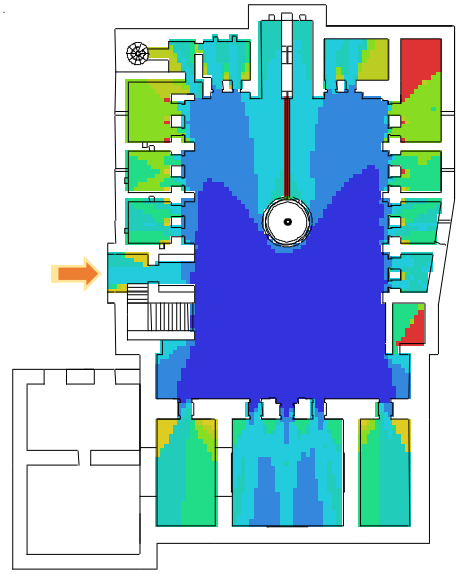


figure 8.6 Minaret

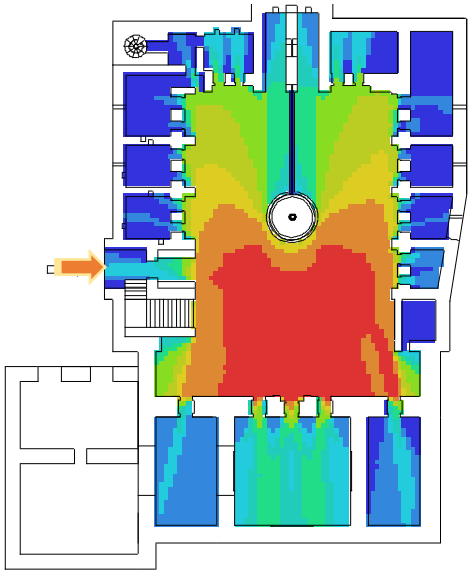
Figure 8.7 : North side

Figure 8.8 south side

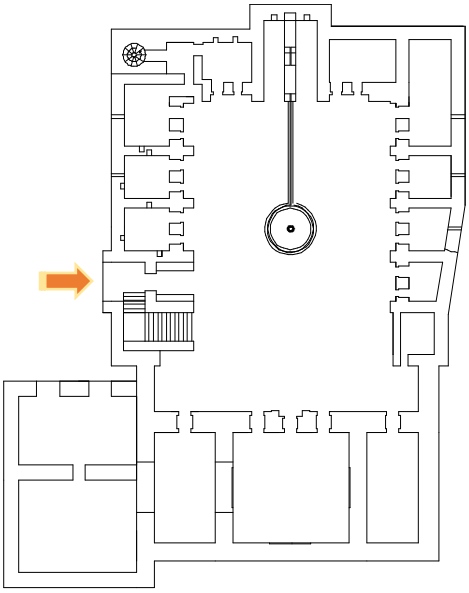
Figure 8: interior of Qubahan school (Source : researchers).



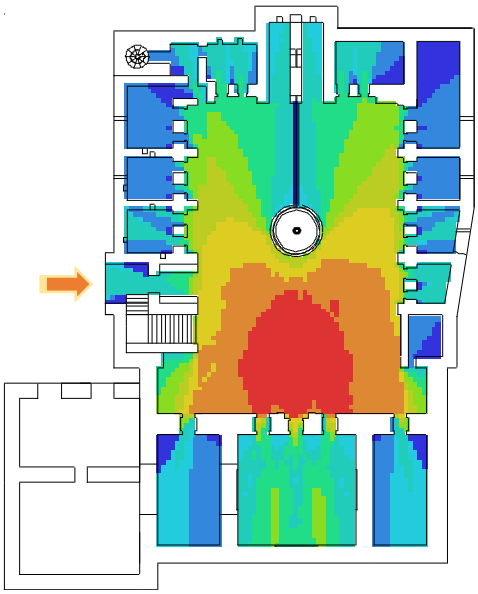
Ground Floor/ Mean Depth



Ground Floor/ Connectivity

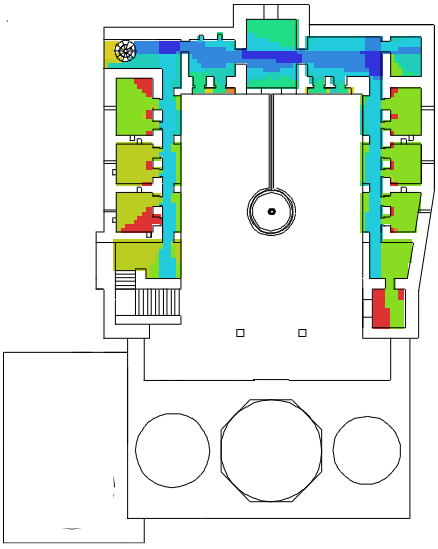


Schematic Ground Floor Plan

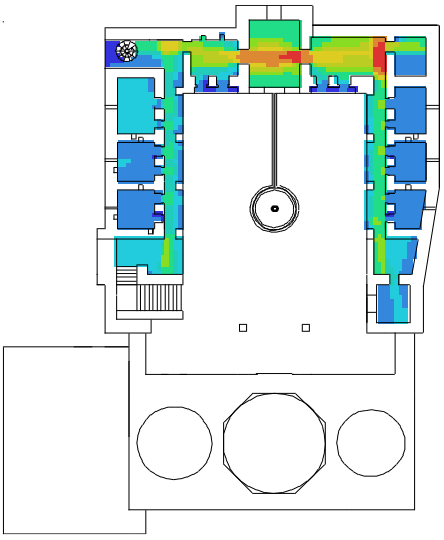


Ground Floor/ Integration HH

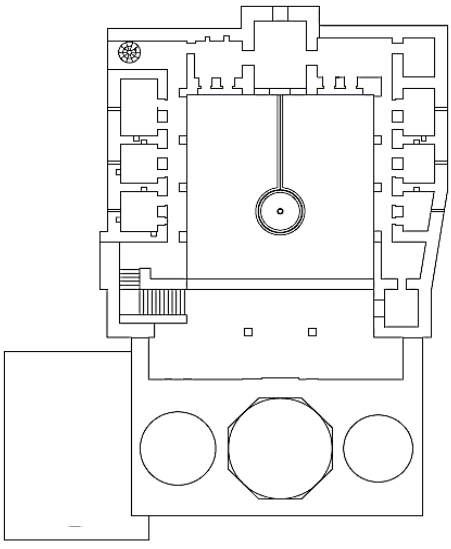
Figure 9: Visual Graph Analysis (VGA) (Source : researchers).



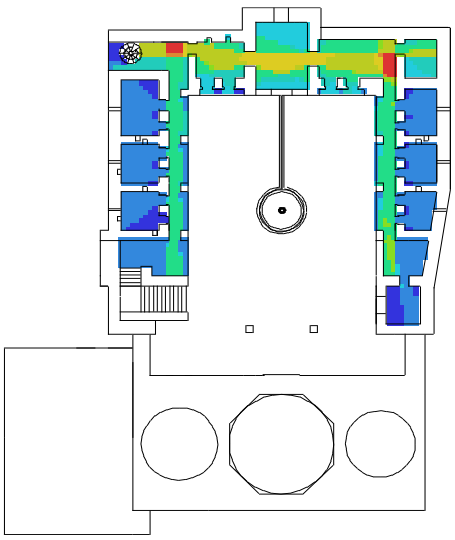
1st Floor/ Mean Depth



1st Floor/ Connectivity

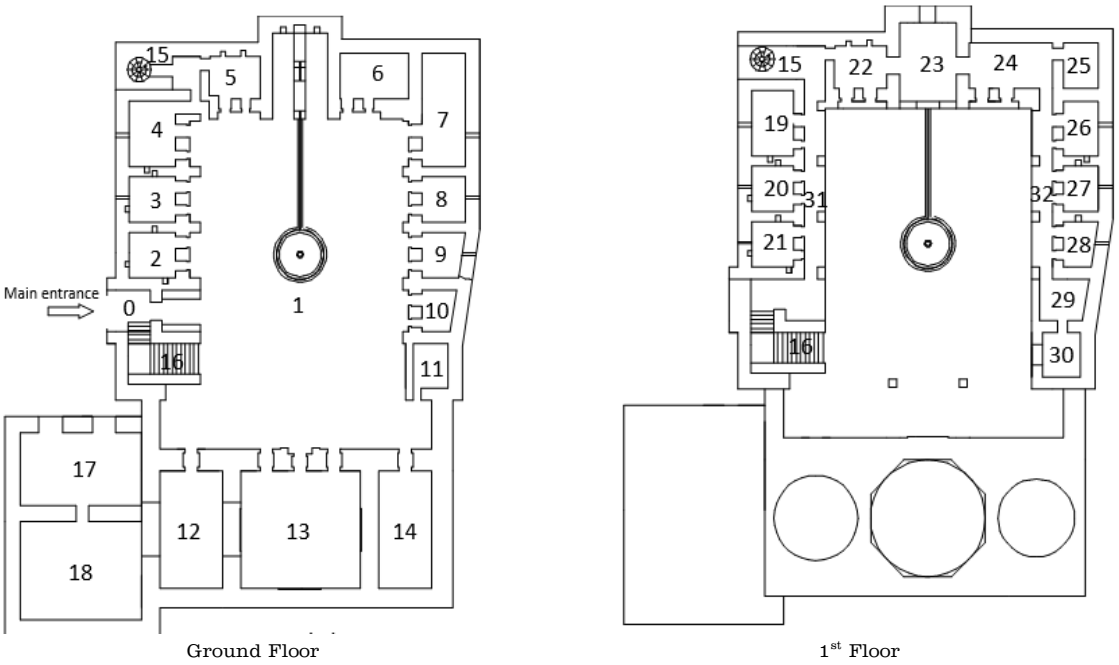


Schematic First Floor Plan



1st Floor/ Integration HH

Figure 10: Visual Graph Analysis (VGA) (Source : researchers).



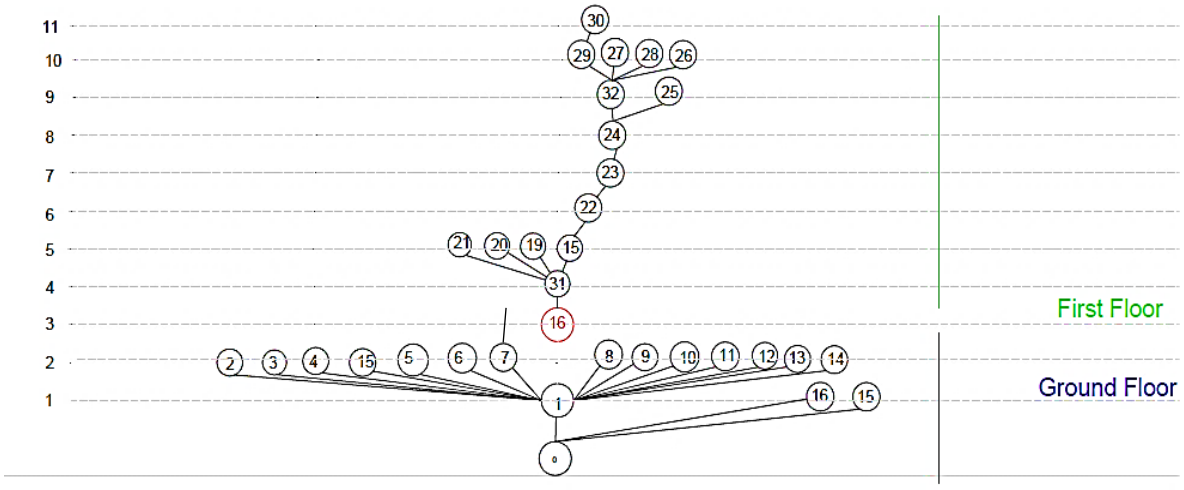


Figure 11: JUSTIFIED MAPS/ Mean Depth for Ground Floor and First floor (Source : researchers).

Table 1: adaptive reuse considerations (Source : researchers).

Cultural characteristics	Site Constraints	Environmental characteristics	Architectural characteristics	Functional characteristics
Heritage Value of the building	Building location	building construction	Architectural significance	Evaluation the Configurational potentials
Possibility of Loss building identity	Characteristics of surrounding buildings	building's Materials	Architectural form	
Historical incidents associated to the persons and the building	Old Use/ Building Type	Damage of the building's elements	Interior of the building	Syntactical properties indexes
	Surrounding urban fabric	durability of Physical structure	building size	-Connectivity -Integration
	Capacity of existing parking	Change & modifications in the original building	Existing documentation of building plan	-Mean Depth Evaluate The potential of New uses/ Building Type
	Infrastructures accessibility	Using hybrid materials		

Table 2: The Syntactical Properties of Ground Floor and First Floor (Source : researchers).

Syntactical properties	Ground Floor		First Floor	
	High Value	Low Value	High Value	Low Value
Connectivity	3134	22	488	10
Integration [HH]	19.009	3.93	8.06	2.33
Mean Depth	3.53	1.52	4.53	2.02

Table 3: Factors Effect Evaluation Table (Source : researchers).

	Main factor		Sub factor	effect		Justifications
Analytical survey	Cultural characteristics		Heritage Value of the building		75%	Revert/ 4.1.1.1
			Possibility of Loss building identity		25%	Revert/ 4.1.1.2
			Historical incidents associated to persons and building		25%	Revert/ 4.1.1.3
	Site characteristics		Building location		100%	Revert/ 4.1.2.1
			Characteristics of surrounding buildings		100%	Revert/ 4.1.2.2
			Potential of old use/ Building Type		50%	Revert/ 4.1.2.3
			Surrounding urban fabric		100%	Revert/ 4.1.2.4
			Capacity of existing parking			Revert/ 4.1.2.5
			Infrastructure		75%	Revert/ 4.1.2.6
			Accessibility		75%	Revert/ 4.1.2.7
	Environmental characteristics		building construction		75%	Revert/ 3.1.3.1
			building's Materials		50%	Revert/ 3.1.3.2
			Damage of the building's elements		50%	Revert/ 3.1.3.3
			durability of Physical structure		75%	Revert/ 3.1.3.4
			Change & modifications in the original building		25%	Revert/ 3.1.3.5
			Using hybrid materials		25%	Revert/ 3.1.3.6
	Architectural characteristics		Architectural significance		50%	Revert/ 4.1.4.1
			Architectural form		50%	Revert/ 4.1.4.2
			Interior details of the building		100%	Revert/ 4.1.4.4
			building size		75%	Revert/ 4.1.4.3
Space syntax Analysis	Functional characteristics/ Evaluation the Configurational	Syntactical properties indexes	Connectivity		75%	
			Integration		75%	
			Mean Depth		25%	

□ No Effect ■ Feeble Effect 25% ▬ Medium Effect 50% ▬ Strong Effect 75% ▬ Very Strong effect 100%

Table (4): Typical space Program of the proposed New Uses (Source : researchers).

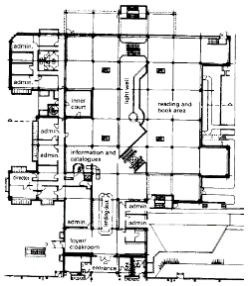
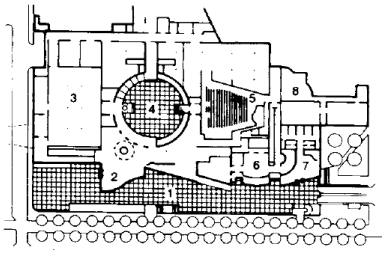
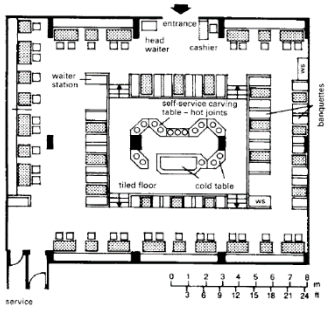
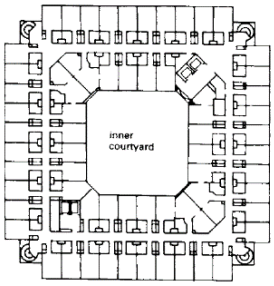
Main Functional Space (Space Program) Study Area(Reading) Books Stacks (Shelving Units) Staff Room Services (Storages, Toilet.. etc.)	
Main Functional Space (Space Program) Main Hall (Gallery) Multi-Purpose Hall Administration Services (Storages, Toilet.. etc.)	Library (Ernst and Peter Neufert/ Architect's Data- 3rd Edition) 
Main Functional Space (Space Program) Dining Area Main Kitchen Staff Rooms Services (Storages, Toilet.. etc.)	Museum and Art Gallery (Ernst and Peter Neufert/ Architect's Data- 3rd Edition) 
Main Functional Space (Space Program) Accommodation room Restaurant and Kitchen Staff Rooms Services (Storages, Toilet. etc.)	Café/ Restaurant (Ernst and Peter Neufert/ Architect's Data- 3rd Edition)  Guest House/ Motel((Ernst and Peter Neufert/ Architect's Data- 3rd Edition)

Table 5: Result for the most appropriate proposed new use (Source : researchers).

No.	New Uses Proposal / Main Impact Factors		Library	Museum and Art Gallery	Café / Restaurant	Guest house / Motel
1	Cultural characteristics	Heritage value of the building	●	●	○	○
2	Site Characteristics	building location	○	●	●	○
		Characteristics of surrounding buildings	○	○	●	○
		Surrounding urban fabric	○	○	●	○
		infrastructure	○	○	○	○
		accessibility	○	○	○	○
3	Environmental characteristics	durability of Physical structure	○	○	○	○
		building construction	○	○	○	○
4	Functional/ Spatial Configuration	Connectivity	○	●	●	●
		Integration	○	●	●	●
5	Architectural Characteristics	Interior details	○	●	●	●
		building size	●	●	●	●

○ medium relation ● strong relation

**The chosen of most appropriate Use depended on the greatest Number of Codes in the table*