September 2022

CALCULATING VANDALISM RISK ASSESSMENT FOR ARCHAEOLOGICAL FINDINGS WITHIN HERITAGE BUILDINGS: THE CASE OF AL-ATTAR HISTORICAL MOSQUE IN TRIPOLI LEBANON

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Abstract

A heritage building is a genuine witness for the past and it mostly correlates with communities' collective memory. It involves a considerable economical asset for cultural tourism in addition to other emotional values. However, building archeology is slightly exposed when handling historical buildings; it is subject to reburial to minimize potential risks and to keep it for future generations. The aim of this research is to explore the validity of exposing an archeological feature by establishing an estimation for vandalism risk through an assessment for society's attitude concerning the new image given to a historic mosque with exposed archeological features. This research handles the ABC calculation method for vandalism risk assessment, and it concludes the risk magnitude by analyzing the social impact for the existence of an archeological feature within Al-Attar historic mosque in Tripoli by performing focus group research targeting persons in direct relation with the subject. The research will open doors for further studies basing on risk magnitude assumption, risk potential sources and different perspectives when handling archeological features; the findings will lead to significant implications for similar cases in Lebanon and in other global similar cases.

1. INTRODUCTION

The concept of heritage is comprehensive; it involves all natural and cultural environment. It covers landscapes, historic sites, and built environments, as well as past and current cultural practices and experiences. Each community has its own specific heritage and collective memory; it is an irreplaceable and an important legacy for the present and for coming generations. (Meckercher & Du Cros, 2002) A heritage building represents a silent representation for the nation's history and identity. Therefore, conserving and restoring these buildings is an essential mission for many countries' decision makers and a common obligation for communities. (Markunaité, Kalibatas, & Kalibatiené, 2019)

The Venice Charter' preamble describes heritage buildings as a living proof for ancient traditions and a legacy for contemporary generations; this statement further announces the importance of preserving heritage buildings as a legacy for future generations. (International Charter for the Conservation and Restoration of Monuments and Sites, 1964) The protection of the community's identity constitutes the main reason for conservation especially when the identity is related to particular historical place. The conserved identity is usually represented as a political tool and a motivation for making choices when deciding about maintaining or demolishing the place. (Jokilehto, 2008)

Regarding an operational point of view, two main characteristics can differ a heritage building from a casual building:

1- Physical shape, as the building may have its special design and geometry, and its special construction method not to mention the traditional materials which is mostly not conforming to the present standards regarding human needs of comfort and safety;

2- Conservation requirements, as rehabilitation or maintenance of a historical building is guided by the established conservation principles and charters that require a careful protection for all components and historical features (Webb, 2017)

Furthermore, the detection of archeological features involves a challenging design decision, especially when handling elements with distinct historical identity. From one side, it may lead to a variation of the historical conventional building image, while from another side; these findings are indeed a part of the building historical chronology. Hereby, multiple behaviors are met; this matter has led to this research in order to analyze the validity of exposing archeological features from a social point of view.

On the other hand, the menacing risks, including vandalism have led heritage buildings and archeological features to be subject of controversial design decision. The design solution does not simply respond to the users' needs, as it is extendable in order to respond to the risk occurrence and mostly likely vandalism when handling archeology. (KUZUCUOGLU, 2009)

2. LITERATURE REVIEW

2.1. Building Archeology

Archeological activities generally occur as an integral part of historical site assessment. The process usually lead to scientific findings, which can be grouped into four main types: artifacts, ecofacts, structures and features associated with historical activities.

Artifacts are removable materials remains; they represent a product coming from a specific time and culture, while ecofacts may be organic materials that represent an evidence for a particular human activity. (Freeman Jr, 2017) Archeological ruins or structures are almost everywhere. They may form a part of an ancient temple belonging to an obsolete religion; they may be remains that result from a residential or a military construction on whatever previous function they had. They always form a part of our culture and they keep attracting visitors and researchers, no matter what aesthetic state they have.

On the other hand, preserving archeological elements will always require to add or to perform a certain consolidation or treatment, which will eventually alter their authenticity. After all, a preservation will eventually lead to a certain loss of authenticity. Thereby, following a conservation process, the resulting monument will not acquire an objective satisfaction from all the specialists; however, it will certainly maintain a crucial cultural message as it tells a part of history. (Ashurst, 2007)

On the other hand, the objective of conservation, was it handling either a building or an archeological asset, is to establish a connection between our present and the memory of human existence. In recent times, such behavior is no more limited to the concrete behavior as per materials and restoration process; it is however extended into a more value-based approach aiming to assign the historical elements a modern socio-cultural value. (Demas, 2013)

Therefore, the role of archeological findings, whether inside or outside the building, is subject to the cultural identity it represents. Furthermore, the potential risks represent a crucial variable that inflicts the design decision; traditionally, the best fitting choice is the reburial due to its minimal implication and the maximum protection against all potential risks with minimum financial implication.

2.2. Risk Assessment

Risk management is an administration procedure that involves the definition of risks by carrying out a framework assessment, and finally concluding risk determination, risk analysis, evaluation of risks, threat and monitor. (Dionne, 2013) Heritage managers are generally responsible to prioritize and make choices about how best to benefit the available resources in order to defend buildings, monuments, collections and sites. This involves, for instance, the duty to decide among options such as improving security against vandalism, improving building physical state in order to reduce water leaks, configuring proper ventilation systems in storage areas, handling pest problems, installing fire alarm systems, applying disaster preparedness and response plans, building convenient storage spaces, intensifying conservation and restoration treatments, etc. (Fan & Stevenson, 2018)

Risk assessment can involve better decisions about the preservation and use of cultural heritage. It allows studying all risks compared to each other in order to conclude priorities and better plan our resources. Risks are definable as the probability of an incident to occur knowing that this particular incident may have a negative impact on our objectives. (Aven & Renn, 2010) The same concept of risk is applicable to cultural heritage. The effect of risks is hereby expressible in terms of the probable damage causing the loss of value to the heritage asset. Cultural heritage is subject to catastrophic events such as major earthquakes, armed conflicts, fires, flood … On the other hand, gradual and cumulative risks are considerable such as biological degradation. The result is the loss of value to the heritage asset. (Fan & Stevenson, 2018)

From a qualitative perspective, the calculation of risk likelihood is achievable through various calculation methods; it depends to the risk nature and its level of complexity. A simple formula is advisable for heritage managers; it helps to estimate, compare, and connect the magnitude of risks to cultural heritage. It consists of numeric scales (named the ABC scales) used to quantify the rate of occurrence and the probable influence resulting from the risk. (Pedersoli Jr., 2016)

2.3. Vandalism: Types and Domains

Vandalism is to harm or destroy an object or a property with or without a previous planning. It is an annoying act affecting buildings; it may include for instance, breaking glass, graffiti disfiguring; it may also involve damaging equipment and artifacts (Horowitz & Tobaly, 2003). On a sociological level, Stanley Cohen has categorized seven types of vandalism:
- The acquisitive vandalism, where the destructive action aims for theft
- Peer pressure, as teens tend to imitate a defying behavior or even to compete for the most aggressive activity, which is more likely to represent a cool and a revolutionary character.
- Tactical vandalism, where looters make harmful activities in order to be arrested and imprisoned.
- Ideological vandalism is carried on in order to represent an opinion as to reject and oppose a political or a religious entity.
- Vindictive vandalism as to revenge someone or some moral entity.
- Play vandalism, which results from simple children play

- Malicious vandalism, it generally aims to diffuse frustration and terror for political or other reasons. (Long & Burke, 2015)

The most vulnerable places are public spaces or the private properties that are exposed to public access or being open to public view. Properties with no specified management scheme, vacant places that seem to be not properly defendable are susceptible for vandalism (Scott, LaVigne, & Palmer, 2007).

2.4. Vandalism and Archeology

When committing vandalism to archeological sites, mostly in the case where location includes transportable objects such as pottery, stone ornaments or even burials, sabotage most probable motivation is to deliberately loot in order to sell the acquired objects in the black market. (Davis, Russel, & Osborn, 1992) Such an activity usually involves a destructive excavation in order to spot and extract artifacts. An improvement for public education is highly recognized as a key treatment for vandalism as it urges community to recognize its cultural asset and consequently to improve the public involvement. (Pybum, 2007)

Political conflicts and social unrest are associated to vandalism activities regarding heritage buildings, and mostly archeological sites. A parallel phenomena is associated to the situations involving conflict of values where unfortunate consequence are met as a result of social and cultural disagreement, where historic buildings or archeological sites do not represent a conventional social value. (Debono, 2001)

However, the traditional management for archeological sites is associated to the reburial choice; this decision represents an economic and simple solution in order to achieve a physical preservation. It is notable that this practice seems to be regressive, as it is associated to the total obsolescence for archeology rather than playing the theoretical role as a cultural memory. (Demas, "Site unseen": the case for reburial of archeologial sites, 2004)

3. RESEARCH METHODOLOGY

The subject of study is an archeological structure that was recently discovered beneath a religious historic building. The structure is most probably the ruins of an ancient unknown chapel dating to the eleventh century, while the upper building is a relevant Mameluke mosque. (Hashem, 2020) The site is a first in Lebanon, as it will contain the first Islamic prayer hall with a glass ground and an archeological structure belonging to another belief.

On the other hand, traditional solutions tend to rebury the findings in similar cases; this issue represents a challenging case due to the ambiguity regarding the social influence facing such an architectural composition.

Furthermore, most technical threats can be handled due to the modern and sophisticated tools as met in similar cases. The risk of vandalism, however, is mostly related to the human factors (visitors, users, building responsible …) especially with the unclear attitude to expect toward the case.

The aim of research is to assess the vandalism risk probability using the "ABC" method as a framework. The vandalism occurrence is quantifiable through assessing the social attitude for specific groups regarding the subject using a focus group study that may open doors for future quantitative studies.

3.1. Framework of Study

The risk assessment can be performed using the ABC scale as prescribed in the ICCROM manual where: MR= A+B+C

MR is the magnitude of risk

A represents how often or how probable is the risk

B represents how much is the fraction of value lost when the object is affected

C represents how much the percentage of the object is subject to the risk

Table 1: The A, B & C Scoring - Source ICCROM Manual, 2016

	A- Score	B- Score		C-Score	
	How often does the event occur? How many years for the accumulation of a certain level of damage?	fraction of value lost in each affected item		percentage of value of the heritage asset	
5	~ 1 year	100%	Total or almost total loss of value in each affected item	100%	All or most of the heritage asset value is affected
4 1/2	~ 3 years	30%		30%	
4	~ 10 years	10%	Large loss of value in each affected item	10%	A large fraction of the heritage asset value is affected
3 1/2	~ 30 years	3%		3%	
3	~ 100 years	1%	Small loss of value in each affected item	1%	A small fraction of the heritage asset value is affected
2 1/2	~ 300 years	0.30%		0.30%	
2	~ 1 000 years	0.10%	Tiny loss of value in each affected item	0.10%	A tiny fraction of the heritage asset value is affected
1 1/2	~ 3 000 years	0.03%		0.03%	
1	~ 10 000 years	0.01%	Trace loss of value in each affected item	0.01%	A trace fraction of the heritage asset value is affected
1/2	~ 30 000 years	0.00%		0.00%	

The vandalism risk assessment will be associated to a particular value to be extracted from the three variables within the "ABC" method:

(A) scoring: it is the occurrence probability, the highest score is 5 which is conform to a probability of occurrence within one year; the lowest score is ½ which is related to an event that is less probable to occur, as a volcano eruption for example in 30000 years.

(B) Scoring: it tells about the fraction of value lost, the highest score is 5 which is conform to a 100% loss; the lowest score is ½ which is related to a loss of 0.003%

(C) Scoring: it tells about the percentage of the asset which is subject to the risk, the highest score is 5 which is conform to a 100% loss; the lowest score is ½ which is related to a loss of 0.003%

(MR) stands for the magnitude of risk as it results from the three components A, B, and C.

The concept of this assessment is to highlight the probability of occurrence, the percentage of loss in relation to the risk and the amount of the object affected by the risk.

The resulting score will vary from 1.5 to 15. Scores starting from 9.5 will show a high risk; the risk is hereby ascending until it reaches a catastrophic priority when the score is 15.

This would be the ultimate risky case when the threat is very probable to occur and its impact would affect the total object and eventually lead to a total harm.

The probable loss of value to the heritage element for each MR value is shown in the last column of the below table. By bearing in mind these results, the level of risk is from now on determinable. All threats can be subject of analysis and assessment; thereby the probability of occurrence, the damage and the extents of the damage are all quantifiable depending to the site conditions and the resulting data. For instance, some references may accept a loss of value to the entire heritage asset that is equal or smaller than 1% in every 1 000 years (which is equivalent to 0.1% in every 100 years). This means that risks of MR

≤ 10 are acceptable, whereas those of MR > 10 are not acceptable. Other stakeholders may think differently about the level of risk that is acceptable for the heritage assets under their responsibility.

Table 2: Magnitude of Risk values resulting from ABC method, Source: ICCROM Manual, 2016

Level of priority	MR	Expected loss of value to the heritage asset
13½ - 15 Catastrophic priority All or most of the heritage asset valueis likely to be lost in a few years.	15	100% in 1 year
	14½	30% per year
	14	10% per year = 100% in 10 years
	13½	3% per year = 30% every 10 years
11½ - 13 Extreme priority Significant damage to all the heritage asset, or total loss of a significant fraction of the heritage asset, is possible in approximately one decade. All or most of the heritage asset value can be lost in one century	13	10% every 10 years = 100% in 100 years
	12 ½	3% every 10 years = 30% every 100 years
	12	1% every 10 years = 10% every 100 years
	11½	0.3% every 10 years = 3% every 100 years
9½ - 11 High priority Significant loss of value to a small fraction of the heritage asset, or a small loss of value in most or a significant fraction of the heritage asset is likely in one century.	11	1% every 100 years
	10½	0.3% every 100 years
	10	0.1% every 100 years = 1% every 1 000 years
	9½	0.03% every 100 years = 0.3% every 1 000 years
7½ - 9 Medium priority Small damage or loss of value to the heritage asset over manycenturies. Significant loss to a significant fraction of the heritage asset over many millennia.	9	0.1% every 1 000 years = 1% every 10 000 years
	8½	
	8	0.01% every 1 000 years = 0.1% every 10 000 years
	7½	
7 and below Low priority Minimal or insignificant damageor loss of value to the heritage asset over many millennia.	7	0.001% every 1 000 years =0.01% every 10 000 years
	6½	
	6	0.0001% every 1 000 years = 0.001% every 10 000 years
	5½	
	5	0.00001% every 1 000 years = 0.0001% every 10 000 years

In the case of our study, we will determine MR value using selected quantitative methods and an analysis will occur in order to evaluate the result in the term of the ability to preserve the object. We propose to handle a particular threat – vandalism – due to the singularity of the archeological feature and its site conditions. The social attitude facing the subject of study will represent a suitable indicator to vandalism risk magnitude, due to the various challenges facing archeological and restoration activities.

3.2. Application: Al-Attar Mosque
3.2.1. Location of monument

Fig.1: General location of Tripoli city - North Lebanon

Al-Attar Mosque is located in North Lebanon, Tripoli City. Integrated in the old city, the mosque lies north of the citadel of Tripoli, on the left bank of *Abu Ali* river, it is located in the *Tarbi'a* area, Lot no. 1, *Hadid* district, at an elevation from sea level of approximately 22m.

It is closely surrounded by Souks, Khans, *Hammams* and residential buildings. The mosque has three entrances, where the main east entrance leads to *Souk Al-Bazerkan*, the west entrance leads to *Zoukak AL-Tarbi'aa* and the west entrance leads to *Khan Al-Shawish*.
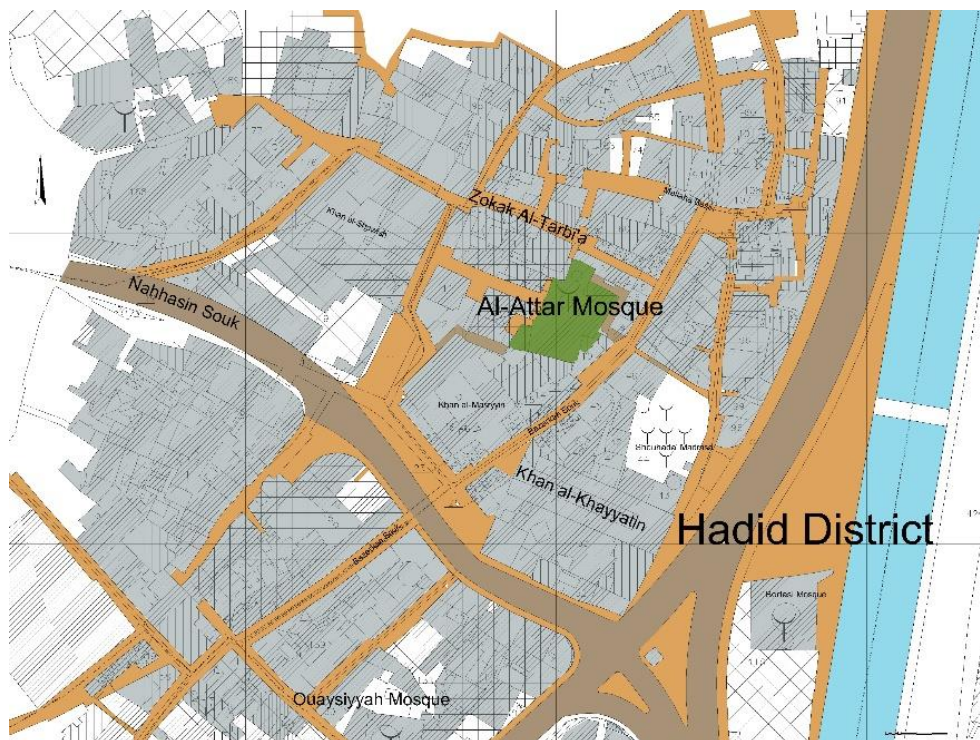

Fig.2: Location of the Attar Mosque, and its surroundings in Tripoli Lebanon

3.2.2. Historical overview

Al- Attar mosque had always attracted researchers and historians due its unique features.

For instance, its architecture typology represents several unique components holding the marks of several historical periods not to mention the local stories, and one sole inscription found in the mosque promoting the founder of the early Mameluke monuments along with the indigenous stories about the underlying ancient temples.

Religious scholars' documents assure that the building was holding an important cultural value during seventeenth century.

Ancient historical references had mentioned major earthquakes in mid eighteenth century and during the first world war, however no relevant documentation can be found; but it is certain that these events had led to restoration projects and eventually modifying the architectural aspect. (Salam-Liebich, 1983)

The monument was subject of a historical study in 2008; the author tried to clarify the vagueness met when analyzing the architectural identity in addition to the contradictory historical reviews regarding a possible underlying ancient crusade church

The controversial historical timeline may be dating to an unexpected era; the various scholars' explanation had never answered the ambiguity met when reading the monuments components; actually, an archeological reading was never performed before, which has always led to more questions regarding the monument's age and morphology. (Kuhn, 2008)

3.2.3. Description of the mosque

The mosque has a rectangular shape, oriented North-South, with a deviation of 12 degrees to the South-West direction.
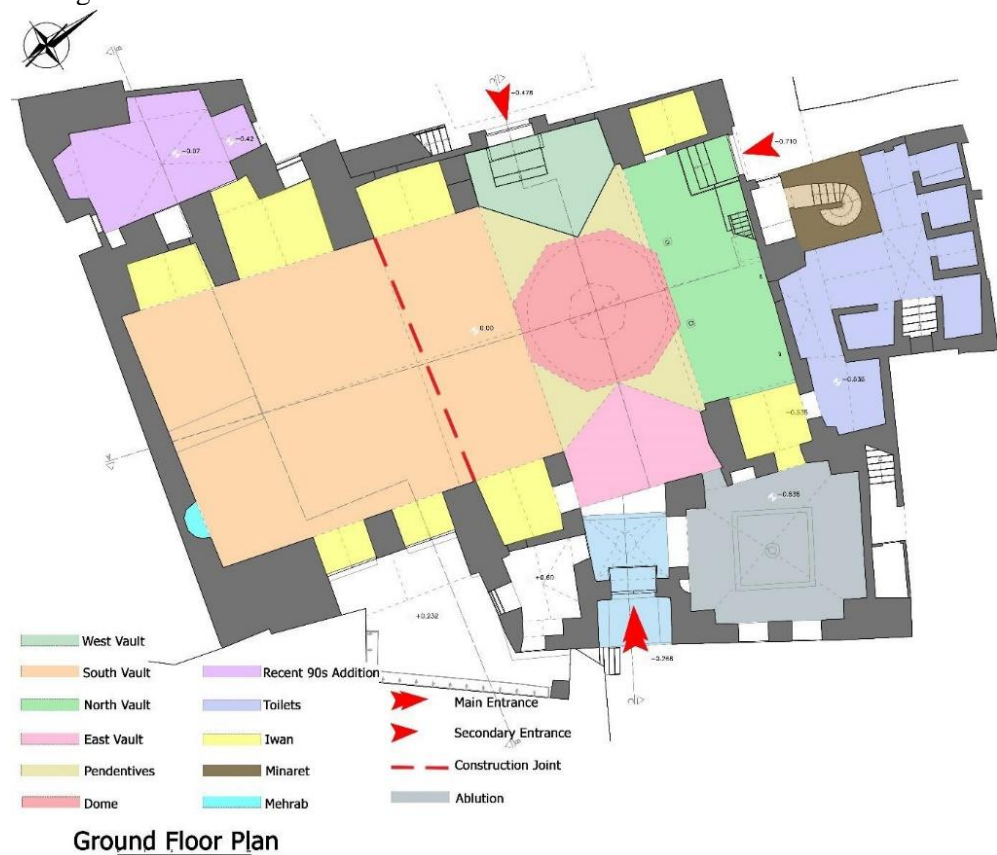

Fig.3: Ground Floor Plan of Attar mosque. Display of its different architectural elements – Ref. Eng. Ghina Sbalbal

The main prayer hall consisting of barrel vaults, dome and iwans, occupies an area of approximately 400 m2 (25 x 16m). Adding general facilities areas such as toilets located North of the mosque, an ablution room located East of the mosque and adjacent to the East entrance, as well as an open space area, result in a total area of the mosque of 600 m2.

The structure of the mosque consists of pointed barrel vaults, built in a cross shape, having a dome at their crossing, which is a unique prototype in Tripoli. (Salam-Liebich, 1983)

Fig.4: Al-Attar Mosque – Ref: Hazem Aysh

3.2.4. Archeological features

In partnership with the General Directorate of Antiquities, an archeological excavation in the mosque was conducted. Noting that, the *Attar* mosque is the first mosque in Lebanon that has underwent a scientific excavation, and embodies an archeological site in its premises. The archeological excavation was launched primarily due to a structural necessity to unveil the foundations of the structures in the investigation phase, given the structural problems encountered. (Hashem, 2020)
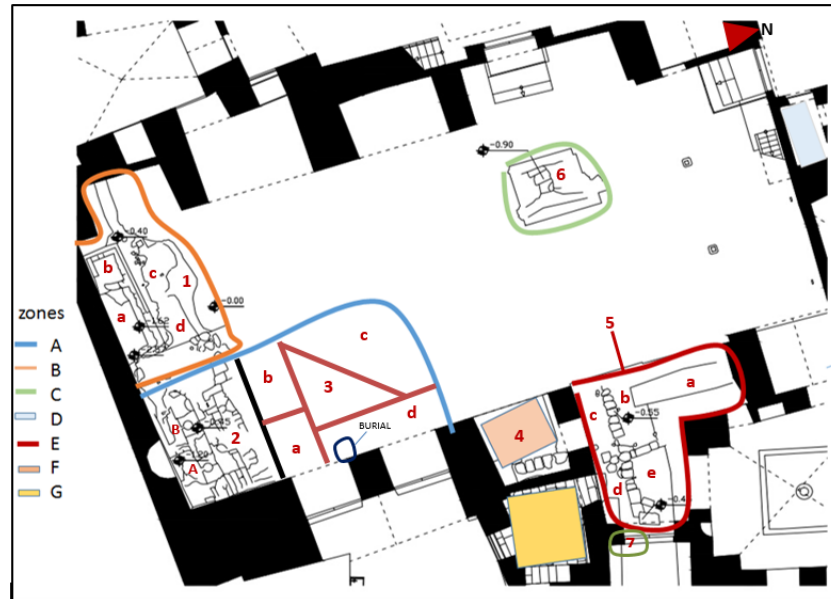
Fig.5: Al-Attar mosque main hall layout showing the archeological
elements distribution - Ref. Archeologist Alia Fares

The excavations have involved almost 40% of total praying area; the results are in form of inventory describing the removable findings as in similar archeological expeditions. However, the scientific expedition has discovered unexpected architectural features that were buried beneath the conventional ground level at the prayer hall. The discovery has acquired an ascending attention due to its unconventional typology and mostly its probable implication regarding the local and regional history.

The findings have swiftly acquired multidisciplinary values in terms of location, scale and construction methodology. However, location itself represents a controversial research subject especially when considering that these findings are not removable and their structural formation is in connection to an extended structure that remains in veil at the moment.

Fig.6: An archeological feature that was discovered in Zone AB - Reference: Archeologist
Alia Fares

It is hereby acknowledgeable that these findings will require additional readings and further analysis on various scale, in the future. In similar sites, studies have lasted for years and maybe decades depending to the complexity of the discovery. On the other hand, the architectural context will maintain the original religious function, and the available period for analysis will never conform for the scientific requirements.

For these reasons, the architectural solution will involve a security glass capping that allows access for studying and reading when needed, while the functionality at the prayer level will not be affected. Therefore, religious rituals will be performed on a glass platform, which will represent a new type of scenery within a historical religious building in Tripoli.

Fig.7: The resulting scenery when keeping the archeological elements exposed – Ref. Hazem Aysh

This solution will represent a revolutionary internal space within a mosque in order to safeguard some ancient remains that may belong to others civilizations. The scientific and cultural benefit is highly appreciable; however, the attitude of visitors and worshippers facing a first time experience in the historic city is fearsome.

The risk of vandalism is highly considerable in the current situation; thereby, a qualitative research is recommendable in order to assess the risk form an expert point of view.

3.3. Research Method: Focus Group

The current state of the site, in addition to the general circumstances in the country, makes it impossible to communicate with the neighboring society in terms of survey or any similar assessment method. For this reason, it is recommendable to launch a focus group that will elaborate a primary expertise reading for vandalism occurrence probability.

The focus group is to be initiated among various specialties and backgrounds that all correlate to the studied subject. The current method does not target a statically illustrative sample of a wider population. A quantitative assessment may emphasize the outcomes at later stages, yet this phase will represent an explorative process that leads to experts' insights regarding vandalism occurrence risk for archeological features in *Attar* historical mosque in Tripoli. The vandalism risk is quantifiable using the "ABC" method and the risk magnitude will be graded. In this research, the MR is deductible through experts' insights resulting from a focus group.

3.3.1. In-depth questions / discussion headlines

A serious of questions or discussion topics can shed light over archeological features and vandalism risk in relation to the various phases of occurrence. The resulting debate will not only answer the topic, it would also open new perspectives based on the variety of participants' background.

a- Can we consider that archeological features represent an additional value of an asset regarding the monument's importance?

b- Are there any actions that may enhance the image of the proposed solution? Will it be leading to minimize the threats coming from people's refusal?

c- Having a feature with archeological value in a prayer space that is operational; does allow a sufficient protection against tourists' vandalism?

d- A suitable legislation could it handle the exposed archeological features in order to preserve and encourage similar experience?

e- After recognizing the site's components, is it possible that an exposed archeological feature will represent a provocation for particular social / ethnic / religious groups?

f- In case all possible protection measures are followed, what is the occurrence rate of vandalism? Certain, probable, not likely?

3.3.2. Group formation: historians and heritage workers

The participants are preferred with an academic background in relation to history, heritage or archeology; their enthusiasm for historical exploration along with their expertise will lead to procuring a logical perspective concerning the topic.

The group consists of six persons: two historians, two urbanists, one restorator and one archeologist. The session was held on Saturday, fourth of December 2021 at 2 pm using zoom meetings.

Most of the points were subject of discussion and variable insights. However, the outcomes are deductible as follows:

- The archeological features represent a recognizable historic and cultural value
- A great attention should be paid to the religious building itself in order to preserve the singularity of a living site that includes archeological features.
- The functionality of the religious building could represent an obstacle when trying to expose the beneath layers as in question.
- Historical records do not represent encouraging results for proper management; yet cultural awareness is the best protector for this feature and any similar cases.
- The proposed design is a new technique that may represent a sort of pride and recognition for society; a comparable experience was traceable in *Mansouri* mosque.
- The current case could represent an opportunity to restore the original nature of the religious building as an extravert facility
- We are facing a first time trial regarding archeological features; therefore, it is important to seize this opportunity as it may open new doors in the future.

In order to summarize the results, attendants were asked to estimate the vandalism risk based on their own opinion; a certain threat can relate to a grade A=5, a probable threat could represent A=2.5 and a not likely threat is combined to a grade A= ½ (ABC method)

"B" and "C" grades represent the percentage of the loss and the amount of the affected parts among the features; in this section, these variables are assigned to maximum grade due to the nature of the item itself regarding vandalism.

Among the six attendants, three have assumed a certain threat, one have voted for a probable occurrence and two attendants believed that the threat is not likely to occur.

The resulting average "A" score would be: 5+5+5+2.5+0.5+0.5= 18.5 / 6 = 3.1

Table 3: Showing the vandalism occurrence probability as seen by the group members

	Vandalism occurrence probability		
	Certain	Probable	Not likely
Participant 1		×	
Participant 2	×		
Participant 3			×
Participant 4			×
Participant 5	×		
Participant 6	×		

The risk magnitude MR is assumable as A+B+C = 3.1+5+5= 13.1
The result flags a catastrophic priority as read by the group.

4. RESULTS READING AND DISCUSSION

Even though, the discussion has involved an estimation to the risk magnitude, the focus group does not involve conclusive quantitative results; however, it represents important indices in contribution to answering the main research questions. The outcomes can also represent a convenient basis for further investigation in latter phases, as a critical vandalism threat is highly predictable.

On the other hand, participants have all recognized the value of the archeological features in terms of historical or cultural perspective; this outcome highlights the validity of the research regarding various disciplines, and consequently the importance of the risk analysis as a milestone to be procured prior to the implementation phase.

In this regard, the research has shed light over several threats and opportunities in relation to the archeological features, the building's functionality and the social impact; the vandalism risk magnitude is estimated at a critical level; yet, various measures are deductible in order to serve for a less risk situation.

5. CONCLUSION

The focus group has shown that the integration of archeological features within a heritage religious building represents a recognizable asset for heritage and history workers. However, acquiring a comprehensive analysis for vandalism risk assessment would involve additional discussion within prospective focus groups of parallel specialties. A quantitative evaluation will eventually emerge at a later stage basing on the in-depth outcomes.

In this study, we have concluded a critical vandalism risk magnitude for archeological exposed features in *Attar* mosque in Tripoli, due to multiple social and administrative factors; this outcome will certainly introduce the potential threats sources and will consequently induce controversial fields that will initiate multidisciplinary research subjects.

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