

Official Awareness of Tourism Carrying Capacity Dimensions in the Fayoum Destination's Natural Heritage Sites (Case of the Valley of Whales)

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The Fayoum destination in Egypt entertains natural heritage as rich as its cultural heritage. Apparently, the increasing tourist demand on the natural heritage sites worldwide is causing a devastating impact on the environment. This case study aims to evaluate the official awareness of tourism carrying capacity (TCC) concept among the destination management stakeholders who are planning and directing the Valley of Whales as a natural heritage site in Fayoum. The site suffers from the lack of conservation and the absence of awareness in the site management. A critical review of literature on the concept of carrying capacity and its dimensions has been analyzed to attain specific criteria. More than 28 semi-structured interviews with the official employees who are in charge for managing the Valley of Whales and a direct observation check list collected rich data for qualitative analysis. The paper concludes that the absence of TCC dimensions between the planners and employees of natural heritage sites in the Fayoum in general and the Valley of Whales in specific will expose these sites to severe damage. Wise decisions have to be taken as fast as possible by the Fayoum destination management in terms of legislations, official staff training, and environmental awareness.

KEYWORDS: Tourism Carrying Capacity (TCC), Natural Areas, Environmental Dimensions, Natural heritage, Sustainable tourism development.

INTRODUCTION

The Valley of Whales situated in the Western Desert 150 km southwest of Cairo and 80 km west of Fayoum in the extreme north western limit of Wadi Rayan Protected Area (fig. 54). It is located between 29° 15' 13" to 29° 23' 56"N by 30° 00' 41" to 30° 10' 06 E (UNEP and WCMC, 2005).

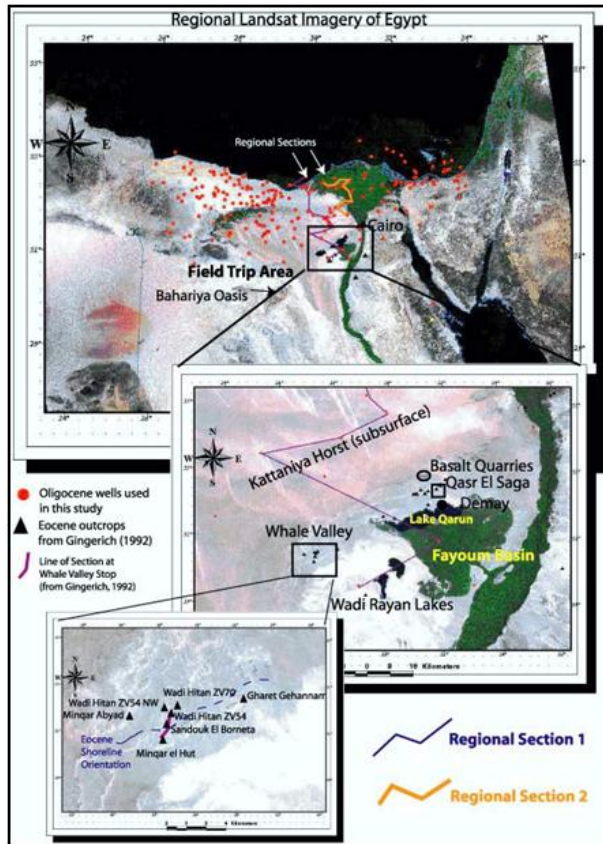


FIGURE 1. Regional Landsite with Location of the Fayoum Basin, Regional Sections and Detailed Cross Section of the Whale Valley Stop (Dolson et al, 2002:8).

“There is another even more ancient Egypt that is known to very few people” said Iskander (2007: 15) while she is explaining the paleontological importance of the Valley of Whales. While Dolson et al (2002a) emphasizes that the Fayoum Basin contains some of the best preserved paleontological sites in the world. The Eocene whales have been studied since the late 1800’s. The Valley of Whales site is considered an extraordinary open-air museum containing over 407 known whale skeletons, with 3 different varieties of whales known. The site is unique in the world and has the richest collection of ancient whales located in any one paleontological site. The Site, when compared with the rich Oligocene paleontological sites, is equivalent in significance to the Dinosaur National Monument (Colorado), Drumheller (Alberta, Canada), Friends of Dinosaur Ridge track site (Denver, Colorado) and Dinosaur Journey trail (Grand Junction, Colorado). More significantly, none of these sites contains the rich archaeological heritage of the Fayoum basin that is spread throughout the geological exposures.

The Valley of Whales official management is suffering from the lack of TCC dimensions’ awareness. Towards a clear understanding for the research problem, direct observation analysis helped to figure out the following issues:

1. Physical - Ecological problems:

- The clear absence of shark teeth in the Valley due to fossils’ collectors.
- Whale specimens are not protected; they could be easily touched or hold by visitors.

2. Administrative problems:

- Tourists who are visiting the site are never accompanied by rangers, therefore, fossil remains can be easily plundered.

3. Economic, socio-cultural and psychological problems:

- In the waterfalls area, local people are selling shark teeth to tourists to earn some money.

This reflects how serious the lack of TCC official and local awareness is; despite the fact that the site is a world-importance and has to be preserved in a better way.

The Fayoum Destination in Egypt Heritage Resources

The Fayoum destination is an oasis that locates in the Western Desert of Egypt, about 96 km southwest of Cairo, between latitude 29° and 29 45 N., and between longitude 30 and 31 E. (Boak, 1926). The destination is a natural depression covering some 12,000 square kilometers, with extremely unique features to its environmental and natural assets (Van Zon & Jeans, 1992).

The Fayoum region owes its existence to Bahr Yusuf canal which links the Nile to the Fayoum depression. The water runs through an elaborate irrigation system, a series of minor canals, ending in Lake Qarun in the north and in the more recently-created overflow basin, Wadi Rayan. The Fayoum governorate has three characteristic landscapes: the rural centre, the surrounding desert, and the shores of Wadi Rayan and Qarun lakes (NSCE, 2004).

Historically, the Fayoum has played an essential role in every culture that has swept through Egypt from the Pharaohs to the Greeks and Romans to the Coptic Christians and finally the Muslim Arabs. The Egyptians began to take an interest in the Fayoum as far back as the prehistoric and Predynastic period (Siliotti, 2003).

Environmentally, the Fayoum has also an outstanding flora and fauna. Birds are the most visible wildlife in the Fayoum. The area is a birdwatchers' paradise. The shores of Lake Qarun and the Wadi Rayan lakes have been distinguished by Birdlife International as an Important Bird Area. These sites are globally important for wintering water birds. Birds can be found almost everywhere in and around the lakes (NSCE, 2004). Moreover, the Fayoum is the most populated, fertile and productive oasis in the Western Desert. It has a thriving handicraft industry that reflects the ecological diversity and abundance of the region. For example, potters, who follow the traditional methods of the ancient Egyptians, can be seen as well as young artists who have begun to develop modern-day artistic pottery reflecting rural scenes (NSCE, 2004).

Geologically, the Greater Fayoum Basin holds a rich heritage of paleontological, archaeological and geological exposures. The Valley of Whale and Gebel Qattrany vertebrate fossil sites are among the most important fossil areas in the world. They are being evaluated as potential UNESCO natural world heritage site (Dolson, et al. 2002). The spectacular Fayoum desert is one of the main reasons visitors come to the

Fayoum. The combination of stunning desert landscape and proximity to Cairo makes it an attractive destination preferred even by expatriates who are living in the nearby capital, Cairo (NSCE, 2003).

The Major Natural Heritage Sites in the Fayoum Destination

The natural heritage assets of a destination spot the environmental framework within which the tourist enjoys the destination. They are considered, along with the cultural heritage assets, the principal motivation for any destination appeal, however in the tourism context; they have a substantial capacity to attract tourists, regardless of any value added by service providers (Dwyer and Kim, 2003). The Fayoum destination is considered one of the richest Egyptian governorates in terms of natural heritage sites due to the variety of landscapes and can be widely used to create various activities for Ecotourism. Due to the abundance of these assets, two areas have been declared as protectorates: Qarun Lake and Wadi Rayan. The fertility of the region and variety of landscapes, from the geology to rural life and handicrafts to flora and fauna and finally deserts, lakes and natural springs are considered the major comparative advantage of the Fayoum region.

The natural heritage assets of the Fayoum destination are plentiful and can produce excellent ecotourist experience through many superb ecotourism activities. These assets could be easily grouped into the following categories:

1. Geology and paleontology;
2. Deserts and hills;
3. Rural life and handicrafts;
4. Flora and fauna;
5. Lakes and waterways; and
6. Natural springs.

Valley of Whales Site Management

Today, the Valley of Whales has been converted into a protected area directed by the Egyptian Environmental Affairs Agency (EEAA) with in-depth collaboration with the Italian-Egyptian cooperative program. Other

major internal stakeholders sharing the site management are the Fayoum Tourist Authority (FTA) and Fayoum Tourism Development Authority (FTDA). The valley has also been enrolled in UNESCO's World Heritage List in July 2005 for its unique natural beauty and scientific importance which is considered an important step towards its conservation (Iskander, 2007). The paper aims to evaluate whether the following three major internal stakeholders aware of the TCC dimension when planning and managing the Valley of Whales heritage site or not?

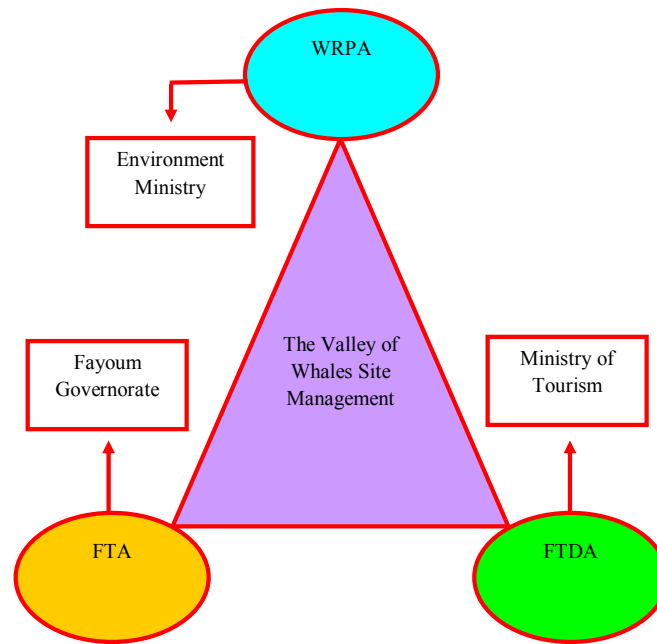


FIGURE 2. The Valley of the Whales Site Planners.

CARRYING CAPACITY AND SUSTAINABILITY CONCEPTS

The paper aims to contribute to the understanding of the concept of Carrying capacity, its practical analysis and measurements, and its efficient application on the Valley of Whales as a natural heritage site in the Fayoum, Egypt. It displays the strong ties with sustainable development which is clear in the mutual principles and similar definitions.

The true application of the concept of sustainable development is really a call for the recognition and acceptance of capacity limits in a different guise (Coccosis; and Mexa, 2004). The wellbeing of future generations can only be ensured if this generation leaves the environment in a fit state to sustain itself (Chopeer, 1998; Haris et al, 2002; and Clivaz, 2004).

The definitions of the two concepts have much in common. Sustainable development involves “*meeting the needs of the present without negatively affecting the needs of future generations*” (WCED, 1987), while the varying definitions of carrying capacity in recreation and tourism generally contain the concept of:

“limits of use to which an area can be put before there is significant and appreciable decline in both the quality of the resource and the quality of the experience for the user”.

Early attempts in the field of tourism planning at identifying the carrying capacity of a destination as: “areas were preoccupied with trying to quantitatively determine the number of tourists that could be accommodated in an area”.

Hovinen (1982) defined it as “*the maximum number of visitors an area could accommodate without there being excessive deterioration of the environment or declining visitor satisfaction*”, a definition supported closely by Matheson and Wall (1982).

The world Tourism Organization (WTO) (1992: 23) defines carrying capacity as being:

“Fundamental to environmental protection and sustainable development. It refers to maximum use of any site without causing negative effects on the resources. Reducing visitor satisfaction. Or exerting adverse impact upon the society, economy and culture of the area. Carrying capacity limits can sometimes be difficult to quantify, but they are essential to planning for tourism and recreation”.

Similarly, Mathiesom and wall (1982: 21) state:

“Carrying capacity is the maximum number of people who can use a site without an unacceptable alteration in the physical

environment and without an unacceptable decline in the quality of the experience gained by the visitors”.

Lack of Acceptance of Capacity Principles

There are a number of reasons for the abandonment of the idea of a specific capacity of a tourism site (European Tourism Destinations, 2001; Reinius; and fredman, 2007):

1. The realization that hardly can be a single definition which sensibly represents the maximum number of visitors who should visit a site over a particular period of time, as different types of users cause different types of impacts and have different preferences and expectations.
2. Tourism normally represents a form of free enterprise, of capitalism and competition, and where the resources and infrastructure are in private hands, the principle for government intervention and regulation is weaker.
3. The absence of clear responsibility for the quality of the resources of many destination areas all over the world (Butler, 1991).

Lack of National Official Awareness Regarding the Valley of Whales:

The Egyptian national biodiversity strategy (1997 - 2017) for the natural resources conservation was submitted in 1998. It includes a Nature Protection Policy which the government of Egypt has adopted for protecting the rare natural wealth and its unique biodiversity and to serve as the basis for achieving economic and social development, providing ecological balance and ensuring a better future for the citizens. This policy relies on the legal principle of implementing relevant legislation and international and regional agreements, in addition to raising ecological awareness.

The final report of this strategy includes legislative classification (categorization) of the Egyptian protected areas which were announced as a legal protected area by national legislation (decree or presidential decree) into four categories as follow:

1. Marine Protected Areas (5 areas): These protected areas include: Ras Mohammed Protected area, Nabq, and Abu-Galum in South Sinai Govern orate, and Wadi El Gemal in the Red Sea Governorate.
2. Wetland protected areas (8 areas) are: Zaranik in North Sinai Govern orate, Ashtum El Gamil in Port Said Govern orate, Omayed in Matrouh Govern orate, Lake Qarun and the Wadi El-Ravan in Fayoum Governorate, and Saluga and Ghazal Islands in Aswan Govern orate, in addition to 144 River Nile Islands.
3. Desert Protected Areas (7 areas): They are the Al-Ahrash protected areas found in North Sinal Governorate and Taba and St.Katherine in south Sinai Govern orate, Siwa oasis in Matrouh Governorate, White Desert in the New Valley Governorate, Wadi Asiuti in Assiut Governorate, and Wadi Allaqi in Aswan Governorate.
4. Geological Protected Areas (4 areas): They are: the Hassana Dome, the Petrified Forest, and Wadi digla in Cairo Govern orate, and Sannur Cave in Beni Sueif Governorate.

It is easily noticed that the Valley of Whales was not enrolled in the geological protected areas included in the Egyptian national biodiversity strategy (1997 - 2017) in spite the fact that the site is the only world natural heritage site identified by the UNESCO in Egypt in 2005.

TCC Dimensions

Apparently, tourism has got an effect on the environment; according to O'Reilly (1986) and Farrell (1992), there are at least four different dimensions of carrying capacity, economic, psychological, environmental and social carrying capacities as being of relevance to tourism. Holden (2000) asserts that the impacts of tourism in an area can be analyzed in terms of three major components forming the TCC dimensions including: physical-ecological; socio-demographic; and political-economic (Kovacic, 2007; Geneletti; and Duren, 2008).

Physical - Ecological Indicators

The physical-ecological components comprise all fixed and flexible components of the natural and cultural environment as well as infrastructure. The fixed components refer to the capacity of natural systems expressed occasionally as ecological capacity. They can not be manipulated easily by human action. The flexible components refer primarily to infrastructure systems. Environmental carrying capacity concerned with the extent and degree of impacts of tourism upon the physical environment (Patil, 2008 and Buckley, 2008).

1. Acceptable level of density (number of visitors) is determined using:
 - The extent of the useable area.
 - Usage nature.
 - Environmental features of the site.
 - Volume and type of required facilities.
 - Environmental management pattern.
 - Site Topography.
 - Ecological system sensitivity.
 - The maximum acceptable loss of natural resources.
 - Acceptable level of air, water and noise pollution.
 - Adequate availability of major facilities and services including: public health and safety, toilets, tickets, information desks, cafeteria, shops, lodging places, banks for both visitors and employees.
 - Availability and sufficiency of infrastructure in terms of roads, transportation, electricity, pure water supply, waste management system.
2. Services' future extension areas are clearly determined.
3. Construction methods and substances can easily be eliminated or replaced according to the future needs.

Administrative Indicators

1. Collaboration among governmental stakeholders to determine the suitable number of visitors.

2. Collaboration between public and private sector to determine the suitable number of visitors.
3. Site tourism development objectives are obviously set.
4. Infrastructure is maintained and renovated gradually.
5. Visitors' types are determined according to fixed administrative criteria.
6. Total area of the site is divided into specific zones to facilitate visitors' movement and activities practices.
7. Specific places have been determined for practicing different activities according to their nature.
8. There are fixed criteria to practice certain activities instead of prohibiting them.
9. Specific time limit of visitors' utilization of the site is determined either per day or per certain period.
10. The visitor is permitted to extend the time allowance of using part of the site in case he is banned of enjoying other part(s).
11. Site employees' number is relevant to the number of visitors.
12. There are gradual monitoring and evaluation system for the site status.
13. Correction procedures are adopted to overcome any emerging problems out of tourist activities.
14. Site management is dominated by experienced and knowledgeable administrative staff.
15. A clear and continuous capacity building system is adopted to enhance the employees' administrative capabilities.

Economic Indicators

The economic set refers to the impacts of tourism on local economic structure, activities, etc. Economic carrying capacity relates to the extent of dependency of the economy upon tourism (Holden, 2000).

1. Tourism activities' economic impact is considered when determining the number of visitors through:
 - The Tourism activities impact on the local income.
 - The Tourism activities impact on the new job opportunities provision.

- The Tourism activities impact on the local handicrafts development.
2. Tourist demand on the site is studied in terms of:
 - Market segments which represent the source of demand.
 - Different features of market segments.
 - The possibility of depending on specific segments.

Socio-cultural and Psychological Indicators

Psychological carrying capacity is reflected in the expressed level of visitor satisfaction associated with the destination. Social carrying capacity concerned with the reaction of the local community to tourism (Holden, 2000).

1. Tourist satisfaction in terms of the available services in the site is always evaluated.
2. Tourist behavior inside the site is always studied.
3. The balance between the number of visitors and the local community is considered.
4. An exclusive survey for the socio-cultural changes in the local community is always conducted.
5. Tourists' social impact is considered when determining the required number of tourists.
6. Preserving local community authenticity is considered when determining the number of visitors.

METHODOLOGY

This kind of qualitative case study research investigates the official awareness of TCC dimensions regarding the Valley of Whales natural heritage site. The data collection includes secondary data via analyzing documents, while, the primary data collection includes a semi-structured interview with the official employees who are in charge for managing the Valley of Whales (total 28 interviews), and direct observation checklist.

Relevant literature has been conducted on tourism carrying capacity and its appropriate dimensions for the Valley of Whales as a natural heritage site in order to determine the major indicators for an interview

issues. Direct observation checklist has been designed to evaluate the major issues regarding the TCC official awareness and to enhance the research validity and reliability through comparing the checklist outputs with other methods.

Semi-Structured interviews with the major internal stakeholders in charge of the Valley of Whales site management including:

- Wadi Rayan Protected Area Management (WRPA) (Manager, eight rangers, and two geologists).
- Fayoum Tourist Authority (FTA) Tourism Development Department Staff (head of department and 11 employees).
- Fayoum Tourism Development Authority (FTDA) (head of department and four employees).

Data, collected from interviews and observation, has been coded, classified, and analyzed.

FINDINGS AND DISCUSSION

1. Physical – Ecological Dimention

TABLE 2. Major Findings of the Physical - Ecological Dimension Indicators.

Indicators	Findings
Acceptable level of density (number of visitors) is determined using:	
1. The extent of the useable area by visitors.	Neither FTA nor FTDA are considering this factor when managing the site. The same is WRPA management; however they would consider it when they receive larger number of visitors.
2. Site usage type and nature.	The fragile nature of WV is never considered when planning and managing the site by all stakeholders.
3. Volume and type of required facilities.	Stakeholders do not put this indicator in mind when determining the site density.
4. Environmental management system.	The site is a part from WRPA. It is run by 10 employees divided into 2 shifts of five. Two rangers and one geologist (from PA) are in charge of preserving the whole site

TABLE 2. (Continued)

Indicators	Findings
	which is 25 square km. It is not enough at all to keep everything in order. There are no employees of FTA assist managing the site.
5. Site Topography.	It is not put in consideration at all in determining the number of visitors.
6. Ecological system sensitivity.	This factor is only considered by PA management but they don't rely on when determining the number of visitors.
7. The maximum acceptable loss of natural resources.	This factor is only considered by PA management but they don't rely on when determining the number of visitors.
8. Acceptable level of air, water and noise pollution.	This factor is only considered by PA management but they don't rely on when determining the number of visitors.
9. Adequate availability of major facilities and services including: public health and safety, toilets, tickets, information desks, cafeteria, shops, lodging places, banks for both visitors and employees.	There are adequate availability of major facilities but never considered a factor when determining the acceptable number of visitors.
10. Availability and sufficiency of infrastructure in terms of roads, transportation, electricity, pure water supply, waste management system.	<p>Infrastructure availability:</p> <ul style="list-style-type: none"> - 36 km track linking the WV with the nearest asphalt road of WRPA. - No gradual transportation is available. - Solar Panels are the main source of power. - Small plastic water tanks are transferred every three days to the site management for drinking. - Large tanks (from the Upper lake of WRPA) are transferred by tractors to the site for toilets. - Waste trenches are linked to the toilets and cleansed gradually. <p>Infrastructure Sufficiency:</p> <ul style="list-style-type: none"> - The track is suffering from uneven ground and the sand covering. - Solar panels sufficiency reduced due to the lack of maintenance.

Table 2. (Continued)

Indicators	Findings
	<ul style="list-style-type: none"> - There is no hygienic and sanitized system for transferring the large tanks. - The polluted water is affecting the water pipes and the tapes which have to be replaced gradually but there is no enough budgets for that. <p>This factor is not considered when determining the number of visitors.</p>
<ul style="list-style-type: none"> • Services' future extension areas are determined. 	There are planned future extensions for services including: camp sites, toilets and cafeteria.
<ul style="list-style-type: none"> • Construction methods and substances can be easily eliminated or replaced according to the future needs. 	The construction methods and substances can easily be eliminated or replaced.

2. ADMINISTRATIVE DIMENTION

TABLE 3. Major Findings of the Administrative Dimension Indicators.

Indicators	Findings
<ul style="list-style-type: none"> • Collaboration among governmental stakeholders to determine the suitable number of visitors. 	Absence of coordination between the responsible governmental stakeholders in terms of the administrative actions required to determine the number of visitors.
<ul style="list-style-type: none"> • Collaboration between public and private sector to determine the suitable number of visitors. 	Lack of collaboration between Public and private sector in determining the number of acceptable visitors except the Italian Cooperation and the Dutch Embassy projects as NGO and official foreign organization respectively.
<ul style="list-style-type: none"> • Site tourism development objectives are clearly set. 	There are many contradictions in the objectives of the related internal stakeholders. The most relevant and achievable are those of the PA management assisted by the Italian Project.

TABLE 3. (Continued)

Indicators	Findings
Infrastructure is maintained and renovated gradually.	There is a gradual maintenance for the infrastructure however restricted by the available budgets (e.g. there are no enough budgets for maintaining solar panels for power supply).
Total area of the site is divided into specific zones to facilitate visitors' movement and activities practices.	The area is divided into a number of zones for visitors and activities practicing.
Specific places have been determined for practicing different activities according to their nature.	Specific places have been determined for practicing different activities according to their nature (e.g. Camping areas).
Specific time limit of visitors' utilization of the site is determined either per day or per certain period.	Specific time limit of visitors' utilization of the site is determined either per day. There are three trails inside the WV site; 30 minutes, 1:30 hours, and 3 hours trails.
Site employees' number is relevant to the number of visitors.	The number of employees is very small in comparison to the number of guests. The small number of employees is due to the expensive cost of living of each employee in the desert.
There are gradual monitoring and evaluation system for the site status.	There is only a daily check up from the site rangers. However, there is no study for the tourist impact on the site gradually.
Correction procedures are adopted to overcome any emerging problems out of tourist activities.	There are enough adopted correction procedures to overcome any emerging problems out of tourist activities.
Site management is dominated by experienced and knowledgeable administrative staff.	Only the PA and FTDA management is experienced and knowledgeable which is not the case of FTA.
A clear and continuous capacity building system is adopted to enhance the employees' administrative capabilities.	There is a lack of a clear and continuous capacity building system to enhance the employees' administrative capabilities.

3. ECONOMIC DIMENTION

TABLE 4. Major Findings of the Economic Dimension Indicators.

Indicators	Findings
Tourism activities' economic impact is considered when determining the number of visitors through:	
The Tourism activities impact on the local income.	The Tourism activities impact on the local income is not considered when determining the number of visitors.
The Tourism activities impact on the new job opportunities provision.	The Tourism activities impact on the new job opportunities provision is not considered when determining the number of visitors (There are no studies investigating the economic impact on local community in the related stakeholders' entities at all).
The Tourism activities impact on the local handicrafts development.	There is a great interest towards reinforcing the impact of tourism activities on the local handicrafts development not only in this site but also in the whole Fayoum destination; however, it was never taken as a factor to determine the site visitation density.
Tourist demand on the site is studied in terms of:	
Market segments which represent the source of demand.	The prime responsibility of studying the tourist demand is only of FTA. Surprisingly, its management and employees have limited vision and a lack of a strategy to set the market segments.
Different features of market segments.	The prime responsibility of studying the tourist demand is only of FTA. Surprisingly, its management and employees have limited vision and a lack of a strategy to determine the features of market segments.
The possibility of depending on specific segments.	The prime responsibility of studying the tourist demand is only of FTA. Surprisingly, its management and employees have limited vision and a lack of a strategy to determine whether they could depend on specific market segments or not.

4. SOCIO-CULTURAL AND PSYCHOLOGICAL DIMENTION

TABLE 5. Major Findings of the Socio-cultural Dimension Indicators.

Indicators	Findings
<ul style="list-style-type: none"> • Tourist satisfaction in terms of the available services in the site is always evaluated. 	Tourist satisfaction in terms of the available services in the site is never evaluated. There is a lack of feedback, training forms and strategy.
<ul style="list-style-type: none"> • Tourist behavior inside the site is always studied. 	Tourist behavior inside the site is always watched and certain penalties' procedures are taken in case of causing any harm or breaking laws.
<ul style="list-style-type: none"> • The balance between the number of visitors and the local community is considered. 	The balance between the number of visitors and the local community is never considered or even studied.
<ul style="list-style-type: none"> • An exclusive survey for the socio-cultural changes in the local community is always conducted. 	There is an absence of surveys to cover any socio-cultural changes in the local community. The major trend is towards the ecological changes.
<ul style="list-style-type: none"> • Tourists' social impact is considered when determining the required number of tourists. 	Tourists' social impact is never considered when determining the required number of tourists.
<ul style="list-style-type: none"> • Preserving local community authenticity is considered when determining the number of visitors. 	Preserving local community authenticity is not considered when determining the number of visitors.

The study concluded that in terms of the physical - ecological dimension indicators, none of the following criteria have been used to determine the acceptable level of density (number of visitors):

1. The extent of the useable area by visitors.
2. Site usage type and nature.
3. Volume and type of required facilities.
4. Environmental management system.
5. Site Topography.

6. Ecological system sensitivity (This factor is only considered by PA management but they don't rely on when determining the number of visitors).
7. The maximum acceptable loss of natural resources (This factor is only considered by PA management but they don't rely on when determining the number of visitors).
8. Acceptable level of air, water and noise pollution (This factor is only considered by PA management but they don't rely on when determining the number of visitors).
9. Adequate availability of major facilities and services including: public health and safety, toilets, tickets, information desks, cafeteria, shops, lodging places, banks for both visitors and employees (there are adequate availability of major facilities but never considered a factor when determining the acceptable number of visitors).
10. Availability and sufficiency of infrastructure in terms of roads, transportation, electricity, pure water supply, waste management system.

However, there were two positive results towards adopting a physical – ecological TCC system including:

1. There are planned future extensions for services including: camp sites, toilets and cafeteria.
2. The construction methods and substances can easily be eliminated or replaced.

Regarding the administrative dimension indicators, the paper asserted the following obstacles:

1. Absence of coordination between the responsible governmental stakeholders in terms of the administrative actions required to determine the number of visitors.
2. Lack of collaboration between Public and private sector in determining the number of acceptable visitors except the Italian Cooperation and the Dutch Embassy projects as NGO and official foreign organization (The Dutch Embassy) respectively.

3. There are many contradictions in the objectives of the related internal stakeholders. The most relevant and achievable are those of the PA management assisted by the Italian Project.
4. There is a gradual maintenance for the infrastructure however restricted by the available budgets (e.g. there are not enough budgets for maintaining solar panels for power supply).
5. The number of employees is very small in comparison to the number of guests. The small number of employees is due to the expensive cost of living of each employee in the desert.
6. There is only a daily check up from the site rangers. However, there is no monitoring and evaluation system for the tourist impact on the site gradually.
7. The number of employees is very small in comparison to the number of guests. The small number of employees is due to the expensive cost of living of each employee in the desert.
8. Only the PA and FTDA management is experienced and knowledgeable which is not the case of FTA.
9. There is a lack of a clear and continuous capacity building system to enhance the employees' administrative capabilities.

However, there were some positive results towards adopting an administrative TCC system including:

1. The area is divided into a number of zones for visitors and activities practicing.
2. Specific places have been determined for practicing different activities according to their nature (e.g. Camping areas).
3. Specific time limit of visitors' utilization of the site is determined per day. There are three trails inside the WV site; 30 minutes, 1:30 hours, and 3 hours trails.
4. There are enough adopted correction procedures to overcome any emerging problems out of tourist activities.

Concerning the economic dimension indicators, the study confirmed that tourism activities' economic impact is never considered when determining the number of visitors in terms of:

1. Tourism impact on the local income.

2. Tourism impact on the new job opportunities provision (There are no studies investigating the economic impact on local community in the related stakeholders' entities at all).
3. Tourism impact on the local handicrafts development (there is a great interest towards reinforcing the impact of tourism activities on the local handicrafts development not only in this site but also in the whole Fayoum destination; however, it was never taken as a factor to determine the site visitation density).

Moreover, it is concluded that although the prime responsibility of studying the tourist demand is only of FTA, surprisingly, its management and employees have limited vision and a lack of strategy to analyze the tourist demand in terms of: market segments which represent the source of demand, different features of market segments, and the possibility of depending on specific segments.

In terms of the socio-cultural and psychological dimension indicators, the paper stated the following constraints:

1. Tourist satisfaction in terms of the available services in the site is never evaluated. There is a lack of feedback, training forms and strategy.
2. The balance between the number of visitors and the local community is never considered or even studied.
3. There is an absence of conducting surveys to cover any socio-cultural changes in the local community. The major trend is towards the ecological changes.
4. Tourists' social impact is never considered when determining the required number of tourists.
5. Preserving local community authenticity is not considered when determining the number of visitors.

However, there is one positive factors of socio-cultural and psychological TCC: Tourist behavior inside the site is always watched and certain penalties' procedures are taken in case of causing any harm or breaking laws.

CONCLUSION

Evaluating tourism carrying capacity dimensions in the Valley of Whales world-famous natural heritage site is a critical factor in terms of its survival. The internal stakeholders who are involved in managing the site in the Fayoum destination are PA, FTA, and FTDA. The paper concluded that there are four major dimensions of TCC that have to be considered by these major stakeholders including: physical – ecological, administrative, economical, and socio-cultural and psychological. Documentation of TCC and its dimensions concluded a list of indicators under each dimension which have been investigated via the semi-structured interviews and the observation; comments are collected, coded and analyzed. Analysis of the collected data concluded that, in general, the site managers of various stakeholders are neither aware of the concept of TCC nor its dimensions which is a serious issue that threatens the site's natural assets existence. Finally, all the emerging themes and issues provide a practical demonstration of the major constraints facing TCC official awareness in the Valley of Whales and also highlight the prime responsibility of the internal stakeholders. An appropriate organization among these stakeholders is a must to resolve all these issues in order to conserve the Valley of Whales heritage site.

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