

The Role of Eco-Heritage Tourism in Achieving Sustainable Development (Applied to The Great Transfiguration at Saint Catherine's)

Sara Ahmed Abdelfatah

Lecturer - Tourism Studies Department
Faculty of Tourism and Hotels, Alexandria University

Gamal El-Din Abdel Razek

Professor - Tourism Guidance Department
Faculty of Tourism and Hotels, Alexandria University

Amr Mohamed Khairy

Associate Professor - Tourist Guidance Department
High Institute of Tourism and Hotels in Alexandria (EGOTH)

Heba Abdallah Elkarmouty

Lecturer in Tourism Studies Department
High Institute of Tourism and Hotels in Alexandria (EGOTH)

Abstract

This study aims to highlight on the importance of sustaining the Eco-cultural heritage (whether economic, social, or environmental) and preserving the eco-cultural heritage in the St. Catherine area, especially the Great Transfiguration Project. Whereas sustainable cultural and eco-heritage tourism is one of the important tourism activities that has a role in increasing the ability of the tourism sector in the region to grow and prosper, as well as its role in achieving the goals of the sustainable tourism development strategy, The study aims, through its theoretical study, to highlight on the importance of eco-heritage tourism and its connection to sustainable tourism development in its various dimensions, and also to focus on the St. Catherine area, especially the Great Transfiguration Project, and the extent of the importance of its achievements in relation to eco-heritage tourism, and the extent to which this is related

to achieving the objectives of the sustainable tourism development strategy.

While the study, in its practical framework, relies on distributing an electronic questionnaire to 567 individuals from all stakeholders involved in the development efforts in St. Catherine region as well as the tourism sector workforce, the results were analyzed through PLS-SEM technology, and the results concluded that there is an effective positive impact of environmental heritage tourism for the Great Transfiguration Project. In the St. Catherine area, achieving the goals of sustainable tourism development, whether social, environmental, or economic, contributes to achieving the goals of the sustainable tourism development strategy.

Keywords: Eco-heritage tourism - Great Transfiguration - Sustainable development

1- Introduction

Recently, in accordance with the Sustainable Tourism Development Strategy and Egypt Vision 2030, there has been huge interest in

all sustainable activities, whether economically, socially, culturally, or environmentally, and among those activities is tourism activity in all tourist destinations and various archaeological sites in order to increase the competitiveness of Egyptian tourism globally. Hence, the importance of sustainable environmental heritage tourism for various archaeological sites in Egypt has emerged (Salwa.M, 2019).

UNESCO defines cultural heritage as the inheritance of tangible and intangible possessions that belong to a group, community, or community that has legacies from previous generations that have survived until the present time and have been gifted to future generations (Atef. A, 2021).

The concept of sustainable tourism emerges from the concept of sustainable development due to the tourism sector's positive contribution to local economic development, the extent of its impact on local communities, and supporting their identity and culture (UNWTO '1995).

According to the World Tourism Organization (WTO), sustainable tourism is defined as development that meets the needs of tourists and host sites, in addition to protecting the right of future generations to enjoy these sites in the future (UNWTO, 2005).

This means that sustainable tourism development is concerned with setting rules and guidelines related to the management of various resources in a way that achieves the requirements of economic, social, and environmental development, in addition to cultural integration with all environmental factors, biodiversity, and supporting life systems (Salwa.M, 2019).

Sustainable tourism is the link between the needs of tourists and the intended tourist destination. Existing resources are managed in a way that leads to providing for all the economic, social, cultural, and environmental

needs of tourists while preserving the cultural form, the important environmental style, biodiversity, and all the other requirements of life. Its systems, which lead to supporting opportunities for the growing development of the destination (Al-Temeemi, 2017).

Consequently the concept of sustainable environmental heritage tourism emerged. Environmentally mindful travel to relatively undisturbed natural regions with the goal of appreciating and enjoying nature that encourages conservation is one of the earliest definitions of ecotourism; it has low negative visitor impact and provides for beneficially active socio-economic involvement of local populations (Cajee , 2014).

Ecotourism is a tool that ensures ecological, environmental, economical, and culturally friendly tourism where tourism activities are controlled by the local communities of any respective area. Nature tourism and ecotourism have become the main strategies that many developed and developing nations are pursuing in order to integrate national parks, reserves, economic growth, and rural development in a sustainable manner (Cajee, 2014).

Thus, ecotourism as a sustainable kind of tourism based on natural resources and its predominant culture are integrated to frame the concept of eco-cultural tourism, which is a subset of ecotourism (D.Fennell, 1999).

In order to create eco-heritage destination for tourists, this new type of tourism combines the ecological and cultural elements of a region. It can also be described as travelling to places where the primary attractions are their natural and cultural resources. It is seen as a potential strategy to assist the preservation of natural habitats, the exhibition of indigenous cultures, and a substitute for sustainable economic growth. It is therefore a tool for economic empowerment and the development of indigenous communities that keeps

traditions alive and supports the protection of both natural and cultural heritage, thereby increasing visitors' appreciation. In other words, it is a form of sustainable tourism, that is, tourism that results in the management of all resources such that cultural integrity, important ecosystems, biological diversity, and life support systems are protected while meeting demands for economic, social, and aesthetic purposes (UNWTO, 2005).

Therefore, sustainable tourism development in heritage sites of an environmental nature plays a positive economic role and may effectively affect the social and environmental aspects.

The current study focuses on the St. Catherine area, especially the Great Transfiguration Project, in some detail so that we can monitor the importance of environmental heritage tourism in achieving sustainable tourism development and the extent of its economic, social, and environmental impact.

2- Literature review

2-1 The Great Transfiguration at Saint Catherine's

The project is expected to cost approximately 4 billion Egyptian pounds to turn Saint Catherine in Sinai into a peaceful oasis and a meeting place for various religions. It is set to become one of the world's leading religious tourism projects, occupying top priority on the country's agenda. This initiative is part of a larger plan aimed at accommodating 3 million residents in Sinai through its development (State Information Service, 2024)

The Great Transfiguration project encompasses several key elements (State Information Service, 2024):

- Various projects have been designed for implementation in the city to realize the city's vision, emphasizing bike and pedestrian lanes, and

enhancing the green cover with olive trees and other vegetation (Appendix 2).

- Establishing a spiritual landmark on the mountains surrounding the Holy Valley, considering the significant importance of the city of Saint Catherine.
- Providing a complete range of tourist and recreational services for visitors.
- Connecting the city to the extended coastal region between Mount Sinai, Sharm El-Sheikh, and Dahab.
- Preparing a comprehensive study to avoid the risks of floods, especially since the city is located at the confluence of many valleys and is threatened by floods.
- Development plans will respect the sanctity of the Holy Valley and the primary area of the nature reserve, ensuring no construction on these sites to preserve their sacred and historical value.
- Renovating select churches within the Saint Catherine Monastery, installing an automatic fire suppression system, and implementing comprehensive fire safety measures.
- Installing appropriate lighting, relocating electrical poles, enhancing security with bag checks, a surveillance control room, and cameras throughout the monastery.
- The development will include providing small electric golf cars to transport visitors from the car park to the monastery, along with pedestrian and camel paths as a means of transportation to the monastery, entering the area through sliding gates rather than electric ones.
- Establishing bazaars to promote Sinai products and herbs, providing signage,

waste disposal facilities, and site maintenance services while restricting on-site cafes, except for potential operation within the Bedouin village.

- Deploying thermal cameras on mountain peaks, integrating them with checkpoints for remote motion detection, and enhancing tourist attractions surrounding the monastery.
- St. Catherine Airport is being upgraded to accommodate daily flights from Cairo to St. Catherine and back, with weekly flights from Athens to St. Catherine and return trips.
- Several studies are currently underway to plan a sound and light project in the Holy Valley, along with the construction of a cable car for access to Mount Moses and the region's renowned mountains.
- Establishment of new type hotels, including a mountain hotel within the Grand transfiguration project and a very distinctive visitors' center on a global scale, developing existing resorts and establishing new ones, in addition to developing the city center. Thus, the city's plan will be completely developed, including the implementation of a modern road network (State Information Service, 2024).

2-2 The Sinai Peninsula

The Sinai Peninsula is located in Asia, serves as a land bridge connecting Asia and Africa (A.Bard, 1999& Zeini, et al, 2018) Inhabited by ancient Egyptians since prehistoric times (D.Mumford, 2001), it played a crucial role in securing Egypt's eastern borders (Hosni, 2003) . Bordered by the Mediterranean Sea to the north, the Red Sea to the south (Nour El-Din, 2010), the Gulf of Aqaba to the east, and the Gulf of Suez to the west, Sinai is

geographically divided into North and South regions. Covering around 61,000 square kilometers, approximately 6% of Egypt's land (Hamdan, 1993, Ismail 2012), with a coastline of about 700 kilometers, accounting for 29.1% of Egypt's total coastlines (Hamdan, 1993). Sinai's population represents less than one percent of Egypt's population. (Zeini, et al, 2018).

In Egyptian texts, it was known by several names, the most significant being "the land of turquoise" (Nour El-Din, 2010) due to its abundant turquoise mines (Givon, 1984).

The significance of turquoise to the ancient Egyptians was immense. The name "Sinai" is believed to be linked to the moon god "Sin" (Nour El-Din, 2010) in Semitic religion, worshiped in Western Asia and neighbouring Palestine. The ancient Egyptians associated Sin with their moon god "Thoth," whose worship was prevalent in Sinai (Hosni,2003). Some theories suggest the name Sinai originates from the region's numerous rugged mountains (Kamel, 2013).

Sinai holds sacred importance for heavenly religions. It was a significant passage for Moses and his people leaving Egypt, where he received the Ten Commandments. Sinai also provided refuge for Jesus and his family fleeing from King Herod, subsequently becoming a hub for monks around Mount Sinai (Kamel, 2013).

These monks established many monasteries and churches (Choucair, 2018) since the 4th century AD, Sinai has been a pilgrimage destination (D.Mumford, 2001). The Muslim army, led by Amr ibn al-As, entered Egypt from Sinai (Abdel Moneim, 1975).

Development Strategies for the Sinai Peninsula

Sinai, both as a whole and particularly South Sinai, boasts numerous tourist attractions that position it among Egypt's top priority tourist destinations (Qanbar,2000). Recognizing this,

the Egyptian government has integrated the Sinai Peninsula into a comprehensive development and investment plan, aiming to revitalize the region and transform it into an appealing hub for investors and residents, while fostering connections with the Delta and other provinces. The key development strategies encompass (State Information Service, 2024):

- Bridging the development gap with Sinai, historically isolated from the rest of the country, by focusing on integrating Sinai with the national infrastructure.
- Enhancing infrastructure and essential services to pave the way for future development projects.
- Launching diverse investments in agriculture, industry, and other economic sectors.
- Establishing new urban communities to accommodate local residents in Sinai and provide opportunities for the youth.
- Boosting sustainable tourism development, particularly in Southern Sinai, exemplified by the Saint Catherine Grand Manifestation Project, aimed at creating a spiritual retreat amidst the mountains encircling the sacred valley.

2-3 Saint Catherine

The city of Saint Catherine is located in the South Sinai Governorate and is recognized as one of the most significant world heritage sites (Mustafa, 2018) as well as one of the largest and most important natural reserves in Egypt, covering an area of approximately 4350 square kilo meters. It is home to 44% of Egypt's native plants and serves as a crucial migratory bird pathway across the eastern Mediterranean Sea (Soliman et al., 2022).

The site of the Great Transfiguration is located on Mount Al-Tur in Saint Catherine. In Arabic, "الطور" means a mountain covered with trees (Rayhan, 2013). Mount Al-Tur is also known in the "Torah" as Mount Sinai or

the Mountain of God, comprising several mountain peaks, including Mount Moses, Mount Saint Catherine, and Mount Al-Munajjah (Choucair,2018) or Transfiguration (Mustafa,2018), where Moses received the law over the mountain of Al-Tur. (Choucair,2018) Hence, Mount Al-Tur is known as the mountainous region. (Hamdan,1993)

Mount Al-Tur is mentioned in numerous verses in the Holy Quran, such as:

سورة المؤمنون " وَشَجَرَةً تَخْرُجُ مِنْ طُورِ سَيْنَاءَ تَنْبُتُ بِالدُّهْنِ وَصَنِيعٍ لِالْكَالِينَ (20)"

Surah Al-Muminoon "and a tree issuing from Mount Sinai which produces oil and food for those who eat"

" . (2) وَطُورِ سِينِينَ (1) سورة التين "وَالَّتَيْنِ وَالزَّيْتُونِ

Surah At-Tin "by the fig and the olive (1) and {by} mount Sinai (2)"

(2) وَكِتَابٍ مَّسْطُورٍ (1) سورة الطور " وَالطُّورِ

Surah At-Tur "by the mount (1) and {by} a book inscribed (2)" (The Holy Quran)

Saint Catherine's Monastery:

Saint Catherine's Monastery is located next to Mount Moses at the beginning of its ascent (Ramzy, 1994); in the middle of the valley completely, which is why the area is known as the Valley of the Monastery (Mustafa, 2018). It was included in the World Heritage Sites in 2002 by UNESCO (Kamel, 2013); it is called the "Monastery of Tur Sinai" and is considered one of the most important religious tourist attractions in the Sinai. Commissioned by Emperor Justinian around 545AD (Choucair, 2018) or between 548 and 565 AD (Rayhan, 2013), this monastery was built as a fortress to protect the monks from potential attacks and safeguard the eastern borders of the empire against Persian invasions. This monastery uniquely symbolizes the coexistence of Judaism, Christianity, and Islam (Mustafa,2018), housing various churches like the Church of the burning bush, a mosque from the Fatimid

period, a library, monks' residences, and essential facilities like mills, an olive press, and water wells, all enclosed by a great wall (Choucair,2018).

In the late 6th century AD, the monastery was renamed the Church of the Transfiguration after monks added a renowned mosaic depicting the Transfiguration (Kamel,2013) It was also dedicated to Saint Catherine, named after the martyr from Alexandria who was Tortured and killed in the early 4th century AD (Mustafa,2018) for embracing Christianity during Emperor Maximian's rule. After about five centuries (Rayhan, 2013), one of the monks of Sinai saw a vision that her body was on top of one of the mountains in Sinai, which was later named Mount Catherine; The monks climbed to the top of the mountain and the body was transferred to the monastery, since that the name of monastery transitioned from the Monastery of Tur Sinai to Saint Catherine's Monastery (Mustafa, 2018), signifying "the wreath" or "abundance of wreaths." (Kamel, 2013)

The Church of the burning bush (Rubus Sanctus) in the Monastery of Saint Catherine: It is the oldest structure in the monastery, dating back to the fourth century when it was built by Empress Helena, the mother of Emperor Constantine the Great (Mustafa, 2018). It was later reconstructed during the reign of Emperor Justinian in the sixth century AD. This church is known by multiple names, such as the Church of the burning bush, the Structure of the burning bush of Moses, and the Church of the Virgin Mary (Kamel, 2013) its floor is approximately 70 cm lower than that of the Church of the Transfiguration, with dimensions of 5m in length and 3m in width (Rayhan, 2013) .The church contains the sacred burning bush, where God transfigured to Moses. One of the reasons for establishing the Monastery of Saint Catherine in this location is to be blessed by the burning bush,

its roots are inside the church while its twigs are outside from the side of the eastern wall (Choucair, 2018). This tree is unique characteristics (Rayhan, 2013). It doesn't give flowers or fruits and doesn't grow anywhere else in the Sinai Peninsula (Kamel, 2013).

Visitors who want to enter this church are required to remove their shoes outside the church's door, following the tradition of Moses (Choucair, 2018) and in accordance with the Book of Exodus: "Take off your sandals, for the place where you are standing is holy ground."(Salim, 2010, P.3)

Similarly, as mentioned in the verses of Surah Taa-Haa

"وَهَلْ أَنتَكَ حَدِيثُ مُوسَى (٩) إِذْ رَأَى نَارًا فَقَالَ لِأَهْلِهِ امْكُثُوا إِنِّي آنَسْتُ نَارًا لَعَلِّي آتِيكُمْ مِنْهَا بِقَبَسٍ أَوْ أَجْدُ عَلَى النَّارِ هُدًى (١٠) فَلَمَّا أَتَاهَا نُودِيَ بِمُوسَى (١١) إِنِّي أَنَا رَبُّكَ فَانْخَعْ نَعْلَيْكَ إِنَّكَ بِالْوَادِ الْمُقَدَّسِ طُوًى (١٢) وَأَنَا اخْتَرْتُكَ فَاسْتَمِعْ لِمَا يُوحَى (١٣) إِنِّي أَنَا اللَّهُ لَا إِلَهَ إِلَّا أَنَا فَاعْبُدْنِي وَأَقِمِ الصَّلَاةَ لِذِكْرِي (١٤)

And has the story of Moses reached you (9) when he saw a fire and said to his family," stay here; indeed, I have perceived a fire perhaps I can bring you a torch or find at the fire some guidance" (10) and when he come to it, he was called,"O Moses, (11) indeed, I am your lord, so remove your sandals. indeed, you are in the sacred valley of Tuwa (12) and I have chosen you, so listen to what is revealed {to you} (13) indeed, I am Allah. There is no deity except Me, so worship Me and establish prayer for my remembrance (14) (The Holy Quran).

So the recent path the Egyptian state is adopting is heading in this investment direction, as is evident in its various national projects in the past years and those planned in the near future. Moreover, Egypt's Vision 2030 for sustainable development set the general goals towards which the government and the various state institutions will aim to

achieve on the environmental, social and economic levels, especially with projects specialized in the renewable energy sector, the development of shanty towns, new cities, infrastructure, and providing alternative water resources nationwide. Despite the serious development efforts over the past decades in the Sinai Peninsula, the state took a new approach in developing the region with its various service and economic projects beginning in 2014.

The priority was for infrastructure projects that have always been the cornerstone of attracting and facilitating investments. New cities and industrial areas also had a share of those efforts in an attempt to build a better life for Egyptians residing in the Sinai Peninsula, especially North Sinai governorate.

South Sinai governorate adopts an approach of strategic planning in defining the integrated future vision for the development of cities and urban communities, in order to achieve the optimal utilization of all available elements, while ensuring their continuity for future generations and creating sustainable, smart and flexible cities that can compete at the level of their local and international peers, and

achieve sustainable development goals using indicators of regional sustainability, competitiveness and empowerment of local communities in setting development priorities, agreeing on development strategies and creating new job opportunities in cities. This is all being done to contribute to developing the local economy, enabling societies to better manage change and seeing the future, stimulating broad participation from all development partners in the city, developing action plans with results, goals and timed programs, with the distribution of roles, responsibilities and budgets, and encouraging partnership between the government and the private sector (The Egyptian Center for Strategic Studies Sinai: A new vision for development 2014-2020).

H1: Eco Heritage Tourism in Saint Catherine’s positively Influence the social benefits for the local community.

H2: Eco Heritage Tourism in Saint Catherine’s positively Influence the Environmental benefits for the local community.

H3: Eco Heritage Tourism in Saint Catherine’s positively Influence the Economic benefits for the local community.

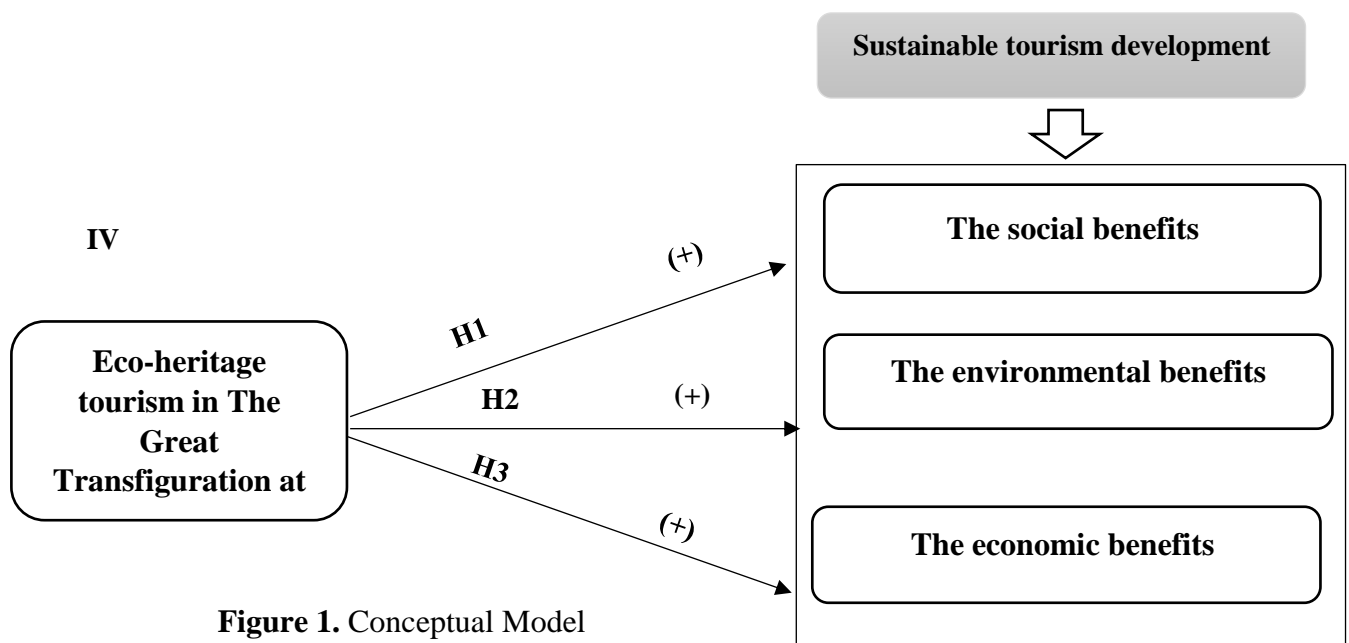


Figure 1. Conceptual Model

3- Research methodology

Sampling and Data Collection

To test study hypotheses, the study was based on a quantitative approach. The research was assessed using Smart PLS (the fourth edition) and the advanced multivariate PLS-SEM technique (Kock, 2015) in order to test 3 hypotheses as a direct effect. This approach was chosen as it facilitates the evaluation of complex models using a straightforward process. The current study is divided into two parts: the theoretical study of eco-heritage tourism and How does the Great Transfiguration Project affect the development of eco-heritage tourism and how does this affect sustainable tourism development in St. Catherine area. The second part of the study, which is the field study of the research, the convenience sampling technique was adopted from the non-probability sampling approach, where a survey has been employed through

distributing an online questionnaire to 567 individuals representing all stakeholders concerned with the tourism sector, especially in St. Catherine area. A survey was conducted from December 15th 2023 to April 10th 2024.

Scale Development

The data was collected using a multi-item questionnaire. Items were adopted from prior studies to ensure the content validity of the data. The questionnaire was split into six sections. The first four sections are designed to assess the effect of the environmental heritage of the Great Transfiguration in the St. Catherine region on achieving sustainable tourism development, whether socially, environmentally, or economically. The fifth section, identifies the most important challenges facing the region in achieving sustainable development, and the sixth and last section is related to demographic data. As clarified in Table 1.

Table 1. Scale Development

Surveying tools sections	Scale development	No. of Items
Questionnaire Section (1) (IV) Eco-Heritage Tourism	- Yahaya.A, Samuel. A and Alhassan.A (2022)	8
Questionnaire Section (2) (DV) Sustainable Social Benefits	- Rina and Siswati (2023)	10
Questionnaire Section (3) (DV) Sustainable Economic Benefits	- Kilichov & Dolores (2021)	7
Questionnaire Section (4) (DV) Sustainable Environmental Benefits	- Cristy <i>et al.</i> , (2023)	5
Questionnaire Section (5) challenges facing the region in achieving sustainable development	- Fatimah <i>et al.</i> , (2020)	6
Questionnaire Section (6) Demographic Data	- Researcher, based on literature	5
Overall Questionnaire Items		41

4. Data analysis and results

4-1 Analysis of demographic (N=567)

Table2. Demographic Profile

Item	N	Percentage
Q1) Age		
18-25	56	9.9
26-35	165	29
36-45	234	41.3
Over46	112	19.8
Q2) Gender		
Male	298	52.6
Female	269	47.4
Q3) Occupation		
Local community	148	26.1
Tour guides	112	19.7
Tourism authorities	107	18.9
Tourism faculty members	84	14.8
Students	56	9.9
Others	60	10.6
Q4) Specialization		
Environmentalists	113	19.9
Heritage experts	132	23.3
Tourism studies	118	20.8
Community projects	148	26.1
others	56	9.8
Q5) Number of participants in any practices related to sustainable development		
1-5	398	70.2
6-10	112	19.8
Over 10	57	10

The study model and hypotheses were assessed using Smart PLS (the fourth edition) and the advanced multivariate PLS-SEM technique (Kock, 2015). The primary-axis factor analysis was used to check for potential biases caused by the use of shared techniques. This advanced statistical technique is very useful in the field of research, since it allows researchers to investigate the underlying elements that may influence study results. Researchers can use primary-axis factor analysis to examine and detect any biases in the data that may exist as a result of the usage of standard techniques. This approach sheds light on the robustness and validity of

research findings. Furthermore, the researcher employed Smart PLS, a strong statistical program that provides an effective technique of conducting this analysis, allowing researchers to acquire a full grasp of potential biases and thereby improve the accuracy and dependability of their research results. The findings revealed that the main component could explain less than half of the variance. As a result, this dataset did not have any frequent technique bias concerns (Chin et al., 2012). Multicollinearity tests found that the bulk of the variables had variance inflation factors of less than 3.20.

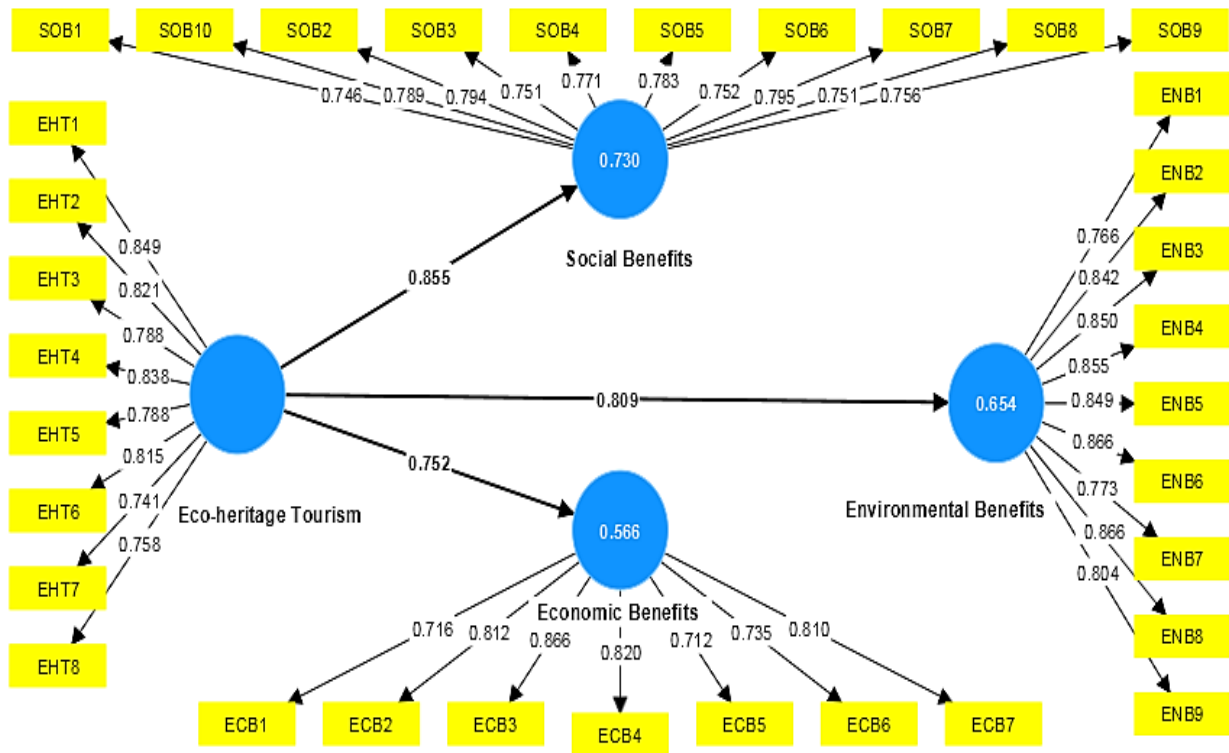


Figure 2. The measurement model

Assessing data normality is an important step in statistical analysis, and kurtosis and skewness are two key variables used to do so. Kurtosis relates to a distribution's degree of flatness, whereas skewness assesses its asymmetry. Researchers can learn about the form and symmetry of data by looking at various statistical measurements. A kurtosis number close to zero indicates a normal distribution, whereas a positive or negative value denotes a more peaked or flat distribution, respectively. Similarly, skewness can indicate whether the data is skewed to the left (negative skewness) or right (positive skewness), or if it is almost balanced. The measurement and structural models are two distinct models that must be estimated using this method without making any assumptions about normalcy. To meet the requirements of structural equation modelling, the data set was analyzed so that it did not contradict the

assumption of normalcy. The appendix shows the ranges for kurtosis and skewness, which are -0.059 to 1.749 and -0.064 to -0.911. Figure 2 and the Appendix exhibit standardized estimates of the study constructs.

4.2. The measurement model

The researchers began by examining the measuring model's reliability and convergent validity. Researchers may guarantee that their data collection instruments are trustworthy, consistent, and accurately measure the desired constructs by thoroughly analyzing the reliability and convergent validity of the measurement model. This rigorous evaluation improves the validity and trustworthiness of the research findings, allowing researchers to make relevant conclusions from their research. Loadings, composite reliability, Cronbach's α , AVE, and VIF were evaluated.

Table 3. Reliability and convergent validity

Constructs	Composite reliability	Cronbach's alpha	AVE	VIF
Eco-heritage tourism	0.900	0.901	0.811	2.03
Social benefits	0.917	0.912	0.707	2.69
Environmental benefits	0.841	0.832	0.994	2.74
Economic benefits	0.907	0.997	0.719	2.64

The loadings were then utilized to assess construct validity (see Appendix). Table 3 displays the CR values, which show how well the instrument components describe the

instrument. These are above the permissible level of 0.7, demonstrating adequate internal consistency (figure 3).

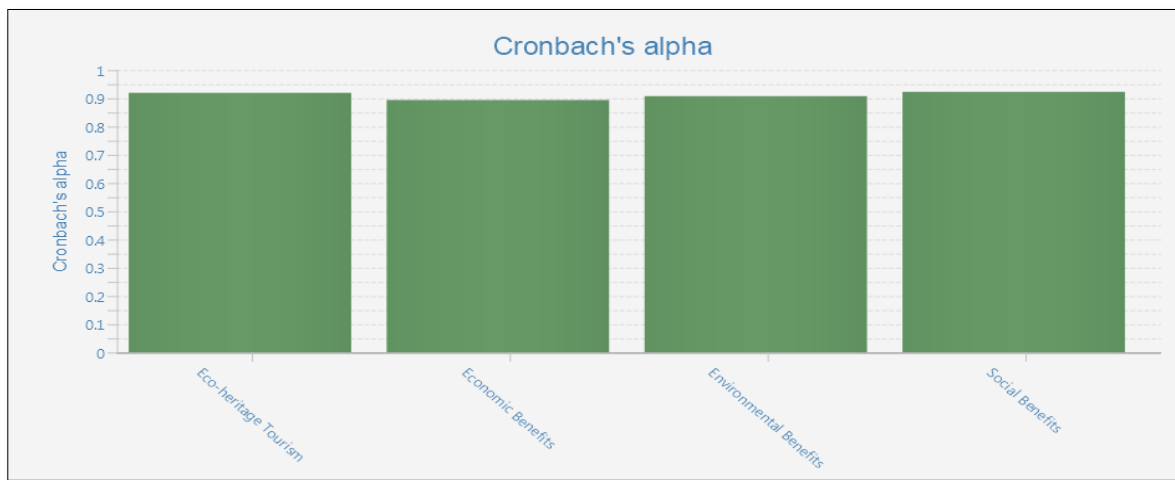


Figure 3. Chart bar for study constructs

The total variance in AVE above the acceptable level of 0.5 (0.697 to 0.987) (Hair et al., 2016). Furthermore, the majority of variables had VIF values less than 3.3 (ranging from 2.11 to 2.69) (Kock and Lynn,

2012). As indicated in Table 3, the square roots of AVE were subsequently refined and proved good discriminant validity, as illustrated in Figure 5.

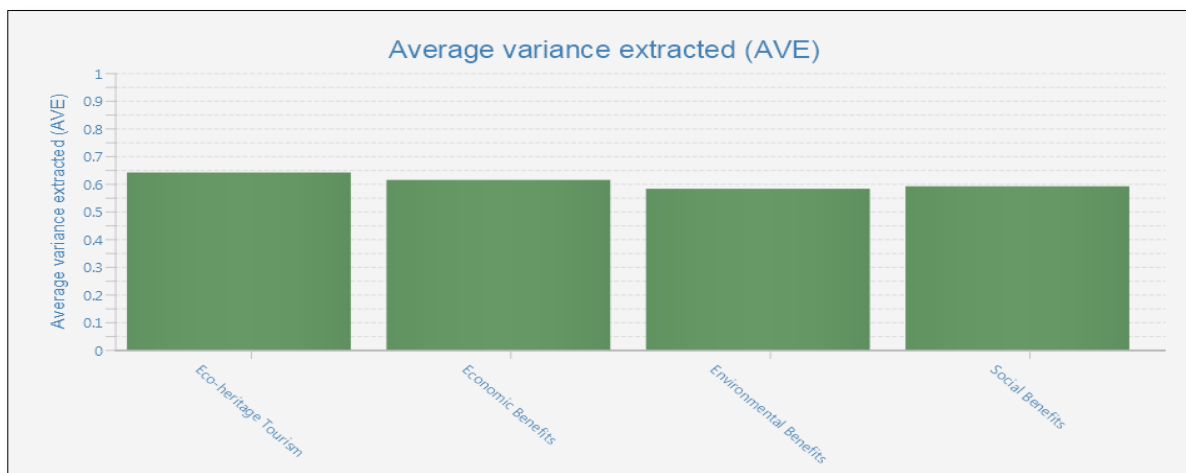


Figure 5. The average variance extracted for study constructs

The Fornell and Larcker (1981) criterion, as well as the heterotrait-monotrait (HTMT) ratio, have lately been evaluated in research technique. Scholars and practitioners have realized the importance of these tools in determining the discriminant and convergent validity of measurement models in structural equation modelling (SEM). A recent examination of the Fornell and Larcker (1981) tests found that they do not detect a lack of discriminant validity in typical study

samples. As a result, Henseler et al. (2015) proposed an alternative approach based on the correlations' HTMT ratios. Table 4 displays the results of applying this novel method to verify discriminant validity. If it surpasses 0.85, discriminant validity is questioned (Kock, 2020). The majority of study constructs had values less than 0.85 (0.637–0.841), showing favorable discriminant validity as shown in figure 6.

Table 4. Discriminant validity

Fornell-Larcker & HTMT	1	2	3	4
1. Eco-heritage tourism	(0.900)	0.611	0.807	0.607
2. Social benefits	0.568	(0.840)	0.813	0.766
3. Environmental benefits	0.651	0.501	(0.996)	0.801
4. Economic benefits	0.564	0.696	0.225	(0.847)

Note. Fornell-Larcker: the values on the diagonal are the square root of the AVEs; and the values on Off diagonal are the correlation between the constructs; HTMT: ratios are above the diagonal: HTMT ratios are good if < 0.90, best if < 0.85.

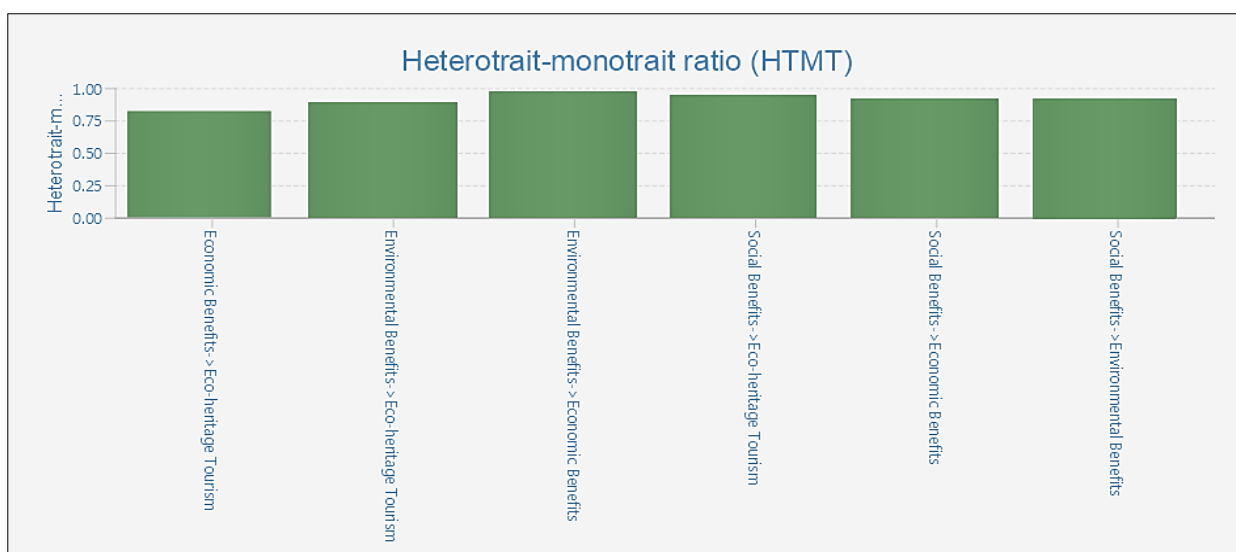


Figure 6. The HTMT ratios of study construct

4.3. The structural model

Hair et al. (2016) suggested investigating GOF indices such as betas, *t* values, *f*², *R*², and *Q*². Furthermore, they suggested using the SRMR as the sole estimated model fit criterion. A zero SRMR score implies a perfect match, while an SRMR value of <0.1 is suitable for PLS path models (Kock, 2020).

The current study's SRMR of 0.037 shows an excellent model fit. Table 4 also shows the results that correspond to the study's hypothesis. Figure 7 depicts the structural model's *p* and beta values.

The findings in Figure 7 provide substantial support for each of the three hypotheses. The

hypothesis (H1) of eco-heritage tourism being influenced by social benefits is supported by a substantial beta coefficient of 0.44 ($p < 0.01$). This suggests that providing social advantages such as community well-being, cultural preservation, and local empowerment boosts the appeal of eco-heritage tourism at the Great Transfiguration site. The study's findings indicate that when eco-heritage tourism locations prioritize social benefits, visitor interest and demand improve, contributing to long-term development.

The hypothesis of eco-heritage tourism being influenced by environmental advantages (H2) is supported by a significant beta coefficient of 0.36 ($p < 0.01$). This suggests that conserving and preserving natural resources, biodiversity, and ecological integrity at the Great Transfiguration site is critical to attracting visitors. The findings imply that tourists prefer sites that promote environmental sustainability and provide chances for ecological exploration and education. This emphasizes the importance of incorporating environmental factors into ecotourism destination management and planning, as well as assuring the site's long-term preservation and meeting sustainable development objectives.

Finally, the hypothesis that eco-heritage tourism is influenced by economic benefits

(H3) has a significant beta coefficient of 0.54 ($p < 0.01$). This suggests that economic considerations such as job creation, income generation, and local economic growth have a substantial impact on the appeal of eco-heritage tourism at the Great Transfiguration site. When a place gives clear economic benefits to both local communities and tourists, it increases the overall appeal and competitiveness of the tourism industry. The findings imply that eco-heritage tourism might act as a driver for economic growth and poverty alleviation in the region, underlining its importance in achieving sustainable development goals.

In conclusion, the structural model's significant beta coefficients and low p-values give strong evidence to support each of the study's three hypotheses. The findings underscore the importance of social, environmental, and economic benefits in eco-heritage tourism at the Great Transfiguration site. Policymakers, destination managers, and stakeholders can collaborate to develop and manage eco-heritage tourism experiences that contribute to sustainable development while preserving the site's cultural and natural heritage, as well as promoting economic well-being and social inclusivity. Therefore, H1, H2, and H3 are supported.

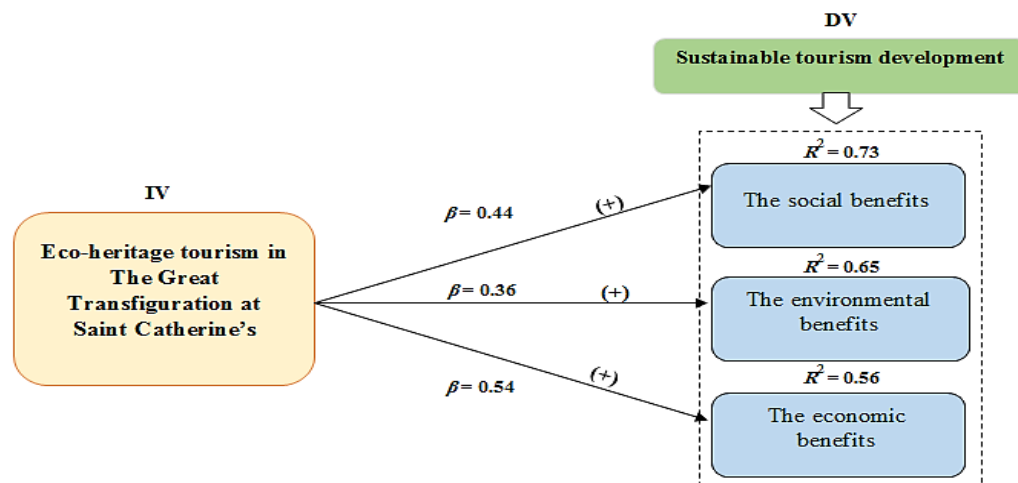


Figure 7. The structure model

Furthermore, eco-heritage tourism accounted for 73% of the variance in social benefits ($R^2 = 0.73$), 65% of the variance in environmental benefits ($R^2 = 0.65$), and 56% of the variance in economic benefits ($R^2 = 0.56$). The R^2 values of 0.60 and 0.57 are more than the 0.26 predicted by Cohen (1988), indicating a significant model (Table 5 and Fig.7). Furthermore, the effect size (f^2) indicates if the path coefficients' effects are minor, medium, or large. Typical values include 0.02, 0.15, and 0.35 (Cock, 2020). Table 4

reveals that each relationship had a moderate to significant influence. Q^2 should be measured in addition to R^2 and f^2 . If Q^2 is positive (i.e., greater than zero), it indicates that the model has predictive relevance for a certain construct, with higher Q^2 values implying greater predictive relevance. The second-quarter figure for sustainable tourism development is 0.351. The Q^2 value of the inner variables indicates their predictive relevance.

Table 5. Hypothesis-testing summary

NO	Hypothesis	Beta	t	P-value	Decision	f ²	Confidence intervals	
							2.5%	97.5%
H1	EHT → SOB	.380	3.696	0.000	Supported	0.039	0.017	0.497
H2	EHT → ENB	.954	1.621	0.000	Supported	0.031	0.614	0.694
H3	EHT → ECB	.627	1.035	0.003	Supported	0.069	0.796	0.149

$P < 0.001$, EHT= Eco-heritage tourism, SOE= Social benefits, ENB= Environmental benefits, ECB= Economic benefits

The path coefficient histogram depicts the relative strength of the links between eco-heritage tourism and social, environmental, and economic advantages. A positive path coefficient indicates that eco-heritage tourism has a direct and considerable impact on

community engagement, cultural preservation, and social cohesion. A greater route coefficient in this area indicates that eco-heritage tourism has a significant positive impact on promoting social well-being and local community development.

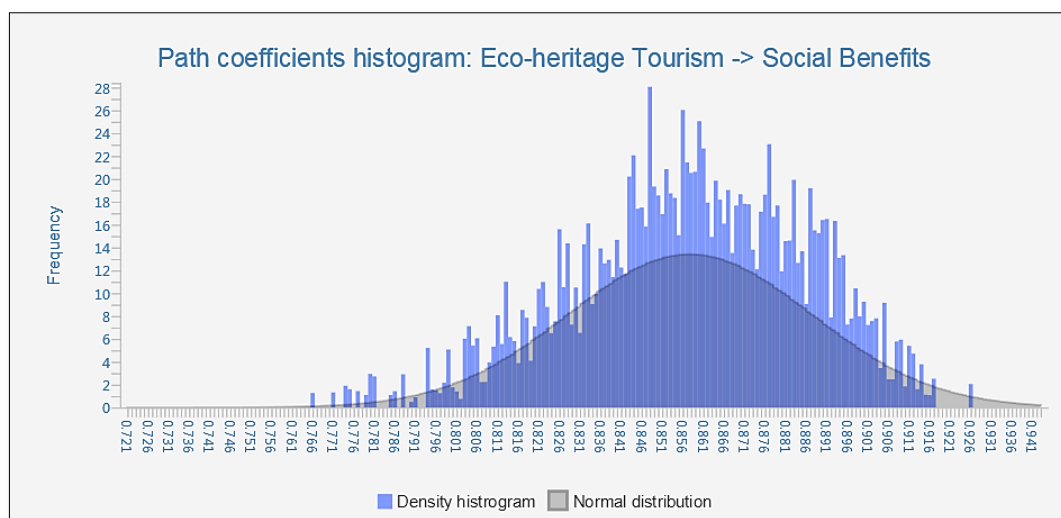


Figure 8. The HTMT ratios of study construct

In terms of environmental benefits, the route coefficient histogram shows how eco-heritage tourism helps to conserve and sustain the ecosystem. A positive path coefficient indicates that eco-heritage tourism measures, such as responsible tourist management, ecological preservation, and sustainable

practices, contribute significantly to the reduction of environmental degradation. A larger route coefficient in this context suggests a stronger link between eco-heritage tourism and favorable environmental consequences, underlining the necessity of protecting Saint Catherine's natural legacy.

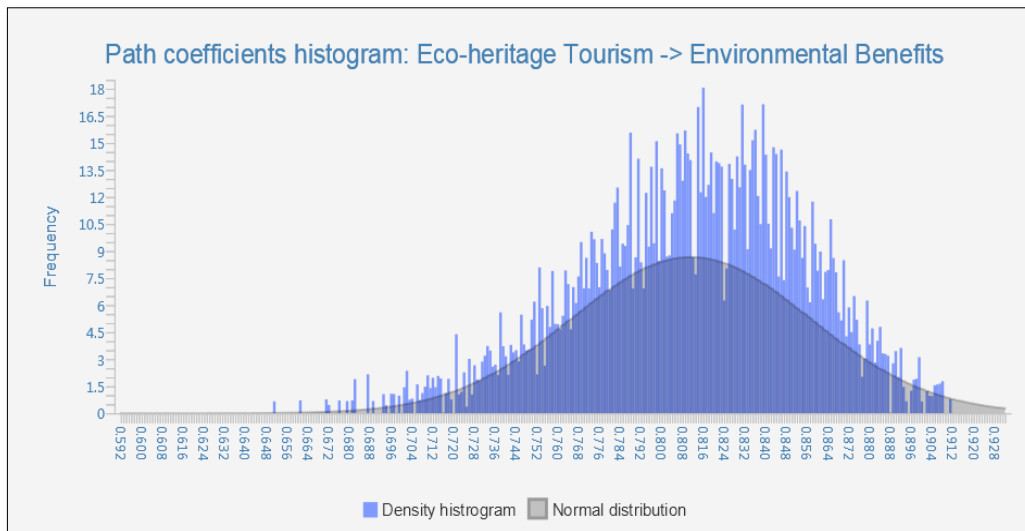


Figure 9. The HTMT ratios of study construct

The histogram also provides insight on the relationship between eco-heritage tourism and economic benefits. A positive path coefficient in this category shows that eco-heritage tourism stimulates economic growth, creates job possibilities, and increases revenue for the local economy. The higher the route

coefficient, the bigger the economic benefits from eco-heritage tourism. This highlights the potential for eco-heritage tourism to contribute to long-term economic development and prosperity in the region surrounding The Great Transfiguration at Saint Catherine's.

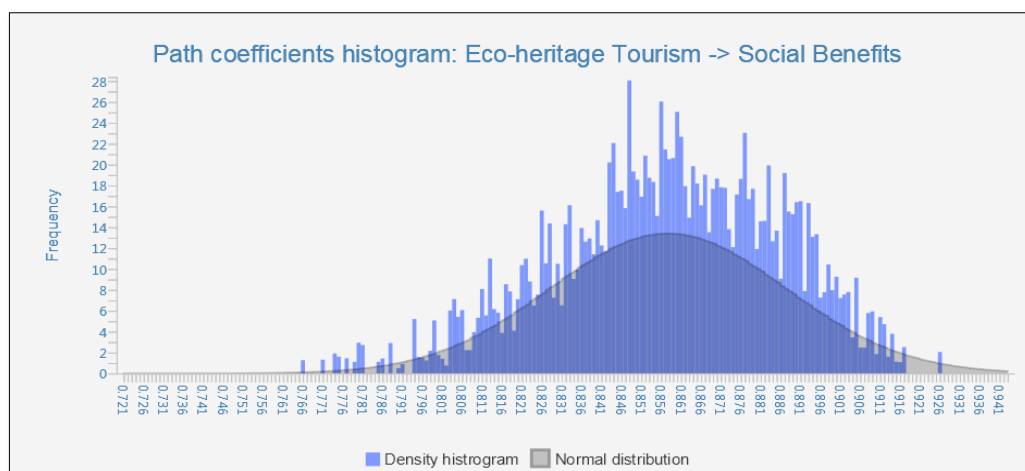


Figure 10. The HTMT ratios of study construct

5- Conclusion

The study aimed to clarify the significance of eco- heritage tourism in St. Catherine region, particularly the Great Transfiguration Project, in the context of sustainable tourism development across multiple dimensions

(social, economic, and environmental). The study also explained the potential for achieving this objective, as summarized in fig.11:

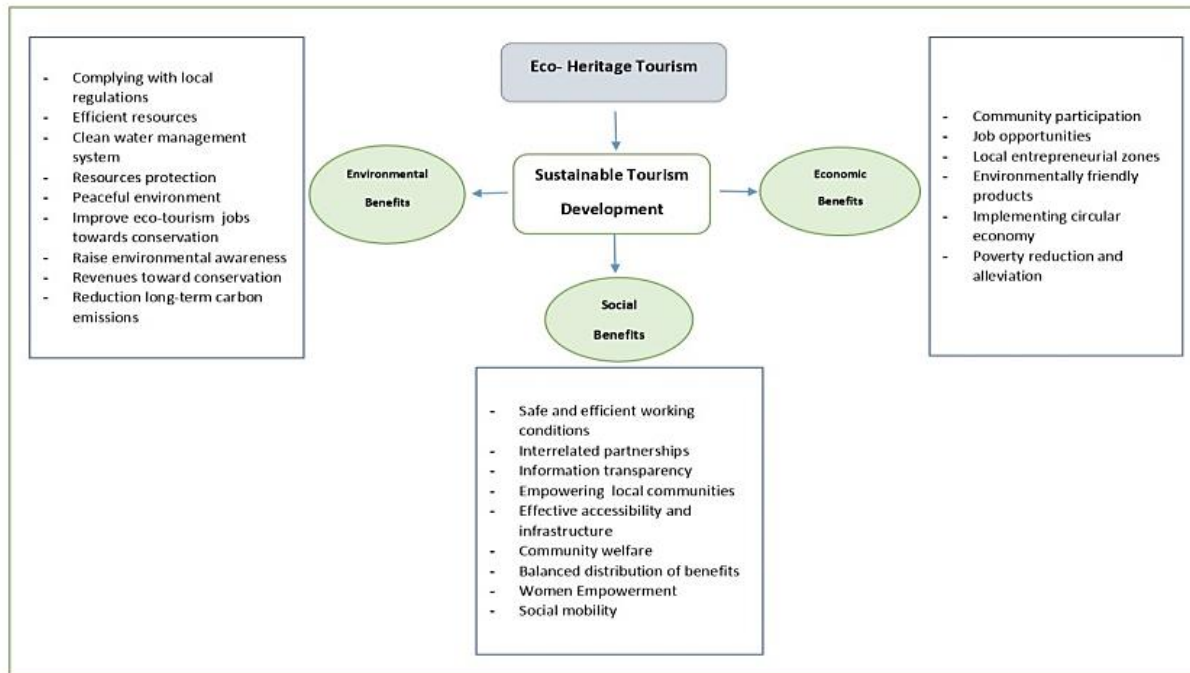


Figure.11 The impact of environmental heritage tourism on sustainable tourism development

The previous figure is based on the research results. Both the theoretical and practical frameworks explained the most important benefits that can be achieved through developing eco- heritage sites in light of the sustainable development strategy.

Recommendations and further research

The study also clarified some of the challenges that were identified during the study and that can be studied in future studies, which can be summarized as follows:

- Inadequate funding sources for initiatives that ready the local community for development work.
- Social activities are typically the main emphasis of development efforts.
- Insufficiently skilled workforce for the tourism industry.

- Lack of administrative and executive competencies.
- Insufficient executive and administrative skills.
- Community members' volunteerism in tourism-related activities is not well-established.

Consequently, a series of suggestions that will enhance development efforts in the St. Catherine region can be formulated, particularly in relation to the Great Transfiguration Project:

- The necessity of cooperation between all concerned stakeholders in order to achieve comprehensive planning for the region and overcome all obstacles.
- Developing laws and legislation related to eco- heritage sites in line with the

directions of the sustainable development strategy.

- Full commitment of all parties to preserve the region's tourism resources for the future and protect all natural and cultural properties.
- Developing a comprehensive standard guide for commitment to sustainable eco-heritage tourism and applying it to all sites concerned in this regard by the site administrators.
- Focus on constantly developing the technical and institutional capabilities of local civil society organizations.

References:

- A.Bard, K. (1999), "Sinai, North, Late Prehistoric and Dynastic Sites", Encyclopedia of the Archaeology of ancient Egypt, London & New York, p.895.
- A.Bard, K. (1999), "Sinai, North, Late Prehistoric and Dynastic Sites", Encyclopaedia of the Archaeology of ancient Egypt, London & New York, p.895.
- Al-Temeemi.O (2017) ,"Sustainable tourism in heritage places – Al-Qishlaq as a case study", Baghdad University, P.4
- Alzamil, W.S.; Al-Qahtani, A.; Alabed, A.M.; Al-Takhifi, K (2023)," The Role of Community Participation in Urban Rehabilitation Projects for Heritage Areas in Saudi Arabia a Case Study: Rijal Almaa Heritage Village", J. Al Azhar Univ. Eng. Sec.t, p.18, 304–324.
- Atef.A(2021)," Sustainable Heritage tourism in Egypt ", International journal of multidisciplinary studies in architecture and cultural heritage , Volume 4, Issue ,P.95
- Bounoua, L.; Bachir, N.; Souidi, H.; Bahi, H.; Lagmiri, S.; Khebiza, M.Y; Nigro, J; Thome, K.(2023), "Sustainable Development in Algeria's Urban Areas: Population Growth and Land Consumption", Urban Sci,p.7, 29.
- Brooks.C, Waterton.E, Saul.H, Renzaho.A," Exploring the relationships between heritage tourism, sustainable community development and host communities' health and wellbeing: A systematic review," PLOS ONE 18(3): e0282319.
<https://doi.org/10.1371/journal.pone.0282319>, 2023, p.24-25.
- Cajee,L(2014), " Eco-Cultural Tourism: A Tool for Environmental, Cultural and Economic Sustainability (A Case Study of Darap Village, West Sikkim) ", , North Eastern Hill University, India,P.2
- Choucair, Naoum (2018), "History of Sinai and the Arabs", Hindawi Foundation, Cairo, 2018, p. 14.
- D.Mumford, G. (2001), "Sinai", The Oxford Encyclopaedia of Ancient Egypt, Vol.3, Oxford University press, Oxford & New York, p.288.
- Exodus 3:5: Salem, Arham Salman (2010) ,"The Book of Exodus in the Jewish Torah" "Exposition and Criticism", unpublished master's thesis, Faculty of Fundamentals of Religion, Islamic University - Gaza, Palestine, pp. 3, 5
- Farid, A.; Al-Najjar, A. (2021),"The role of community engagement in the success of sustainable tourism development: A case study of Al-Khabra's traditional village", J. Tour. Cult. Chang.
- Fatimah, Y. A., Govindan, K., Murniningsih, R., & Setiawan, A. (2020), "Industry 4.0 based sustainable circular economy approach for smart waste management system to achieve sustainable development goals: A case study of Indonesia. Journal of cleaner production", p. 269, 122,263.
- Fennell.D (1999)," Ecotourism: An introduction", Routledge, London, p.54.
- Giveon, R. (1984), "Sinai", LÄ 5, Wiesbaden, col.949.
- Kilichov, M., & Dolores, T. S. M. (2021)," SUSTAINABLE HERITAGE TOURISM DEVELOPMENT RESEARCH MODEL AT HERITAGE RESOURCES. "Экономика и туризм" международный научно-инновационный журнал, (1).
- Mumford.D, G. (2001), "Sinai", The Oxford Encyclopedia of Ancient Egypt,

- Vol.3, Oxford University press, Oxford & New York, p.288.
- Salwa.M.Morsy & others (2019), "Sustainable Cultural Heritage Tourism (Applied to Historical Cairo)", Planning Issues Series and Development No. (302), National Planning Institute, p.26
 - Soliman. A., M.Sheta, B.; Bahnasway, M.; M. Orabi, G., (2022), "Avifaunal updated survey in St. Catherine protectorate, Egypt", Journal of Medical and Life Science, Vol.4, No. 1, p.9-17.
 - UNWTO (1995), "The World Charter for Sustainable Tourism, The World conference on Sustainable Tourism", World Tourism Organization (UNWTO), p 1-3
 - UNWTO and UNEP (2005) , Making Tourism More Sustainable - A Guide for Policy Makers,p.8
 - Yahaya.A, Samuel. A and Alhassan.A (2022), Sustainable eco-tourism in Ghana: An assessment of environmental and economic impacts in selected sites in the Upper East Region, Journal of Geography and Regional Planning, Vol. 15
 - Zeini, N. , Abdel-Hamid, A., Soliman, A, Okasha, A. (2018) ,"An exploratory study of place-names in Sinai Peninsula, Egypt: a spatial approach", Annals of GIS, 24:3, 177-194

المراجع العربية

- إسماعيل، كرم ناصر (٢٠١٢) شبه جزيرة سيناء، رسالة ماجستير غير منشورة، كلية الآداب – قسم الجغرافيا – الجامعة الإسلامية – غزة، فلسطين، ص ٣
- حسنى، بسرية عبدالعزيز (٢٠٠٣) المدخل الشرقي لمصر، دراسة مواقع آثار شمال سيناء، هلا للنشر والتوزيع، الطبعة الأولى، القاهرة، ص٢٣
- حمدان، جمال (١٩٩٣) سيناء في الاستراتيجيات والسياسة والجغرافيا، مكتبة مدبولي، القاهرة، ص ٦١

- رمزي، محمد (١٩٩٤) القاموس الجغرافي للبلاد المصرية من عهد قدماء المصريين وحتى ١٩٤٥، الجزء الرابع، الهيئة المصرية العامة للكتاب، القاهرة، ص ٢٦٦
- ربحان، عبدالرحيم (٢٠١٣) سيناء ملتقى الأديان والحضارات، الهيئة المصرية العامة للكتاب، القاهرة، ص٢٨
- سفر الخروج ٣ : ٥ : سليم، أرحام سلمان (٢٠١٠) سفر الخروج في توراة اليهود "عرض ونقد"، رسالة ماجستير غير منشورة، كلية أصول الدين الجامعة الإسلامية – غزة ، فلسطين، ص ٣، ٥
- شقير، نعوم (٢٠١٨) تاريخ سيناء والعرب، مؤسسة هنداوى، القاهرة، ٢٠١٨، ص ١٤
- عبدالمنعم، محمد (١٩٧٥) مدخل الى نهضة سيناء، مؤسسة روز اليوسف، القاهرة، ص ١١
- القرآن الكريم
- قنبر، أسامة عبدالنبي (٢٠٠٠) نحو عمارة سياحية بيئية بجنوب سيناء دراسة حالة تقويم العمارة السياحية الساحلية بقطاع رأس سدر السياحي، رسالة ماجستير غير منشورة، كلية الهندسة جامعة الأزهر، القاهرة، ٢٠٠٠، ص ٢٣
- كامل، ميري مجدى انور (٢٠١٣) تاريخ وحضارة وآثار مصر القبطية البيزنطية، المؤسسة المصرية للتسويق والتوزيع، الإسكندرية، ص ٤٥٢
- مصطفى، محمد حلمي محمد (٢٠١٨) " الدور الحضارى لدير سانت كاترين عبر العصور" ، مجلة البحوث والدراسات الاثرية، العدد الثالث، كلية الآداب – جامعة المنيا، ص ٣٤٠
- نور الدين، عبدالحليم (٢٠١٠) مواقع الآثار اليونانية الرومانية في مصر، الطبعة الخامسة، القاهرة، ص ٧٣٩

Web sites

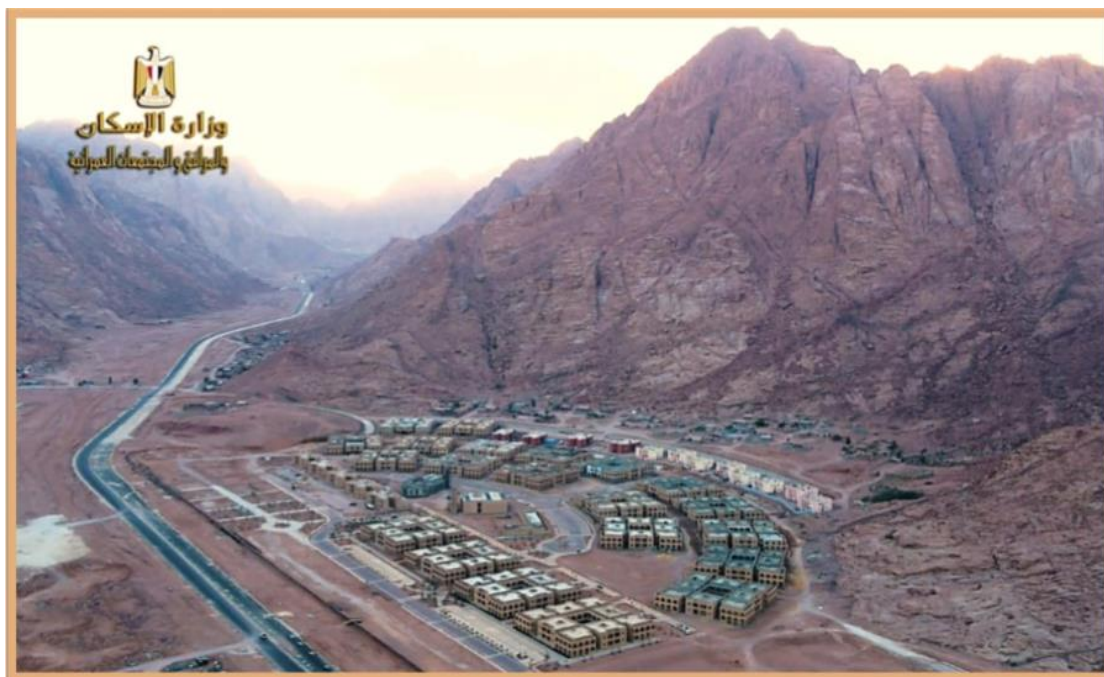
- The Bush Church - Discover Egyptian Antiquities - Ministry of Tourism and Antiquities (<https://egymonuments.gov.eg/>) (Accessed 4/5/2024 11pm)
- The Great Transfiguration Project and the Development of St. Catherine - State Information Service (<https://www.sis.gov.eg/>) (Accessed on 5/14/2024 5pm , 4/5/2024 9am)

Construct	Mean	SD	Loadings	P-value	Skewness	Kurtosis
Eco-Heritage Tourism (EHT)						
EHT1. Beautification of the environment.	2.014	0.547	0.849	<0.001	-0.304	0.936
EHT2. Environmental pollution.	3.479	1.631	0.821	<0.001	-0.171	-0.744
EHT3. Mitigation of climate change.	3.451	0.954	0.788	<0.001	-0.107	0.471
EHT4. Land degradation.	2.259	0.749	0.838	<0.001	-0.997	0.964
EHT5. Provision of ecosystem services.	3.104	0.694	0.788	<0.001	-0.669	0.587
EHT6. Conservation of the environment.	3.987	0.369	0.815	<0.001	-0.247	0.459
EHT7. Bad environmental practices.	3.964	1.159	0.741	<0.001	-0.196	0.479
EHT8. No negative impacts.	3.129	1.978	0.758	<0.001	-0.974	-0.369
Sustainable Tourism Development (STD)						
Social Benefits (SOB)						
SOB1. Creating safe and efficient working conditions.	3.369	1.364	0.746	<0.001	-1.694	0.987
SOB2. Establishing interrelated partnerships.	4.445	0.974	0.789	<0.001	-0.974	0.421
SOB3. Enhancing information transparency.	3.694	1.339	0.794	<0.001	-0.364	0.364
SOB4. Empowering communities through training, innovation, and excellent service.	3.789	1.479	0.751	<0.001	-0.974	0.694
SOB5. Ensuring effective accessibility and infrastructure.	4.149	1.947	0.771	<0.001	-0.258	0.969
SOB6. Contributions to community welfare through improved health and social services.	3.964	1.452	0.783	<0.001	-0.369	0.647
SOB7. Balanced and fair distribution of benefits.	3.369	1.634	0.752	<0.001	-0.495	0.479
SOB8. Increased interaction with outside world.	4.459	1.479	0.795	<0.001	-0.789	0.269
SOB9. Empowerment of women.	3.594	1.964	0.751	<0.001	-0.964	0.479
SOB10. Social mobility.	3.964	1.694	0.756	<0.001	-0.224	0.749
Environmental Benefits (ENB)						
ENB1. Complying with local regulations.	4.694	1.947	0.766	<0.001	-0.469	0.964
ENB2. Using resources efficiently without wastage and destruction.	3.471	1.219	0.842	<0.001	-0.987	0.259
ENB3. Establishing clean water management by village institutions for tourism.	3.964	1.117	0.850	<0.001	-0.694	0.947
ENB4. Protecting resources, promoting clean production, and saving energy.	3.978	1.339	0.855	<0.001	-0.497	-0.694
ENB5. Creating a comfortable, peaceful environment.	4.412	1.947	0.881	<0.001	-0.978	-0.479
ENB6. Employment in ecotourism improved attitude towards conservation.	3.694	1.694	0.836	<0.001	-0.584	-0.459
ENB7. Increased awareness and education about environmental conservation of natural resources.	3.947	1.479	0.773	<0.001	-0.419	-0.693
ENB8. Revenues can be fed back into conservation and management of protected areas.	3.459	1.694	0.847	<0.001	-0.961	-0.547
ENB9. Tourism industry can reduce long-term carbon emissions.	3.961	1.369	0.804	<0.001	-0.479	-0.961
Economic Benefits (ECB)						
ECB1. Creating job opportunities for community participation in tourism development.	4.694	0.694	0.716	<0.001	-0.669	-0.663
ECB2. Providing employment and income sources for the community.	4.479	1.954	0.812	<0.001	0.479	0.733
ECB3. Establishing entrepreneurial zones with local resources.	3.961	0.559	0.866	<0.001	-0.369	-0.789
ECB4. Promoting recycling and environmentally friendly products.	4.789	1.947	0.820	<0.001	-0.919	-0.694
ECB5. Developing green products in tourism and agriculture sectors.	3.014	0.776	0.712	<0.001	-0.900	0.459
ECB6. Implementing circular economy	3.479	0.339	0.735	<0.001	-0.789	0.967
ECB7. Statistically significant positive effect on poverty reduction and alleviation	4.779	0.978	0.810	<0.001	0.223	0.694

Appendix 2: Pictures of the greatest manifestation projects



Pic.1 : <https://img.mhuc.gov.eg/images/2ea750ec-a63d-46e0-b579-691a964b01f4.pdf>



Pic.2 : <https://img.mhuc.gov.eg/images/2ea750ec-a63d-46e0-b579-691a964b01f4.pdf>



Pic.3: depicts the sacred burning bush (*Rubus sanctus*)

The Bush Church - Discover Egyptian Antiquities - Ministry of Tourism and Antiquities
(egy monuments.gov.eg) (accessed 4/5/2024 11pm)