



Maximization of the Tourism Impact of Folk's Celebrations Associated with Saint Demiana in Dakahlia through Augmented Reality

Emad Saeed Mohamed Ashmawy^a

Samah Abdel rahman Mahmoud^b

Yousri Abdelwahed^c

Hussein Abdel wahab Abdel rady^d

^a PhD Candidate, Tourism Guidance Department, Faculty of Tourism and Hotels, Minia University

^b Professor, Tourism Guidance Department, Faculty of Tourism and Hotels, Minia University

^c Professor, Tourism Guidance Department, Faculty of Tourism and Hotels, Minia University

^d Assistant Professor, Tourism Studies Department, Faculty of Tourism and Hotels, Minia University

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Abstract

The Monastery of St. Demiana in Belqas, Dakahlia Governorate, is one of the oldest nunneries in the world. It dates back to the 4th Century AD. Currently, it includes seven churches, the most important of which is the ancient church of St. Demiana, which was rebuilt on 12th of Bashans (May 20, 744 AD). It contains Demiana's body and the forty virgins. Demiana was martyred in the time of Diocletian on the 13th of Toba (January 21). The Egyptian churches celebrate this occasion annually. It is the largest popular religious celebration associated with Saint Demiana in the world.

The research is a cultural tourism study and depends on the descriptive analytical methodology in addition to having interviews with tourism officials, monastery's priests and number of the participants of this celebration for reaching to the desired results.

The research reviews the manifestations and rituals of Demiana's celebrations in Belqas, as one of the components of the intangible cultural heritage in Egypt, through the applications of augmented reality. The research also aims to put the monastery on the tourism map of Egypt and present a tourist route for participating in the celebrations of Saint Demiana Monastery, with stops to explain the history of the monastery, Saint Demiana, and Belqas region through augmented reality applications.

It is highly recommended to take advantage of the most effective applications of AR in the tourism sector, which can contribute significantly for maximizing the tourist impact of Demiana's celebrations and creating a tourism attraction in Delta.

1. Introduction

The celebrations of Saint Demiana's monastery in Belqas, Dakahlia Governorate¹, witness several religious, cultural, artistry, social, economic manifestations that confirm the special value of the Coptic folk celebrations in general and the celebrations of Saint Demiana's monastery particularly, as these celebrations witness events, customs, traditions and distinctive practices in Egyptian folklore that are necessary to continue to revive and preserve for future generations.

From this point of view, the heritage value of these celebrations constitutes a strong motive for researching how to maximize the tourism impact of it in a way that achieves economic benefit that helps preserving this heritage and contributes to its sustainability, which is what heritage tourism achieves.

Therefore, it is necessary to address some important points that help putting the folk's celebrations of Saint Demiana's monastery in Belqas, as a unique component of intangible heritage tourism, on the tourist map of Egypt and aggrandizing its tourism impact through augmented reality.

Augmented reality technology is considered one of the most important technologies that, through the development of its applications, can effectively contribute to maximizing the tourist experience in the cultural tourism destinations and enhance the competitiveness of these destinations in providing many religious, cultural and recreational tourism activities and services, as well as presenting the cultural heritage resources in a very innovative way that helps attracting many tourists from all over the world.

2. Research Objectives

- Highlighting the different manifestations of the celebrations of Saint Demiana, as one of the intangible heritage cultural tourism resources in Egypt, in a very interactive way using Augmented Reality applications.
- Setting a tourism route or itinerary of the annual celebrations of saint Demiana at Belqas including stop points for showing the biography of Saint Demiana, history of the monastery and the area of Belqas.
- Inclusion of Saint Demiana's celebrations on Egypt's tourist map and creating a tourist attraction in the center of the Delta region.
- Taking advantages of the most effective Augmented Reality applications in the field of tourism that can be used for maximizing the tourism impact of saint Demiana's celebrations.
- Increasing the tourism income of Dakahlia Governorate through highlighting these celebrations.

3. Research Methodology

¹ Dakahlia Governorate is one of the governorates of Lower Egypt. It occupies the northeastern part of the Delta region in Egypt, bordered to the north by Damietta Governorate, to the south by Qalyubia Governorate, to the east by Sharkia Governorate, and to the west by the Gharbia and Kafr El-Sheikh governorates. Its capital is the city of Mansoura.

- رضا محمد هلال، سلسلة المحافظات المصرية – محافظة الدقهلية، مركز الدراسات السياسية والإستراتيجية، مطابع الأهرام التجارية، القاهرة، 2004، ص 13؛ محمد رمزي، القاموس الجغرافي للبلاد المصرية من عهد قدماء المصريين إلى سنة 1945، الجزء الثاني، الهيئة المصرية العامة للكتاب، القاهرة، 1994، ص 27.

It is 3,459 km², and its population was 7,294,502 in 2022.

<https://2u.pw/bD70k> – Accessed on 12/8/2023, 12:22.

The city of Belqas is located on the northwestern side of the governorate. It is the largest city in Dakahlia. The monastery of St. Demiana is located 12 km north of Belqas.

- رضا محمد هلال، المرجع السابق، ص 13، 23.

The research is a cultural tourism study. It relies on the descriptive methodology that depends on the scientific analytical method for all data and information, along with making field studies to Saint Demiana's monastery and participating in the folks' celebrations associated to the saint in Belqas, in addition to having interviews and meetings with some tourism sector's officials, monastery's priests and number of visitors of this celebration in order to reach to the desired results.

4. Coptic Folk's Celebrations (Mawlid)

4.1. Mawlid Concept

Mawlid can be defined as a celebration of the birthday of a wali, the day of death or martyrdom of a saint, or the anniversary of the inauguration of his/her church. The duration of the festivities ranges from one to two weeks, and mawlid usually ends with a final night called "The Great Night" which is the main night of the celebration.²

The main purpose of holding a mawlid is to honor a saint or wali. It is celebrated annually in the place where the saint or wali was buried. Mawlid is not only a religious occasion, but also a social occasion for entertainment, listening to music, children's games, swings, and religious and popular dance.

Also, it contributes to thriving the commercial and economic activities. The multiplicity of celebrations led to the broad popular participation, the participation of large numbers of visitors and devotees, as well as the diversity of rituals, practices and beliefs during the celebrations.³

4.2. Saints Mawlid

Christians do not have mawlid, but feasts for martyrs and saints. The date of these occasions determined depending on the days of the saint's death, his martyrdom, or finding of part of his body, or building a church in his name, so one saint has more than one feast in the year, during which religious celebrations take place to honor him in all churches that bear his/her name. As a result, there are many such occasions that are supported by the church, which instills this belief in the conscience of Christians.⁴

Egypt celebrates 62 mawlid of saints and martyrs every year, such as Saint George, Saint Barsoum El-Erian, and Saint Demiana at Belqas.⁵

4.3. Saint Demiana Celebrations

This research deals with the folk's religious celebrations associated with Saint Demiana as a high value cultural heritage recourses. These celebrations are very similar to those of Muslim Walis, due to the big number of such these celebrations and their similarity in the means of celebrating. Therefore, it is very important to set an account of churches and monasteries that hold celebrations for the Saint all over Egypt. They are about forty-two church and a monastery all around the provinces of Egypt.

All of these celebrations contains only very simple religious practices and rituals, which are represented in raising prayers in the churches and reading the saint's biography in

² فاروق أحمد مصطفى، دراسات في المجتمع المصري، الموالد دراسة للعادات والتقاليد الشعبية في مصر، الهيئة المصرية العامة للكتاب، فرع الإسكندرية، 1980، ص 6؛ أشرف أيوب معوض، الموالد القبطية "مولد الأنبا شنودة نمونجاً"، مركز الدراسات القبطية، سلسلة دراسات قبطية، العدد السادس، أكتوبر 2015، ص 20-21؛ أحمد زكي حسن محمد، المناسبات الاجتماعية القبطية في مصر الإسلامية من العصر الفاطمي حتى نهاية العصر المملوكي، رسالة ماجستير، كلية السياحة والفنادق، جامعة المنيا، 2017، ص 210.

³ Abdelnour, Samia, Egyptian Customs and Festivals, the American University in Cairo Press, Cairo, 2007, p.71-72.;

فاروق أحمد مصطفى، المرجع السابق، ص 3-9.

⁴ نيكولاس بيخمان، الموالد والتصوف في مصر، ترجمة:- ر عوف مسعد، المركز القومي للترجمة، القاهرة، 2009، ص 34-35؛ داوود مكرم، مرجع سابق، ص 54؛

Wiens, Claudia Y., Coptic life in Egypt, the American University in Cairo Press, 2003, p.33.

⁵ عرفة عبده عرفة، موالد مصر المحروسة بين الماضي والحاضر، عين شمس لدراسات والبحوث الإنسانية والاجتماعية، القاهرة، 1995.

detail for following her footsteps, except for the great celebration of consecration saint Demiana's church at her monastery in Belqas on May 20, Bashans 12, which includes many cultural, artistic, social, economic and recreational activities⁶. All these manifestations will be explained in detail in this this research, as a case study, as follows;

4.3.1. Saint Demiana's Mawlid in Belqas

In Belqas, Dakahlia Governorate Celebrating, St. Demiana is celebrated twice a year; the first time is on the thirteenth of tuba (January 21), on the anniversary of the martyrdom of saint Demiana, the second time is on the twelfth of Bashans (May 20) of each year, on the anniversary of the consecration of her church. The main celebration takes place during the period from 10-20 of May (2-12 Bashans). The monastery receives large numbers of participants in honoring the saint religiously and popularly. This period is known popularly as "Mawlid Setna Demiana".⁷

4.3.2. Saint Demiana Monastery

4.3.2.1. Biography of Saint Demiana

Saint Demiana was born in the third century AD. Her father, Mark, was a governor of the city of Zaaforana in the Sisban Valley. His daughter, Demiana, refused marriage and devoted herself to praise and sanctification life. Mark built a luxurious palace outside the city for his daughter and forty virgins of her close friends who did not stop praying and fasting. During the reign of the Roman Emperor Diocletian, her father became the governor of al-Farama. Thenm he was martyred because of his adherence to Christianity.

Later, Diocletian sent a prince to Demiana in the city of Zaaforana asking her to leave Christianity but she refused strongly. With her adherence to Christianity, they tortured her with the most severe types of torment. She was killed with the forty virgins by Diocletian's soldiers on 13th of Tuba (January 21)-⁸

4.3.2.2. History of the Monastery

The history of the monastery is divided into three main phases;

- In the fourth century, Mark, Saint Demiana's father, built a palace outside the city of Zaaforana for his daughter to worship in with the forty virgins. After Saint Demiana's martyrdom with the forty virgins, their bodies were buried in the place where they

⁶ A field visit to the monastery and an interview with Dioscorus Shehata, Deputy Archdiocese of Saint Demiana Monastery on 19/5/2022.; (<https://cutt.us/hVj7c> – Accessed on: 12/4/2022, 22:15).

⁷ فاروق مصطفى، مرجع سابق، ص 6؛ مراد كامل، حضارة مصر في العصر القبطي، دار العالم العربي، القاهرة، ص190، ص 190-189؛ أشرف أيوب معوض، مرجع سابق، ص 21-22، ص 39؛ عصام ستاتي، مقدمة في الفلكلور القبطي، الهيئة العامة لقصور الثقافة، 2010، ص 26-27؛ عائشة شكر، موالد الأولياء والقديسين، دراسة فلكورية في الشخصية المصرية، الهيئة العامة لقصور الثقافة، القاهرة، 2022، ص56؛

Gabra, Gawdat, Be Thou There, the Holy Family's Journey in Egypt, the American University Press in Cairo Press, 2001, p. 126.

⁸ أمير نصر، القديسة دميانة الشهيدة عصرها- حياتها- ديرها، المطبعة التجارية الحديثة، القاهرة، 1980، ص25-56؛ سيرة الشهيدة دميانة، مطابع المعهد القبطي بالظاهر، مكتبة المحبة، القاهرة، د.ت، ص7-35؛

Debbane، M. Nicolas، *Le Moulded de Sitti Dimiana*، Tome V III، Bulletin de la societie Sultanieh de geographie، Imprimerie de IFAO، Le Caire، 1914، pp.79-84.؛ Delahaye، Gilbert- Robert، *Des apparitions au couvent de Sainte Damienne rapportees par Johann Michael Vansleb*، volume LX، Etudes Coptes، ed.par A. Boud' hors J. Gascou et D. Vaillancourt، Paris، 2006، p.112.

worshipped. Later, Empress Helena⁹, the mother of King Constantine, built a cemetery for saint Demiana and the forty virgins and surmounted it with a church. This church was consecrated in the time of Alexandros, Pope XIX (313-326 A.D.) on 12th of Bashans who ordained as a new bishop for Al-Defrana and Al-Brollos.

- In the sixth century AD, during the reign of Anba Youhanna, Bishop of Burullus, the church was destroyed and uninhabited.¹⁰
- In 744 AD, Prince Hassan bin Atahia, the governor of Egypt, the church was rebuilt with one dome and the bodies of the martyrs were buried in it, and Patriarch Khael (46) also inaugurated it on 12th of Bashans.¹¹

4.3.2.3. Description of the Current Monastery

It is one of the archaeological sites registered as Coptic antiquities by the Ministry of Tourism and Antiquities by Ministerial Resolution No. (338) of 1996.¹²

The Coptic monastery is a group of religious buildings for worship, including churches and cells. The monastery also has walls, fortresses, mills, a library, a water well and an apiary. Also, it contains a Baptistery and a cemetery for the monks.¹³

The Monastery of St. Demiana occupies an area of two acres approximately, about 12 kilometers away from the city of Belqas. It is surrounded by a large wall with a main gate leading to a wide open courtyard that includes seven churches, namely; The main (great) church on the south side, the church of St. Mar George Al-Muzahem on the western side, the ancient church of al-Sitt Demiana that is known as the Appearance Dome Church of because Copts believe that St. Demiana appears in the form of a great light above the dome on her annual feast (Mawlid al-sit Demiana), dating back to 1974.

Also, the monastery includes other four churches; the ancient Church of the Virgin, The Church of the Tomb or al-Manama that contains the body of Saint Demiana and her forty companions, the Hanging Church which dates back to 1871, and the Church of Anba Anthony that locates south of the Church of the Tomb and west of the Hanging Church. In addition to the seven churches, there is a convent for nuns surrounded by an internal wall, and the archdiocese building to the right of the main gate. On the eastern side, there are several rooms dedicated to receiving visitors, the library and halls for movie screenings. A three-storeys building was attached to the main (great) church building, the ground floor included the baptistery building, as well as a cemetery for the bishops, the second floor is a computer center for linguistic analysis of the Bible, and the third floor is a library belonging to the diocese.¹⁴ (Map. 1)

⁹ Saint Helena (247-327 AD) was born in the city of al-Ruha to Christian parents around the year 247 AD. She married Constantine, king of Byzantium, in 270 AD. She is the mother of Constantine, who was the first of the Roman emperors to become a Christian, and allowed Christianity to spread in the West. Helena participated with her son Constantine in building church buildings in Bethlehem and Jerusalem. Her discovery of the Holy Cross caused a movement to revive Jerusalem and encouraged tourism to it. She became a living example of the Christian empress who contributes to making the Roman Empire Christian. Also, she devoted many endowments to churches, monasteries and the poor. Then, she died in 327 AD at the age of eighty.

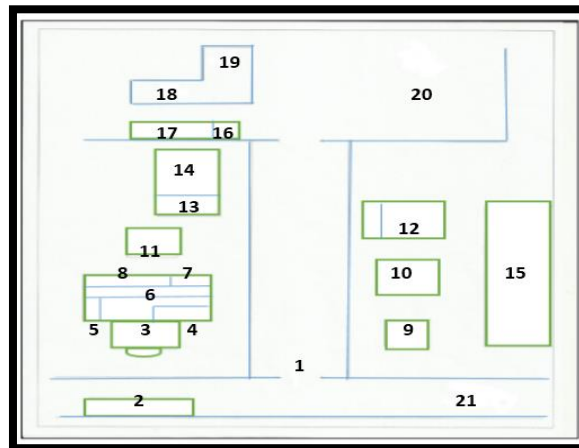
- القس يسطس (القس)، المسيحية في الأرض المقدسة، الخمسة قرون الأولى، القاهرة، 2010، ص 336-338.
¹⁰ الأنبا فيلبس (مطران الدقهلية)، مطرانية الدقهلية بين الماضي والحاضر، مطرانية الدقهلية ودير مارجرس بميت دمسيس وبلاد الشرقية، المنصورة، 2001، ص 59-61.

¹¹ اللجنة الجمعية للطقوس، السنكسار، ط2، ج2، اميريال بعابدين، القاهرة، 2013، ص220.

¹² سوزان السعيد، الموروث الشعبي رؤية تأويلية، الهيئة المصرية العامة للكتاب، القاهرة، 2018، ص 10.

¹³ جلال أحمد أبو بكر، الفنون القبطية، مكتبة الأنجلو المصرية، القاهرة، 2011، ص36-40.

¹⁴ الأنبا فيلبس، مرجع سابق، ص 61-62؛ عائشة شكر، مرجع سابق، ص 54-55.



(Map. 1): The Parts of Saint Demiana Monastery at Belqas.

(Designed by the Researcher)

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|---|---|
| 1. The Main Entrance to the Monastery. | 2. Guesthouses and Accommodation Buildings. |
| 3. The Great Church of Saint Demiana. | 4. The New Baptistery Building. |
| 5. The Bishops' Tomb. | 6. A Computer Center. |
| 7. The Library. | 8. The Church of Mark the Governor. |
| 9. The new Archdiocese Building. | 10. The new The Consecrated Women's Building. |
| 11. The Archaeological Church of Martyr George. | 12. The New House of Retreat above the Ancient Cells. |
| 13. The Church of the Tomb. | 14. The Archaeological Church of Saint Demiana. |
| 15. Toilets, Sales Outlets, Cafeterias and a Kitchen. | 16. The Second Archaeological Church. |
| 17. The Third Archaeological Church (currently Anba Anthony). | 18. The Nuns' Cells Building and the Nuns' Art Gallery. |
| 19. The Nuns' Work Building. | 20. Monastery Farms and Apiaries. |



(Pl. 1): An External View of Saint Demiana Monastery at Belqas

It Shows the Wall and the Entrance to the Monastery Between the Two Minarets, the Great Church, and the Archdiocese Building.

Source: (Monastery of the chaste Martyr Saint Demiana (churches, buildings of the monastery and handicrafts), photographed by the nuns of the monastery, published video on 3/10/2020).



(Pl. 2): The Nave of Saint Demiana's Ancient Church.

Source: (Monastery of the chaste Martyr Saint Demiana (churches, buildings of the monastery and handicrafts), photographed by the nuns of the monastery, published video on 3/10/2020).



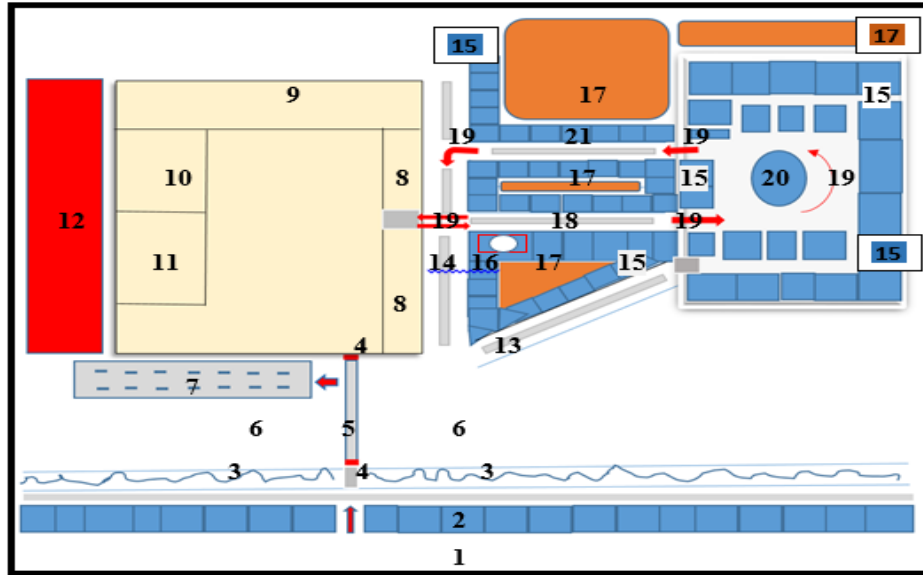
(Pls. 3): Saint Anthony Church (the Second and Third Ancient Churches).

نقلاً من: (ميرى مجدى أنور، الآثار المرتبطة برحلة العائلة المقدسة فى مصر بما تحويه من أيقونات وجداريات دراسة حضارية أثرية سياحية، رسالة دكتوراه غير منشورة، كلية السياحة والفنادق، قسم الإرشاد السياحى، جامعة الإسكندرية، 2011، شكل134).

4.3.3 The Manifestations of Saint Demiana's Celebrations

The popular belief is based on the fact that the saint respond only those who truly believe in him/her and celebrate him/her and burn his/her candles.¹⁵

The celebration of St. Demiana and its different popular rituals, practices and beliefs that take place every year can be invested as intangible cultural heritage tourism product, and also included in the map of religious cultural heritage tourism of Egypt which resulted in giving a competitive value to Egypt as a very unique cultural tourism destination.¹⁶ (Map. 2)



(Map. 2): A Map of the Celebration Area.
(By the Researcher)

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|--|--|
| 1. The Village of Al-Set Demiana. | 2. Shops, Stores and Cafeterias Looking over the Celebrations Area. |
| 3. Canal. | 4. Security Gates. |
| 5. The Way Leading to the Monastery and the Celebration Area (1.100 km). | 6. Agricultural Land. |
| 7. The Park. | 8. The Hospitality Building. |
| 9. The New Building of Monastery. | 10. The Ancient Palace. |
| 11. The New Church. | 12. The Sacred Red Land. |
| 13. Al –Magzar Al-Aly Street. | 14. The Street Separating between the Monastery buildings and the Main Celebration Area. |
| 15. Shops and Stores. | 16. Café and Cinema. |

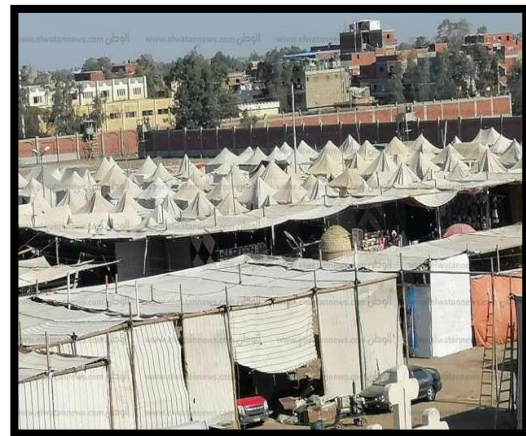
¹⁵ محمد غنيم، و سوزان يوسف، المعتقدات والأداء التلقائي في موالد الأولياء والقدسين، الجزء الثاني، موالد القديسين، المركز القومي للمسرح والموسيقى والفنون الشعبية، وزارة الثقافة، القاهرة، 2007، ص 133.

¹⁶ Huh, Jun, Tourist satisfaction with cultural heritage sites: The Virginia Historic Triangle, Master of Science, Blacksburg, Virginia, 2003, p. 7.

17. The Celebrants' Tents.
18. Al-Souq or Al- Zafa Street.
19. The Daily Icon Procession Route on the Area of Celebration.
20. The Main Square of the Cultural, Economic and Entertainment Area.
21. Al-Set Street.

Preparations of celebrating the mawlid of St. Demiana in Belqas start from the beginning of May. Christians pitch tents around the monastery and stay there for ten days (Pls. 4), while others prefer to reside in buildings belong to the monastery.

Swings and markets are set up for selling clothes, chickpeas, sweets, children's toys, medals, icons of saints and Christian symbols. Also, some shops are set up for preparing and selling different kinds of drinks and foods. (Pls. 5). Moreover, making washm or tattoos is one of the most popular practices in the celebration (Pls. 6), where celebrants can choose a specific symbol, sign, picture, or word to be made on their bodies.¹⁷



(Pls. 4): The Tents around the Monastery During Saint Demiana's Celebration.

Source: (Monastery of the chaste Martyr Saint Demiana (churches, buildings of the monastery and handicrafts), photographed by the nuns of the monastery, published video on 3/10/2020).

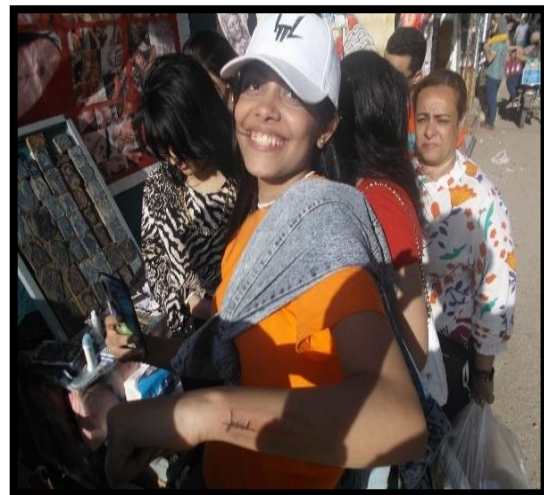


¹⁷ A field visit to the monastery and an interview with Dioscorus Shehata, Deputy Archdiocese of Saint Demiana Monastery on 19/5/2022.



(Pls. 5): The Vendors of Chickpeas, Different Kinds of Sweets, Children's Toys, Clothes and Icons in Saint Demiana's Celebration.

(By the Researcher)



(Pls. 6): Making washm.

(By the Researcher)

The celebrants of St. Demiana's celebration are from different social classes and age stages including the elderly, the middle-aged, the youth and children as well. There are large numbers of Muslims visit the monastery and participate in the several manifestations of the celebration which entirely assure the real unity and harmony of the popular beliefs.¹⁸

There are many reasons and motives of participation in this celebration. Some celebrants participate for the purpose of healing and treatment, to solve problems, or to fulfill a wish. Most of them burn candles and place vows, and some of them perform a special prayer in front of the icons of Saint Demiana, or write their wishes on papers wrapped neatly and place them under the icons or on the tomb of Saint Demiana. The content of these wishes is a request to solve some problems, Treat of diseases, or some marriage issues¹⁹ (Pl.7).

¹⁸ A field visit to the monastery and an interview with Dioscorus Shehata, Deputy Archdiocese of Saint Demiana Monastery on 18/5/2023.

¹⁹ نيكولاس بيخمان، مرجع سابق، ص 109.



(Pl. 7): The Tomb of Saint Demiana and the Forty Virgins.
(By Researcher on May 17, 2023)

Masses are held every morning during the celebration period from 10 to 20 of May every year. Visitors go every day to pray in the church and recite the Holy Mysteries. Also, the celebrants visit Manama Church to pray, ask for forgiveness and blessing of St. Demiana.

It is worth noting that participation in the Mawlid is for many purposes, the most important of which is receiving blessings, desire for treatment, recovery from some diseases, having children, completion of financial deals, or the desire for social relations. Mawlid is an opportunity for entertainment, fun, and social life that cannot be provided in this way through camps.²⁰

A lot of vows are made by visitors to the monastery on this occasion. These vows include sacrifices, sacks of flour and grain (Pl. 8), or sums of money.



(Pl. 8): Offering Vows during the Celebration in form of Grain Sacks.
(By the Researcher)

There are also many children who are baptized during the celebration. This occasion is celebrated with family and friends in a procession accompanied by music and religious songs related to St. Demiana.²¹ (Pls. 9)

²⁰ فاروق أحمد مصطفى، مرجع سابق، ص 207؛ أشرف أيوب معوض، مرجع سابق، ص 23-42؛ داود مكرم، مرجع سابق، 49.

²¹ مركز الدراسات السياسية والإستراتيجية، تقرير الحالة الدينية، العدد الثاني، الأهرام، القاهرة، ص 336؛ نيكولاس بيخمان، مرجع سابق، ص 109.



(Pls. 9): Celebrations of the Baptism of a Girl during Saint Demiana's Mawlid.

(By the Researcher)

The icon procession is one of the basic practices and manifestations of this celebration. The Processions is headed by the icon of Saint Demiana accompanied by the reciting of religious hymns in all streets around the monastery of Saint Demiana reaching the entrance of it. This icon acquires its importance of being an extraordinary image of Saint Demiana because it has a special ritual and ideological character. Before placing it in the church, the inaugural prayer is prayed over it. The icon is anointed with chrism oil and carried by a group of deacons, led by the Archbishop, and a group of deacons in their uniforms, carrying crosses and church musical instruments, and reciting hymns in a big procession. During this procession, thousands of people scramble to receive the blessings of Saint Demiana²². Therefore, there are groups of volunteers (Al-Kashafa) affiliated with the monastery surrounding the icon, the bishop, and the deacons. (Pls. 10).



(Pls. 10): The Icon Procession on the Closing Night of the Celebration, 19/5/2023.

(By the Researcher)

It is believed that saint Demiana appears over the dome of her tomb on the last night of the celebration (al-lila al-kebera) in the form of a dove. She also appears on the feast of

²² A field visit to the monastery and an interview with Dioscorus Shehata, Deputy Archdiocese of Saint Demiana Monastery on 19/5/2022.

her martyrdom on the 13th of Tuba (January 21) in the form of a dove or a halo of light, which is called the phenomenon of the transfiguration of St. Demiana. The celebrants spend this night waiting for the appearance of the saint. They also write their desires and wishes on papers bearing their names and throw them on the tomb of the saint. After that, they burn candles in front of the icons of the saint for receiving blessing.²³

5. Augmented Reality (AR)

5.1 Augmented Reality (AR) Concept

Information and Communication Technology (ICT) has become the most important tool for accessing information. Augmented Reality (AR) is a technology which merges the real world with computer-generated virtual data. The applications of augmented reality have not fully exploited yet but they are expected to grow rapidly in the upcoming years. AR applications contribute to the development of many fields such as medicine, agriculture, engineering, astronomy, archaeological discoveries, museums, tourism, etc.

Many studies dealt with augmented reality. Azuma mentioned that augmented reality technology is different from virtual reality, which introduces the users into an unrealistic environment. Augmented reality is featured by interactivity, merging part of the virtual world with the real one, and adding three-dimensional shapes to it.²⁴

Dede and Dunleavy defined augmented reality as an experience that combines the real world and computer-generated content synchronously. The content can span multiple sensory modalities, including auditory, visual, haptic, somatosensory and olfactory. It incorporates three basic features; a combination of virtual and real worlds, real-time interaction, and accurate 3D registration of virtual and real items and objects.²⁵

Also, augmented reality was defined by Yuen as an interactive experience that reinforces the real world with computer-generated perceptual information. Using software, applications, and hardware such as AR glasses, augmented reality overlays digital content into real-life environments. He also indicated that 3D and 4D shapes can be added as well as video, audio and text files to enhance user awareness of the real environment.²⁶

It is noteworthy that augmented reality is defined also as a system that combines the virtual reality with the real world through computers.²⁷ Technicians and researchers of augmented reality technology are keen to display virtual items and information in an integrated manner with the real world for a better interacting experience of the users.²⁸ So, the digital content, whether images, videos, websites, or three-dimensional (3D) or two-dimensional (2D) objects, are projected with high accuracy by calculating their

²³ نيكولاس بيخمان، المرجع السابق، ص 36.

²⁴ Azuma, R., *A survey of Augmented Reality*, Presence teleoperators and virtual Environment, vol.no.6, 1997, pp.365.

²⁵ Dunleavy, M. & Dede, C., *Augmented Reality Teaching and Learning*, Harvard Education Press, USA, 2006, pp.7-8.

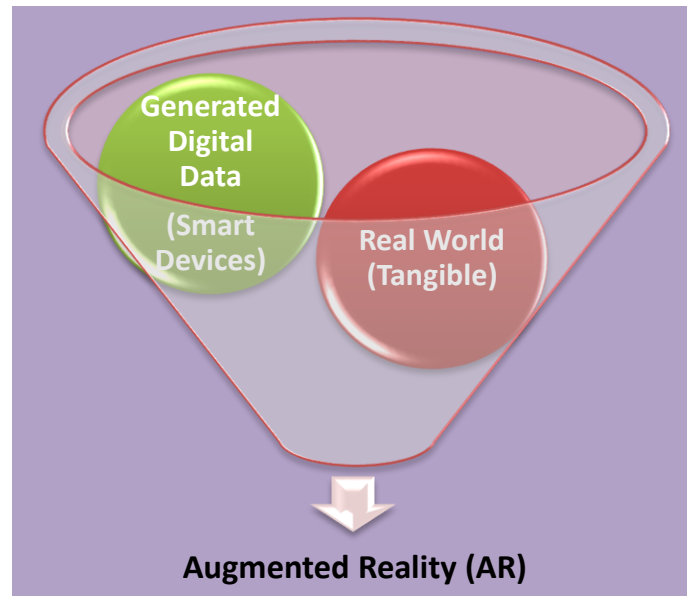
²⁶ Yuen, S. Others, Augmented Reality: An overview and five directions for AR in Education, *Journal of Educational Technology Development and Exchange*, 2011, pp.119-140.

²⁷ مها عبد المنعم محمد الحسيني، أثر استخدام تقنية الواقع المعزز (Augmented Reality) في وحدة مقرر الحاسب الآلي في تحصيل واتجاه طالبات المرحلة الثانوية، (رسالة ماجستير غير منشورة)، جامعة أم القرى، المملكة العربية السعودية، 2014، ص 9.

²⁸ Gabriel, t., "Interaction with 3D objects in the augmented reality system via mobile phones", <http://www.diva-portal.org/smash/get/diva2:692329/FULLTEXT02>, 2014. Another copy is preserved on (Wayback Machine - Internet Archive), on 10/6/2020.

locations before projection into the real world of the users which is so called “Camera Calibration process”.²⁹

The researcher can define augmented reality technically as an interactive, participatory, simultaneous technology that integrates the real world with the virtual world by projecting virtual objects and information (digital data) into the user's real environment, such as images, videos, websites, or three-dimensional (3D) or two-dimensional (2D) objects, which results in greatly enhancing the user's perception and interaction. (Pl. 11)



(Pl. 11): Augmented Reality (AR) Concept

(Designed by the Researcher)

5.2. Augmented Reality (AR) Patterns

The augmented reality technology depends on a system linking the real world features with the appropriate virtual element that is previously stored in the memory as geographical coordinates, location information, video, or any other information that enhances the real environment of the users, then analyzes it and works for integrating the virtual elements with it³⁰. AR technology not only displays digital objects in the real world, but also provides the possibility of interaction with these digital items and objects using the smart phone or glasses associated to it, as it is closely related to the concept of interaction in real time, but with the possibility of changing events³¹. (Pl. 12)

²⁹ Kevin Bonsor and Nathan Chandler, “How augmented reality works”, <https://computer.howstuffworks.com/augmented-reality.htm>, 2010. Another copy is preserved on (Wayback Machine - Internet Archive), on 10/6/2020.

³⁰ الحسين أوباري، أربع من أفضل تطبيقات أندرويد للتقنية الواقع المعزز، مجلة تعلم جديد، 2015/10/2، (<https://2u.pw/YFh6kl> - Accessed on: 3/4/2023)

³¹ Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, Journal of Arts and Humanities, Faculty of Fine Arts, Minia University, December 31, 2020, P 5. (<https://n9.cl/dvxxm> - Accessed on: 16/4/2023).



(Pl. 12): The Researcher is Interacting with some Digital Objects Using the Phone and AR Glasses Linked to it.

Source: The International Scholarship of Japan International Cooperation Agency (JICA) during the Period from January 25 to March 3, 2023 at (A) Himeji Convention Bureau on February 9, 2023 and (B) Zentan Bus Co. Ltd on February 15, 2023.

There are four patterns or types of augmented reality as follows³²;

5.2.1. Markerless AR

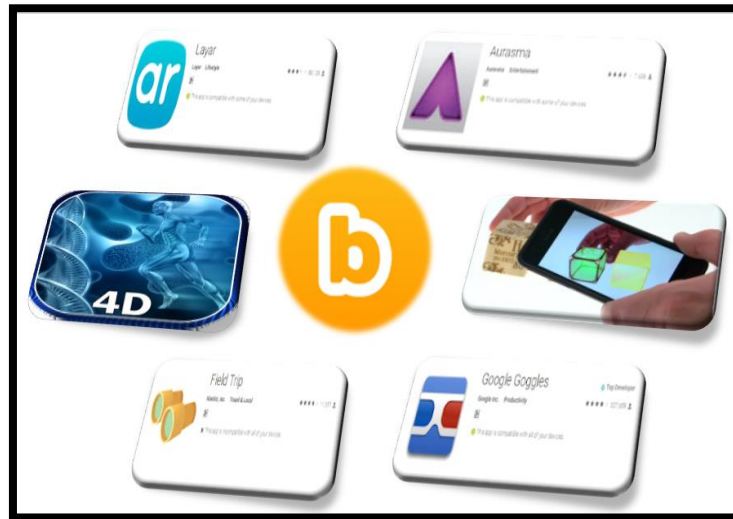
This pattern does not rely on the use of markers, but rather uses the geographical location of the camera through GPS or image recognition programs for displaying information (Pl. 13). Among the most important applications in the augmented reality industry are Google Translate, Layer, Aurasma, Field Trip, Blippar, Element 4D and Anatomy 4D. (Pl. 14)



(Pl. 13): Presentation of Using Markerless AR

Source: (Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, Journal of Arts and Humanities, faculty of Fine Arts, Minia University, December 31, 2020, P 5. (<https://n9.cl/dvixm> - Accessed on: 18/4/2023).

³² عبد الله بن إسحاق عطار، حسان محمد كمنساره، الكائنات التعليمية وتكنولوجيا النانو، ط1، الرياض، المملكة العربية السعودية، مكتبة الملك فهد الوطنية للنشر والتوزيع، 2015/1/21، ص 32-33؛ هند الخليفة، تقنية الواقع المعزز وتطبيقاتها في التعليم، جريدة الرياض، عدد 15264، 2017، ص 16.



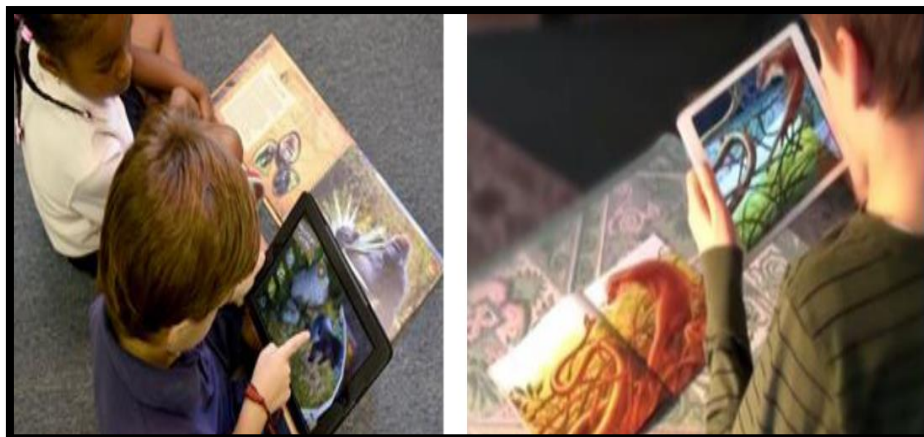
(Pl. 14): The Most Important Applications in the Augmented Reality Industry

(Designed by the Researcher)

5.2.2. Markers-Based AR

This pattern depends on the use of markers, so they are captured by camera and marked, and then the associated information is displayed.

It is worth noting that the steps followed in the work of the augmented reality technology are similar, whether this technology follows a mark or defines a geographical location (markerless); If there is a marker, the marker is recognized, then the three-dimensional shape appears on the surface of the mark, and in the case of absence of a mark, the surrounding location is detected and the digital information is assigned to specific coordinates on the network³³. (Pl. 15).



(Pl. 15): Presentation of Using Markers-based AR (Depending on a fixed Picture)

Source: (Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, Journal of Arts and Humanities, faculty of Fine Arts, Minia University, December 31, 2020, P 5). (<https://n9.cl/dvkxm> - Accessed on: 18/4/2023).

³³ Kipper,G. & Rampolla,J., *Augmented Reality: An Emerging Technologies Guide to AR*, Elsevier, Amsterdam, 2013, p.187.

5.2.3. Superimposition-Based AR

It depends on recognizing objects and exchanging the original pictures partly or totally. Many companies have used this type of augmented reality for helping their customers feel more connected to their brand. Ikea is one of those companies. Users can place objects on their screen, usually within a room. This method has proven its ability to raise the rates of sales and enhance the marketing of services and products, because of the fun and interactive way that is given to customers to know if they like the product without buying it or knowing the degree of their approval of the product, and if the product suits them or not. Superimposition-based AR can be used to make tourist tours in the historical and archaeological sites narrating the historical events related to such these places in a more realistic way and with a great degree of interaction with users/visitors³⁴. This model can be applied to the case of Saint Demiana's monastery in Belqas and the historical events and celebrations associated with it and the surrounding area. (Pl. 16)



(Pl. 16): Presentation of Using AR Based on Superimposition and Replacing Elements

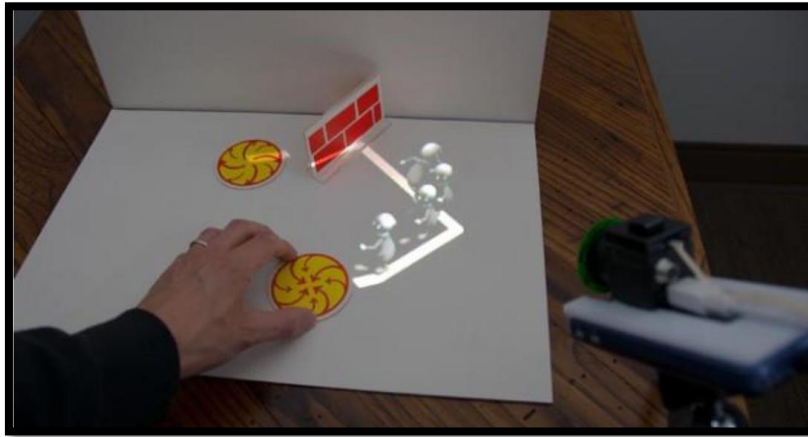
Source: (Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, Journal of Arts and Humanities, faculty of Fine Arts, Minia University, December 31, 2020, P 6. (<https://n9.cl/dvkxm> - Accessed on: 18/4/2023).

5.2.4. Projecting Light-Based AR

This pattern depends on projecting light or images onto a physical surface and allowing users/visitors interact with it. The appropriate light is projected for experience and interaction with it by comparing the original projection with the object or item that resulted from the user/visitor's touching of the projection place³⁵. (Pl. 17).

³⁴ Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, Journal of Arts and Humanities, faculty of Fine Arts, Minia University, December 31, 2020, P 6. (<https://n9.cl/dvkxm> - Accessed on: 26/4/2023).

³⁵ Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, Journal of Arts and Humanities, faculty of Fine Arts, Minia University, December 31, 2020, P 5. (<https://n9.cl/dvkxm> - Accessed on: 26/4/2023).



(Pl. 17): Presentation of Using Light Projection AR

Source: (Ibrahim Mohamed Ibrahim Abdulhady, “Augmented reality technology and the techniques of its using in producing and designing science fiction stories for children”, *Journal of Arts and Humanities*, faculty of Fine Arts, Minia University, December 31, 2020, P 5. (<https://n9.cl/dvixm> - Accessed on: 18/4/2023).

5.3. Augmented Reality (AR) in Tourism

Augmented reality (AR) is a technology that allows tourists to combine their experience with technology and place it in a real life. It also helps tourism service providers to market their services. This technology can attract more tourism service consumers by enhancing their experiences leading to increased income³⁶. AR is also concerned about presenting contextual information and assisting in many daily activities, which is particularly helpful when people are unfamiliar with the environment around them. By highlighting interesting features or bringing history to life, moreover, AR provides intuitive means to develop and enhance a touring experience³⁷. The widespread of AR came with use of the mobile devices like Smartphones; even that the AR technology has started in 196's and has become more essential in the last decade of the twentieth century³⁸. Tourists usually request precise and tailored information while exploring a tourism site. They need accurate information about lodging properties, restaurants and tourist attractions, amongst others, for making the most of their experience. Mobile Augmented Reality (AR) can help tourists in the process of gaining such information in a very simple and accessible way.

Combined with the information located on the Web, social media and streaming techniques, AR can improve and enhance the way users interact with the physical world, adding additional information about people, buildings or places to suggest previous memories or complement present stories³⁹. Augmented reality could relate to

³⁶ Shabani, N. and Hassan, A., Augmented Reality for Tourism Service Promotion in Iran as an Emerging Market. In: Nadda, V., Dadwal, S. and Rahimi, R. Promotional strategies and new service opportunities in emerging economics (eds), IGI Global, USA, 2017, pp. 116-129.

³⁷ Bermejo, C., HUANG, Z., BRAUD, T. and HUI, P., “When Augmented Reality meets Big Data”, 2017, (http://www.cse.ust.hk/~panhui/papers/carlosBermejo_hotpost_2017.pdf - Accessed on: 5/4/2023).

³⁸ Mesároš, P., Mandičák, T., Mesárošová, A., Hernandez, M., Kršák, B., Sidor, C., Štrba, L., Molokáč, M., Hvizdák, L., Blišťan, P., and Delina, R., Use of Augmented Reality and Gamification techniques in tourism. *Journal of eReview of Tourism Research (eRTR)*, 13 (1/2), 2016, pp. 366-381.

³⁹ Marimon, D., Sarasua, C., Carrasco, P., Álvarez, R., Montesa, J., Adamek, T., Romero, I., Ortega, M. and Gascó, P. MobiAR: Tourist Experiences through Mobile Augmented Reality, in 'Proceedings of 2010 NEM Summit. Barcelona, Spain, 2010.

any human sense, including sight (visual), hearing (audio), touch (haptic AR), smell (Olfactory) and taste (gustatory AR)⁴⁰.

Therefore, it can be said that augmented reality is one of the most effective and appropriate means that could be exploited for tourism promotion of the heritage, historical and cultural elements related to the Folk's celebration of St. Demiana's monastery in Belqas, as a case study, and shed light on them in a way that highlights them as a unique tourism potential. Augmented reality applications are used on many mobile platforms such as iPhone, Windows Phone, and Android smartphone as well.

5.3.1. Augmented Reality Applications

AR applications provide not only practical information, such as facts about accommodation, attractions, monuments and museums, but also customized information based on the user's preferences and context. With the increasing popularity of smart phones, mobile location-based AR applications have started to play an important role in the industry of tourism. These applications help visitors/users to access context-aware information on locations or tourist attractions that could enhance their knowledge about the area. Mobile location-based AR applications allow visitors/users to explore the world by adding new layers of location based information to their reality and to create lists of their favorite point of interests (POIs) through using this information⁴¹. Augmented reality applications in tourism, in implementation on the saint celebrations at Belqas, could be recognized in the following⁴²:

5.3.1.1. Augmented Reality as a Marketing Tool (ARM)

Augmented reality supports a special type of marketing known as augmented reality marketing (ARM). AR is an innovative and latest technology form as adopted by some business enterprises for strategizing their marketing campaigns. AR is applied as the combination of online and print advertising. The application of AR can thus become useful in a far greater way for reaching and interacting with those audience groups⁴³. This is commensurate with the circumstances of our case study, as the audience interested in participating in the popular religious celebrations are varied in terms of age, economic, educational and cultural level in addition to geographical distribution, which makes it necessary to depend on a marketing tool that suits all these market segments, achieving a high degree of interaction with them.

Augmented reality device applications (apps) can appear as having positive effects in marketing in general, and as potential campaign of marketing of tourism and hospitality marketing in particular. However, AR as a campaign of marketing needs to be given more sufficient attention for its development to meet the diverse tourist demands⁴⁴.

⁴⁰ Hollerer, T. and Feiner, S., Mobile augmented reality. In: Karimi, H. and Hammad, A. (eds) *Telegeoinformatics: Location-based computing and services*. Taylor and Francis, 2004, pp. 221-262.

⁴¹ Chen, W., Historical Oslo on a handheld device-mobile augmented reality application. *Proceedings of 18th International Conference on Knowledge-Based and Intelligent Information and Engineering Systems*, 35, 2014, pp. 979-985.

⁴² Digital Tourism Think Tank, "Augmented Reality in Tourism 10 Unique Applications Explained", 2017, (<file:///C:/Users/ABDALLAH/Downloads/10-AR-Best-Practices-inTourism.pdf> - Accessed on: 6/4/2023).

⁴³ Shabani, N. and Hassan, A., Augmented Reality for Tourism Service Promotion in Iran as an Emerging Market. In: Nadda, V., Dadwal, S. and Rahimi, R. *Promotional strategies and new service opportunities in emerging economics* (eds), IGI Global, USA, 2017, pp. 116-129.

⁴⁴ Celtek, E. (2015) Smart Technologies: Augmented Reality Applications in Tourism Marketing. In: *Emerging Innovative Marketing Strategies in the Tourism Industry*, Ray, N. (eds), IGI Global: USA, 2015, pp 116-132.

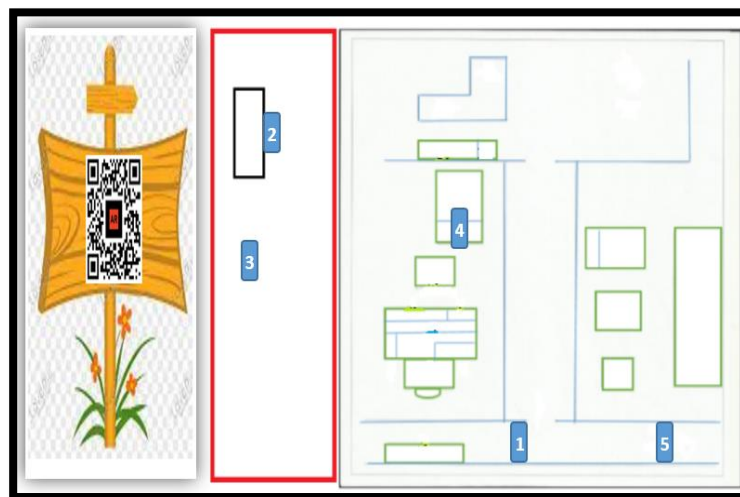
Therefore, this research addresses proposals for implementing augmented reality technology to display the different manifestations of the folk's celebrations of St. Demiana's monastery in a way that highlights the heritage, historical and cultural value of them and maximizes their tourism impact by contributing to creating high rates of tourism demand that certainly results in prosperity and development of local society.

5.3.1.2 Re-living Historic Life and Events

Re-creation of ancient historic destinations is a topic which lends itself naturally to AR with a number of developed commercial and prototypical systems. The first cultural heritage site that benefited from an augmented virtual reconstruction of an ancient temple was Olympia in Greece, where researchers developed the Archeo-guide AR System⁴⁵.

The AR cultural heritage building system is the most appropriate way to simulate or recreate the historical life and events associated with Saint Demiana, the forty virgins and Belqas region, in addition to many religious, cultural and social aspects related to the folk's celebrations of Saint Demiana, which have been celebrating hundreds of years ago reflecting many features of the Egyptian heritage. As all new systems and services tourism, the use of augmented reality also requires investments. Creating the suitable software, content or maybe the infrastructure could be costly and in a recent time needs further investment, but the technology evolving rapidly, and the enhanced services can attract more tourists and visitors⁴⁶.

The researcher prepared a map of proposed augmented reality spots at the monastery and the area of popular celebrations, to the right hand side of the Main entrance of the monastery, to be used as a guide of visitors participating in this occasion. (Fig. 19)



(Map. 3): The AR Spots Directions at the Site of Saint Demiana's Monastery
(Designed by the Researcher)

⁴⁵ Digital Tourism Think Tank, "Augmented Reality in Tourism 10 Unique Applications Explained", 2017, (<file:///C:/Users/ABDALLAH/Downloads/10-AR-Best-Practices-inTourism.pdf> - Accessed on: 6/4/2023).

⁴⁶ Attila, K., Beyond Reality - The Possibilities of Augmented Reality in Cultural and Heritage Tourism. In: proceedings of the 2ed International Tourism and Sport Management Conference, 2017, pp.120-125.

1. The history of Belqas Region and Building the Monastery.
2. Saint Demiana's Childhood and her Upbringing in addition to Building a Palace for Demiana by her Father, Mark the Governor, Located in the Ancient hill, after her Desire to Join the Life of Celibacy and Monasticism with the Forty Virgins.
3. Saint Demiana's Martyrdom (The Red Land).
4. The Visit of Queen Helena, Mother of Emperor Constantine, to the Site of Saint Demiana's palace and Building a Church over the Tomb.
5. The Different Aspects of St. Demiana's Celebrations and the Evolution of their Manifestations through the Ages.

5.3.1.3 An Enhanced Booking Experience

Readers of the Enquire magazine, Popular Science, or Time can explore additional multimedia content through pointing their Smartphone towards specific pages. This new breed of next-generation promotion could be applied as well to tourism catalogues, brochures, pamphlets, flyers and any other type of paper-based promotion materials. Hotels, theme parks, casinos but also virtual roller-coaster trips or special events could come to reality for providing a better sense and impression of what tourist is looking for⁴⁷.

In this way, the cultural and heritage content of the celebrations associated with St. Demiana can be identified and promoted smartly, including the folk's music, songs, games, competitions and rituals in addition to some miracles and historical facts associated with St. Demiana and the area of her monastery, which will reinforce the impression of tourists and enhance their experience.

5.3.1.4 Augmented Reality International Festivals

There has been a great dependence of many countries and institutions on AR technology as a means for achieving success and maximize the benefit from international festivals and giving them high competitive advantages. Augmented reality also plays a prominent role in improving the shopping experience and providing opportunities for business growth.

In 2022, Dubai shopping festival witnessed the launch of new digital experiences with audience participation and capturing the most prominent events of the festival via their mobile phones, as a new interactive potential was introduced through smartphones with 23 unique experiences of augmented reality. Once a QR code was scanned, new experiences opened up every week for more than 25,000 visitors.

The added digital character of the festival's entertainment shows, using augmented reality technology, gave a new dimension to the festival, with immersive and interactive experiences. Augmented reality experiences included 3D butterflies and flowers, and beautiful laser beam formations (Pls. 18), adding more values to the festival's opening ceremony. One of the best features is that it allowed users to record all augmented reality experiences of the festival on their own phones and share them on social media platforms⁴⁸.

⁴⁷ Digital Tourism Think Tank, "Augmented Reality in Tourism 10 Unique Applications Explained", 2017, (<file:///C:/Users/ABDALLAH/Downloads/10-AR-Best-Practices-inTourism.pdf> - Accessed on: 9/4/2023).

⁴⁸ "Dubai Festival presents the shopping experience with augmented reality for the first time in the region", Al Bayan, Dubai, 19/1/2022, available at (<https://2u.pw/EKbLxE>), accessed on 1/5/2023.;



(Pls. 18): Augmented Reality Applications at Dubai Shopping Festival in 2022

Source: (Dubai Festival presents the shopping experience with augmented reality for the first time in the region”, Al Bayan, Dubai, 19/1/2022, available at (<https://2u.pw/EKbLxE>), accessed on 1/5/2023).

In the 40th edition of the Cairo International Film Festival, which was held in November 2018, the “5dVR” company provided the AR service at the festival; So that an extra Layer of 3D graphics was added, which appeared to users/visitors to explain some ideas and concepts by looking at a specific objects or places through their own mobile phones, which results in a high degree of interaction with the different AR objects⁴⁹.

Therefore, it is necessary to enrich the various manifestations of the celebration of Saint Demiana’s Monastery, whether entertainment, religious, cultural or social, with the digital character in order to maximize its importance and economic return to society and highlight its historical, heritage and cultural value. Also, it is important to contract with some specialized creative studios to design games, XR experiences, and interactive content commensurate with the nature and importance of this celebration, to improve augmented reality experiences during the days of the celebration, in addition to providing an “E-Zone” that contains AR games and shows that celebrants can enjoy any day of the year, especially children, as they represent the largest segment among the various segments participating in this celebration.

Moreover, the cinemas that are held on the occasion of St. Demiana’s celebration every year should present some AR shows and Mixed Reality “MR” films for introducing the history and importance of the monastery, the surrounding area and preserving the Egyptian heritage and working on its continuity. These shows will result in enriching this celebration and give it new interactive values; as AR and VR technologies can be used very effectively in the field of cinema shows and presenting new ideas and values.

5.3.1.5. Augmented Reality Translation

Navigation and exploration of unfamiliar surroundings could be significantly influenced by the absence or shortage of clear translation of foreign language signs and instructions.

“Dubai Shopping Festival.. 23 unique experiences of augmented reality”, Al Ain News, Abu Dhabi, 20/1/2022, available at (<https://2u.pw/HX3YfR>), accessed on 1/5/2023.

⁴⁹ Nermin Helmy, “12 information about virtual reality and augmented reality at the Cairo Festival”, November 26, 2018, available at (<https://www.e3lam.com/371227/>), accessed on 1/5/2023.

Apart from street signs, AR applications could provide real-time immediate translation of the written texts on dinner menus, train schedules and newspapers headlines from a foreign to the native for the user language⁵⁰.

There are augmented reality applications that provide translation of the elements in real time, such as, menus, train times and newspapers. These applications translate in real time the language of the country where the tourist is located to his or her native language. Word Lens and Intelligent Eye are two commercial applications of Augmented reality that have the ability to do translations in real time, simply pointing the mobile device to the original text, overlapping it on the device display, the text already translated into the selected language⁵¹.

Therefore, AR applications could be exploited to provide visitors with simultaneous translations of the instructions and informative signs related to the celebration of St. Demiana, in addition to identifying them with the significance of the celebration and its religious, cultural and social aspects. Also, welcoming tourists upon their arrival to participate in the various rituals and activities of the celebration.

Currently, the Egyptian Tourism Promotion Board (ETPB) is equipping all tourist sites with signs welcoming messages to enhance the experience of tourists and increase their level of satisfaction⁵².

5.3.1.6. Augmented Transportation

AR systems are ideal tools which could guide tourists through unfamiliar environments. Navigation and way finding was one of the first application areas for AR. Augmented displays have the features needed to reduce the mental efforts required to both pedestrian and auto navigation. Navigation and signaling were the first areas of application of Augmented Reality in tourism⁵³.

Therefore, AR applications could be used to guide the participants in the celebrations area and facilitate the process of moving among the different sections of ceremony, which will result in saving a lot of effort and time, enhancing the experience of visitors, and achieving the maximum benefit from this celebration at all levels.

5.3.1.7. The Augmented Reality Hospitality Institutions Experiences

Augmented experiences can enrich the whole visit to a new destination. While a particularly suitable system to enhance AR experiences, hospitality Institutions have been lagging behind in harnessing the true potential of the technology. Hotels are very suitable venues for the development of AR applications. One of the best-known examples in this concern was developed by Holiday Inn. Through an AR application installed on the smart devices of the hotel guests, they can enjoy Olympic and Paralympic athletes as if they were in the reception, the saloon, or in their hotel rooms⁵⁴. (Pl. 19)

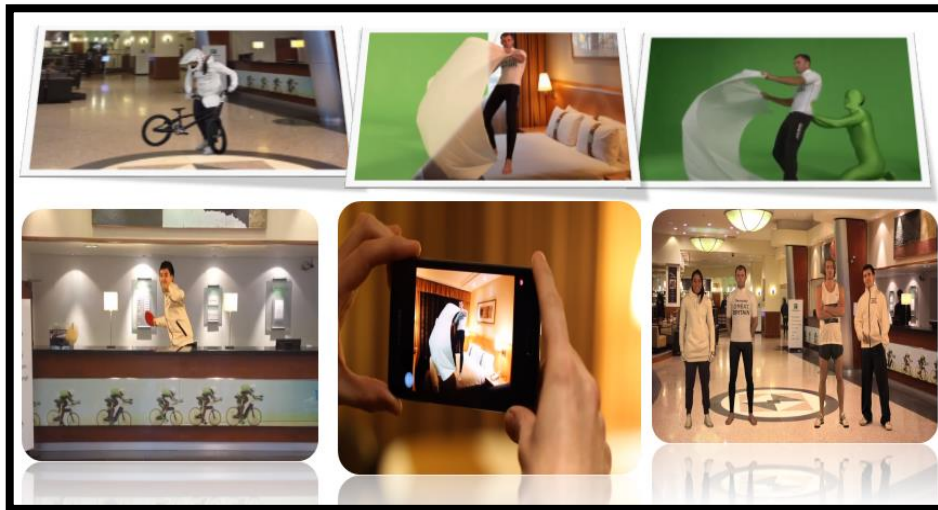
⁵⁰ Digital Tourism Think Tank, "Augmented Reality in Tourism 10 Unique Applications Explained", 2017, (<file:///C:/Users/ABDALLAH/Downloads/10-AR-Best-Practices-in-Tourism.pdf> - Accessed on: 9/4/2023).

⁵¹ Pereira, M., Oton, M., Cotos, J. and Remoaldo, P., Applying an Augmented Reality Tool to the Camino de Santiago in Portugal. In: Rodrigues, J., Ramos, C., Cardoso, P. and Henriques, C., Handbook of Research on Technological Developments for Cultural Heritage and E Tourism Applications (eds), IGI Global, USA, 2018, pp. 120-39.

⁵² An interview with Mrs. Ola Gamal, Director of Visitors and Tourists Satisfaction Department, Ministry of Tourism and Antiquities on 9/4/2023.

⁵³ Ozdemir, E. and Kihc, S., Augmented Reality: Applications and Implications. In: Handbook of Research and Technological Developments for Cultural Heritage and E Tourism Applications, Rodrigues, J., Ramos, C., Cardoso, P. and Henriques, C. IGI Global, USA, 2018, pp. 54-71.

⁵⁴ Buhalis, D. and Yovcheva, Z., Augmented Reality in tourism: 10 unique applications explained. Digital Tourism Think Tank, Bournemouth University, Dorset, 2014.; Luís Marques Martins,



(Pl. 19): Holiday Inn World's First Augmented Reality Hotel

Source: (Holiday Inn World's First Augmented Reality Hotel - The Making of & Nick Dempsey Aura), published videos on 23/10/2017), (<https://youtu.be/vAHvoNSQRlw>, <https://youtu.be/FeD255ANw0E> - Accessed on: 10/4/2023)

AR could be applied in setting of the guest houses of the monastery of saint Demiana and the places designated for practicing some activities related to the celebration. It could be used in offering the experience of seeing some great religious figures associated with the monastery's history and the area of Belqas, whether monks, nuns, fathers or travelers, historians, public figures and influencers, have previously participated in this popular celebration who will appear on screen when celebrants point their devices at specific sites in the guest houses and the places of performing some activities during the ceremony.

The experiences will be built by combining image recognition technology and chroma video. The app recognizes various building sites and triggers the overlay video footage of the figures, combining the real environment with these virtual elements. Celebrants could even interact with these honorable figures and take pictures with them through their own mobile devices and share them on their own social media.

5.3.1.8. Augmented Reality Services in the Restaurants

The AR experience is based on a projective AR system. Customers are able to interact with the tabletop and select their own table theme, order items from multimedia rich menu or watch a live video-feed from the kitchen. Such augmented applications leverage the abundance of tables and walls, seen as canvases, to providing both a physical collaborative space and an interactive computer display of virtual information⁵⁵.

AR restaurant experience could be applied in the restaurants, kiosks and outlets that are set up every year in cooperation with the monastery's management to provide food, meals, drinks and popular sweets to the participants in the celebration. Some objects could be projected represent the richness of the Egyptian cuisine and shed light on the cultural and historical background of the offered food and drinks that will result in

"Augmented Reality in Hotels Use Case - Holiday Inn, the first ever", Oct 23, 2017, (<https://cutt.us/BuIm6> - Accessed on: 10/4/2023).

⁵⁵ Ozdemir, E. and Kihc, S., Augmented Reality: Applications and Implications. In: Handbook of Research and Technological Developments for Cultural Heritage and E Tourism Applications, Rodrigues, J., Ramos, C., Cardoso, P. and Henriques, C. IGI Global, USA, 2018, pp. 54-71.

strong promotion and marketing the gastronomy and food tourism including some types of popular food such as beans, falafel, koshari, salted fish, and some types of meat and rice.

With such these projected objects, the celebrants could interact directly, whether during preparing, choosing, serving or having foods, in addition they could take picture with these objects through their own devices and share them on their own social media.

It is worth noting that augmented reality technology is used in some other areas closely related to the tourism sector, such as the presentation techniques of museums, training, marketing and tourist reservation, aviation, architectural designs, maintenance and restoration, tourist transport, teaching tourism sciences, hospitality and tourist guidance⁵⁶.

6. Results

- St. Demiana's great status among the Copts that appear clearly through the great folks' popular and religious celebrations, along with the large number of churches dedicated to her in Egypt, which number forty-two.
- The Monastery of Saint Demiana is visited by large numbers of Copts throughout the year, whether from inside or outside Egypt, due to the sanctity of the monastery and the great status of Saint Demiana, in addition to the participation of large numbers of Muslims in the celebrations of the Monastery that are held annually. Although there are no statistics related to the number of visitors to the monastery and their nationalities who visit the monastery throughout the year, Anba Dioscorus Shehata mentioned that the monastery receives annually about 250,000 visitors.⁵⁷ Despite, the monastery is not included on the religious-cultural tourism map of Egypt.⁵⁸
- The celebration of Saint Demiana's mawlid and the accompanying popular beliefs and manifestations are an important source for the study and documentation of the intangible cultural heritage.
- AR Technologies make it possible to take advantages of folk's celebrations in the field of tourism throughout the year without being restricted to their actual timing of holding which result in enhancing their revenues and tourism impact significantly.
- Using AR applications are easy to use and useful as they do not need mental efforts in addition, the content displayed consistent and informative.
- The AR applications enrich the tourists experience by providing valuable information during their tour by letting them to back to history and relive historic life and events including the folk's religious, cultural, social celebrations such as that of Saint Demiana's monastery at Belqas.
- Augmented Reality is a promising technology that can has a wide impact on many domains also those not commonly associated with computer technologies. Hence, AR applications will make the tour experience of the tourists different.

⁵⁶ Hazem Mohamed Sayed Farrag, January 2021, "Augmented reality technology in the field of tourist guides", Pp. 389-405, available at (https://journals.ekb.eg/article_258531.html), accessed on 28/4/2023.; Topic Tech, "Augmented reality technology uses", published on January 31 2022, last updating on October 2022, available at (<https://2u.pw/3p4pjX>), accessed on 28/4/2023.

⁵⁷ A field visit to the monastery and an interview with Dioscorus Shehata, Deputy Archdiocese of Saint Demiana Monastery on 19/5/2022.

⁵⁸ سوزان السعيد، الموروث الشعبي رؤية تأويلية، الهيئة المصرية العامة للكتاب، القاهرة، 2018، ص ١٥٠.

7. Recommendations

- Construction of AR System for the ceremonies and celebration of saint Demiana's monastery at Belqas to be the first of its kind in Egypt which will be a preparation for implementing this successful experience to the similar cases giving them an added value and a great competitive ability.
- The necessity of recording and documentation the different popular beliefs and manifestations of saint Demiana's celebrations as one of the legacies of Egyptian folk culture in accordance with the UNESCO agreement in 2003.
- The real need to put the Monastery of St. Demiana among the priorities of tourism planning in the Delta region, due to its religious, economic, cultural and recreational importance.
- The importance of adopting the concerned authorities, such as Dakahlia Governorate and the Ministry of Tourism and Antiquities, a tourism itinerary for visiting the monastery and participation in the saint's celebrations.
- Activating the role of the Regional Authority for Tourism Promotion in Dakahlia Governorate, through cooperation with all concerned entities for putting the Monastery of Saint Demiana and its related celebrations on the map of Egyptian tourism.
- Preparing a tourist guides about the Monastery of St. Demiana and the popular beliefs related to the mawlid in multiple languages, in addition to developing a plan for maximizing the tourism impact of the popular beliefs and several manifestations of St. Demiana's celebrations as one of cultural heritage tourism products.
- Paying more attention to the infrastructure in the Belqas region, which includes the electricity, drainage and communication networks, in addition to the roads leading to the monastery, and providing them with the tourist guiding signs in several foreign languages.

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