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The Role of Digital Technologies in Activating Archaeological Tourism – Babil Governorate

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Abstract
One of the recent trends currently prevailing in the travel and tourism sector in the 21st century is digital tourism. This paper set out to discuss the notion of digital tourism, the nature of digital tourism technologies, processes of the digital tourism experience as well as the archaeological tourist sites of greatest importance in Babil. The research was descriptive-analytical in nature and a random sample of tourists made of 156 people was used to gather the data through the questionnaire. The results made it clear that the digital technologies can play a very important role in stimulating archaeological tourism in Babil Governorate. The research also presented a number of recommendations such as considering digitalization in the strategy of tourism development in Iraq and utilizing the experiences of other countries in digital tourism to apply it in archaeological sites in Babil.
Keywords: Digital technologies – Digital tourism – Archaeological tourism – Babil

Introduction

With the advent of the massive technological changes, tourism has become a digital tourism or Tourism 4.0 that has radically changed the tourist, company, and destination behavior leading towards a smarter digitalization (Pencarelli, 2020). This is a novel model that aims to unlock innovation potential in the entire tourism industry with the help of the enabling technologies of the Fourth Industrial Revolution, like the Internet of Things, big data, artificial intelligence, virtual reality, and augmented reality, to provide a rich tourism experience in the physical and digital worlds (Peceny et al., 2019). This has resulted in what is now called the digital traveler, which is also known as SoLoMo, the acronym of Social, Local, and Mobile (Koul and Jasrotia, 2025), that is, a tourist who is always on social media, local apps, and mobile solutions. Tourists constantly demand information via local applications to complement the destination experience and use mobile technologies due to their constant connection to mobile devices (Ejarque, 2015). This means that the tourism and travel sector is currently starting the digital experience before the tourist decides whether to travel or not (Tung and Au, 2018) and proceeds until the tourist returns to his or her country (Gonzalez et al., 2020). Through this, the digital revolution has brought an overall revolution to the global tourism industry, which has initiated a progressive reengineering of tourism to a radical transformation with technology, which has disrupted the industry structure and generated a myriad of potential opportunities (Morais et al., 2025).

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Babylon Governorate is one of the most renowned tourist destinations in Iraq, owing to its significant, distinctive, and unique archaeological attractions, which have played a prominent role in Iraqi civilization since the earliest times. Babylon is distinguished by its ancient civilization, cultural heritage, and old archaeological sites (Majran, 2019). The Greeks referred to it as *Babylon*, from which the name of the Land of Babylon was derived, the name by which ancient Iraq was known since the second millennium BCE (Al-Bakirat, 2022). Babylon Governorate is located in central Iraq, and although its administrative capital is the city of Al-Hillah, the city of Babylon itself is the oldest, with a history dating back approximately 4,500 years. It is considered one of the most famous tourist cities in Iraq, in addition to its wide international recognition (Al-Saadi and Al-Saidi, 2019).

Given the great tourism importance of Babylon Governorate, it has become necessary to employ all possible means to stimulate tourist movement to it from various Iraqi governorates, as well as to enhance international archaeological tourism to Babylon. This can be achieved through the adoption of modern technological tools and methods provided by the diverse technologies of digital tourism.

Research Problem:

Archaeological tourism in Iraq in general, and in Babylon in particular, faces multiple challenges in the areas of tourism promotion, attracting international tourists, and increasing domestic tourism flows. These challenges stem from poor transportation and mobility infrastructure, low levels of tourism services, and weak tourism marketing activities carried out by tourism and hospitality companies. Moreover, the challenge has further been exacerbated by the fact that the behavior of tourists in the twenty-first century has been characterized by increased dependence on information technology and other digital devices. This fact implies that the Iraqi tourism industry as a whole should be developed by both the public and the private tourism institutions, as well as initiate the use of digital tourism tools to make archaeological sites more appealing. The aim of such activation is to provide added value and competitive advantage that prompts tourists to participate in archaeological tourism in Babylon despite the existing challenges that can be addressed by using the latest digital tourism technologies. In this framework, the research problem is expressed in the following question: What part play digital technologies in the renewal of archaeological tourism in Babylon Governorate?

Research Hypothesis:

The opinion expressed by a sample of tourists intending to visit archaeological sites in Babylon Governorate has statistically significant association between digital tourism technologies and the possibility of revitalizing the archaeological tourism according to opinions gathered.

Research Objectives:

1. To get to know what digital tourism is in its modern shape.
2. To determine the different types of digital tourism technologies being applied across the world.
3. To analyze the processes of the online experience in tourism and travelling.
4. To shed some light on the most significant archeological tourist attraction sites in Babylon.
5. To identify the perception of a sample of tourists on the contribution of digital technologies in enlivening archaeological tourism in Babylon Governorate.

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Significance of the Study:

The relevance of the given research is due to the evolution of technologies in the tourism and travel sector, which has become entirely reliant on the modern digital technologies and tools they offer, including the Internet of Things, artificial intelligence, big data, blockchain, and virtual and augmented reality. The new technologies have transformed tourism and travel and have significantly impacted the purchasing pattern of the tourists which has taken a more digital shape. Consequently, the 21 st century tourist has been referred to as the digital tourist. Since archaeological tourism in Babylon, Iraq and security issues are institutional, organizational and security issues, implementation of digital technologies by archeological institutions may play a part in overcoming the challenges, encouraging tourists to visit the archeological sites in Babylon, and rejuvenating archaeological tourism. This is especially essential in the light of the active part of the sector in the development of local communities, the support of the national economy and sustainable development. In this regard, the role of digital technologies in re-energizing archaeological tourism in Babylon becomes one of the most important in terms of allowing the destination to maintain the pace with more developed world tourism destinations and to take a niche in the world tourism map.

First: Review of the Theoretical Literature of the Study

1. Digital Tourism

1.1 Digital Tourism Concept: Digital tourism is a modern ecosystem that is founded on creating high-tech services that have several distinctive features: interoperability, which is ensured by the standardization of communication protocols; virtual simulation, when physical processes are managed using cyber systems; decentralization, whereby every computer or technological device can independently decide in centralized processes; real-time data collection and analysis; service orientation, as it is directed to both external and internal consumers of organizations; and modularity, which makes it flexible enough to respond to any changes in the business environment (Pencarelli, Digital tourism is based on speed, ease, and efficiency in facilitating tourism promotions that have led to growth of tourism institutions due to the adoption of digital technologies in operation management. Therefore, the issues of digital solutions have become one of the pressing needs to attain sustainable tourism, ensure competitiveness, and follow the modern global trends (Al-Mouji, 2022).

1.2 Digital Tourism Technologies: The most significant technology in digital tourism is the following:

1.2.1 Internet of Things (IoT): The Internet of Things is a concept closely related to digital tourism since it is the general framework that embraces a variety of factors (that include internet and web networks, the physical world, and devices) that sense physical and digital things and interconnect them with the help of the corresponding technologies (Pencarelli, 2020). Some of them are IoT-based personal navigation in smart museums, which improves the cultural experience of the tourist (Del Fiore et al., 2016).

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1.2.2 Big Data: The digital economy has helped to bring about the concept of big data, which is the large volumes of digital data that are disseminated on the internet. The sensors incorporated in the IoT systems receive this data, the digital footprint that tourists leave when doing things online and offline (Pencarelli, 2020). The use of big data has proven useful insights to stakeholders in the tourism sector in helping them achieve a number of objectives that include; predicting travel demand, effective decision-making, knowledge flows and interactions with tourists, and providing efficient and quality services (Buhalis and Leung, 2018). Indicatively, with big data analytics, digital tourism mobile applications can be used to offer information on tourists, and thus, analyzing travel patterns and their effects on tourism environment becomes possible (Kim et al., 2019).

1.2.3 Blockchain: Blockchain can be applied transparently and without any intermediaries in payment processes, booking, and international settlements among other service providers, such as tourism and travel agencies, hotels, and data aggregation companies, such as Skyscanner, Google Flights, Expedia, and Booking.com (Önder and Gunter, 2020).

1.2.4 Artificial Intelligence: Artificial intelligence has been used more to assist in real-time services in the tourism sector and assists in creating shared value among all stakeholders on various platforms. Real-time interactions enhance collective performance, increase competitiveness, and generate flexible, value-added solutions for all participants in the industry (Buhalis and Sinarta, 2019). Best instances of the use of AI are represented by travel, tourism, and hospitality companies to automate services and deploy robots in the form of chatbots, delivery robots, reception robots, mobile restaurants, and self-service information and check-in kiosks (Ivanov and Webster, 2017).

1.2.5 Augmented Reality and Virtual Reality: In augmented reality, companies use technological tools to add and display content that captures the interest of the digital tourist alongside the real environment being viewed (Scholz and Smith, 2016). In virtual reality, the digital tourist undertakes a virtual journey engaging all senses within a non-realistic context, with the aim of refining desires and expectations. In both cases, tourists enjoy a unique emotional experience even before leaving their location, exploring what they would otherwise only experience during the actual trip (Obeidy et al., 2017).

1.3 The Digital Experience in Tourism and Travel: Digital technologies in the era of digital tourism have fundamentally influenced tourists' behaviors before, during, and after travel, to the extent that traditional tourists have transformed into digital and smart tourists (Wang et al., 2014). Accordingly, digital tourism and travel experience practices can be identified as follows:

1.3.1.Online Information Search: In the eyes of the tourists, a tourism trip is an information-intense consumption experience in which it takes a significant amount of effort to gather information and develop a mental image of the destination and subsequently make the travel decision (Azevedo, 2021). Tourists use the information sources of search engines and social media, which is underpinned by mobile technologies that are widely accessible, have powerful computing capabilities, and find it easy to access information because of the integrated algorithms of artificial intelligence (Li et al., 2021).

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1.3.2 Online Booking and Payment: The use of modern technology has also helped to streamline purchasing procedures and reserve services online (O'Connor, 2023), and electronic modes of payment are also boosted through the implementation of the blockchain technology (Önder and Gunter, 2020).
1.3.3 Digital Services in Airports: digital technologies are used to support tourism travel processes in the airports which include self-check-in devices, self-services baggage drop, and automated passport control using facial recognition technology (Kazandzhieva and Filipova, 2019).
1.3.4 Easy digital entry to Accommodation: The tourists will be able to access the hotels by their means of autonomous vehicles by entering the airport (Tung and Au, 2018).
1.3.5 Hotels Digital Reception: As soon as tourists enter hotel entrances, automated employees (robots) greet them, and they can put in their check-in information using self-service machines (Robinson et al., 2020).
1.3.6 Hotels Digital Reception and Room Allocation: A digital key is downloaded to the smartphones of the tourists to spend their entire stay at the hotel, automated robot transports them to their room (Pillai and Sivathanu, 2020).
1.3.7 Digital Hospitality Services in Hotels: Hotels can provide smart digital devices in hotel rooms that allow tourists to easily use mobile apps, tablets, or voice-activated digital assistants (Buhalis and Moldavska, 2021).
1.3.8 Digital Food Ordering: Tourists can order food and drinks at restaurants using self-service kiosks or use tablet computers on the table (Cha, 2020). Mixed reality (virtual and augmented reality) applications can also be utilized by them to see the food and choose products online (Serravalle et al., 2019). Moreover, guests can also have food delivered outside the hotel, and it will be delivered by a drone or an autonomous vehicle (Buhalis et al., 2024).
1.3.9 Automated Tourist Guidance: This involves the use by tourists of automated tourist guidance services on outdoor tours by means of chatbots or voice-activated digital assistants (Pillai and Sivathanu, 2020).
1.3.10 Virtual Tourism Tours: With the revolutionary metaverse technology, tourists can create virtual and physical tourism experiences and traverse through time and space to experience the historical experiences and explore natural and human phenomena to highlight the tourist attractiveness, enhance sustainability, and protect the environment (Buhalis et al., 2023).
1.3.11 Digital Check-out and Payment Procedures: once the tourists are done with their tourism trip, they complete check-out procedures and make payments electronically (Ji et al., 2024). These types of technological advancement help enhance the efficacy and sustainability of tourism and travel sector and make the tourism experience more meaningful and more than the simple transactions (Buhalis et al., 2024).
2. Archaeological Tourism in Babylon: The ancient man created a successful civilization in Babylon, whose traces are reflected in numerous archaeological sites which are directly associated with the history of the ancient city of Babylon. As shown in Table (1) and Figure (1), archaeological tourism sites are distributed all over Babylon Governorate.

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Table (1): Distribution of Archaeological Tourism Sites in Babylon Governorate

Administrative Units	Number of Archaeological Sites	Percentage (%)
Al-Kifl Subdistrict	42	10.9
Al-Mashrouʿ Subdistrict	42	10.9
Al-Madhatiyah Subdistrict	41	10.6
Al-Shomali Subdistrict	37	9.6
Al-Nil Subdistrict	32	8.3
Jurf Al-Sakhar Subdistrict	28	7.2
Al-Iskandariyah Subdistrict	27	7.0
Abi Gharaq Subdistrict	20	5.2
Al-Qasim Subdistrict	19	4.9
Al-Hillah District Center	18	4.7
Al-Saddah Subdistrict	17	4.4
Al-Taliʿa Subdistrict	16	4.1
Al-Mahawil District Center	16	4.1
Al-Imam Subdistrict	14	3.6
Al-Musayyib District Center	13	3.4
Al-Hashimiyah District Center	5	1.3
Total Governorate	**387**	**100%**

Source: (Majran, 2019).

Babylon Governorate includes approximately 387 archaeological sites according to the records of the Babylon Antiquities Inspectorate. These sites are distributed across the various districts and subdistricts of the governorate. The Al-Kifl and Al-Mashrouʿ subdistricts together account for about 38% of the total archaeological sites, whereas the lowest proportion 1.3% is located in the center of Al-Hashimiyah District. Given that the archaeological sites in Babylon are so numerous that it is difficult to enumerate them within the scope of this study, emphasis has therefore been placed on highlighting the most important archaeological sites in Babylon Governorate.

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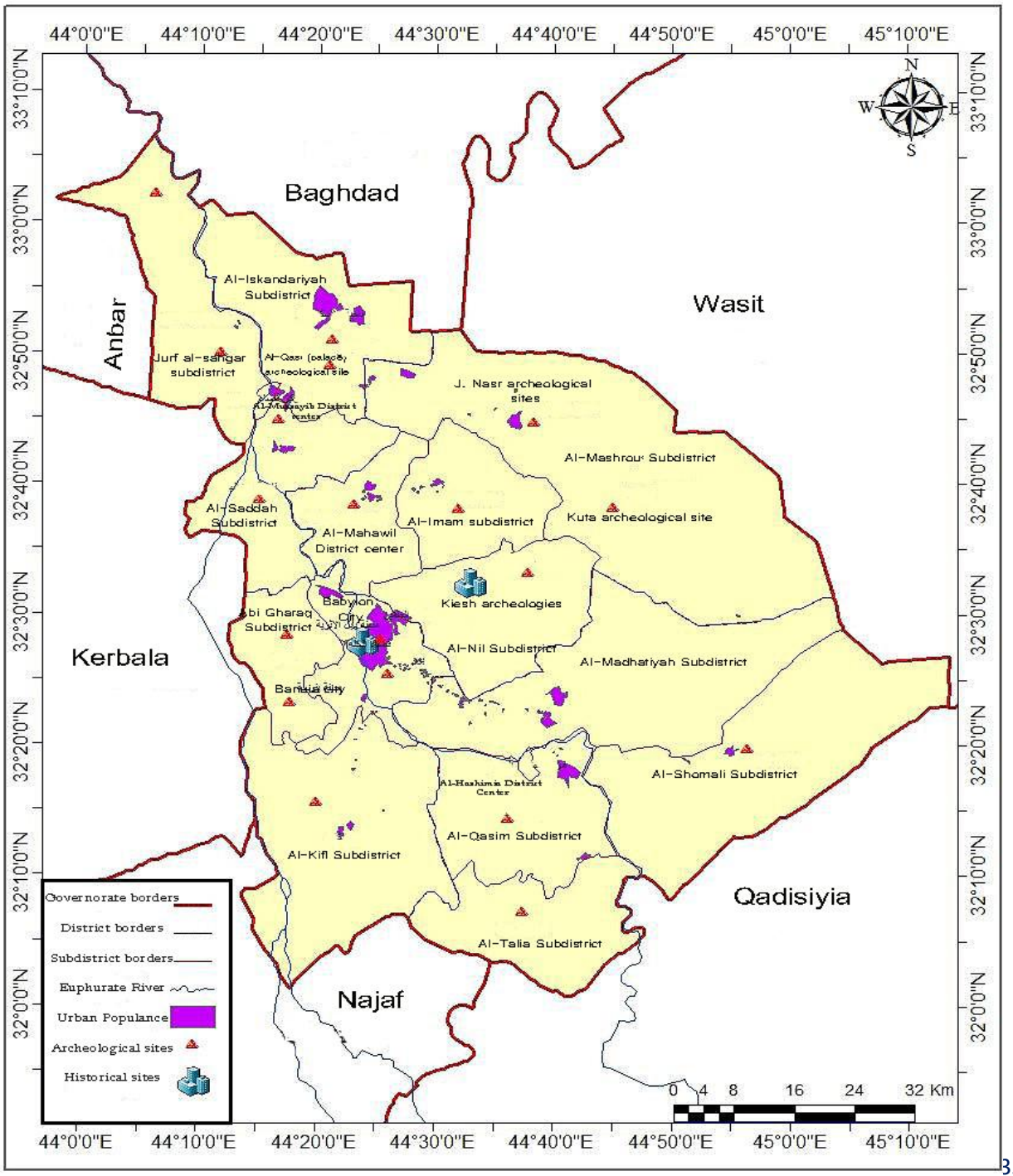

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Source: (Salman, 2017)
Figure (1): Map of Archaeological Tourism Sites in Babylon Governorate

2.1 The Archaeological City of Babylon: The archaeological city of Babylon is considered one of the most famous ancient Iraqi cities. It is mentioned in the holy scriptures, and its walls and Hanging Gardens are counted among the Seven Wonders of the Ancient World. The earliest reference to Babylon dates back to the Akkadian period during the reign of King Sargon (2334–2279 BCE). During the Neo-Babylonian period, King Nebuchadnezzar II undertook a comprehensive renovation of the city, reconstructing its walls, towers, and palaces (Salman, 2008). The city has also a lot of important archaeological remains, such as royal palaces, temples, the Ishtar Gate, the Ziggurat of Babylon, the Greek theater, and other monuments which are also major archaeological tourism sites in Babylon (Al-Bakirat, 2022).

2.2 Archaeological Wall of Babylon: The ancient city of Babylon consists of two giant walls namely: the inner wall and the outer wall. The inner wall was called Imgur-Enlil by the Babylonians or to rise or to be lifted. It encloses the city on every side and has two huge walls made of baked brick and mud-brick, crowned with fortification towers. It has eight gates and is in direct relation with the main citadel (Sachs, 2009). The outer wall was the Shalku Wall, in Babylonian Nimitti-Enlil, which translates to: the foundation of the god Enlil. It is composed of three walls: the inner wall is made of mudbrick that is 8 meters thick, the middle wall is made of fired brick which is 7-8 meters thick and the outer wall is made of fired brick which is 3 meters thick (Majran, 2019).

2.3 The Ishtar Gate: The Ishtar Gate is among the most popular archeological sites of Babylon. It was built under the rule of king Nebuchadnezzar II and is made of a twin gate structure. The front entrance consists of the smaller gate which has bright pictures of the animals in red and white like the bulls and the mythical dragon. This gate is now in the Museum of Berlin. The bigger size gate is on the back entrance and there is a passageway between the two gates between inner and outer walls (Farid, 2017).

2.4 The Ziggurat Tower: The Ziggurat Tower is the Babylonian great Tower built in the Middle Babylonian period and the approximate height of the Tower is 91 meters. It was destroyed when King Sennacherib (705 681 BCE) was at the throne but it was rebuilt later by his son King Esarhaddon. Later on, King Nebuchadnezzar II brought out a total renovation that made it one of the most notable landmarks of the archaeological city of Babylon (Salman, 2008). The ziggurat is made up of seven successively smaller layers, the upper layer being a temple, and assuming a semi-pyramidal shape (Al-Moussawi, 2013).

2.5 Palace of Nebuchadnezzar II: The size of the palace is around 151,000 m 2. King Nebuchadnezzar II rebuilt it based on a rectangular architectural design with five courtyards that have halls with the biggest being the Throne Hall (Alwan, 2013). The Throne Hall has a size of approximately 1, 000 m 2 and is glazed with decorative motifs (trees) on the center and the lion on the bottom and other figures on the sides and the upper part. There are three doors to the hall, with the northern having the view of the central courtyard connecting the buildings situated within the inner wall of the city to the main citadel (Talib, 2013). The palace had been built using Babylonian fired brick and is enclosed

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by a huge wall whose thickness is between 7 and 11 meters thick. King Nebuchadnezzar II increased the size of the palace to the river Euphrates and lined it with gold, silver and precious stones (Sachs, 2009).
Second: The Applied Aspect of the Study: In order to attain the applied aspect of the study, the researcher developed a questionnaire to demonstrate the role of digital technologies in rejuvenating archaeological tourism in the Babylon Governorate on a five-point Likert scale. The questionnaire had four demographic questions and nine thematic items. It was issued to random sample of tourists in archaeological city of Babylon and 156 questionnaires were collected.

A.Descriptive Statistics of Demographic Data:

1. The study sample was dominated by males (53.2) compared to females (46.8) meaning that men enjoyed a higher portion in the profession of tour guiding.
2. The age group of 35 45 years was the best with 54.2 then the group of 45 55 years was following with 31.1 then those below 35 years was the last with 14.7. This means that young and old age groups are interested in archaeological tourism in Babylon.
3. With respect to educational level, bachelors degree holders were top with 84.6% followed by postgraduate degree holders with 9.6% and secondary education came with 3.5% and lastly preparatory education with 2.2%. This indicates a close correlation between increased education and enthusiasm in the archaeological tourism in Babylon.
4. In terms of the number of visits, first-time visitors were the highest at 51, second-time visitors came next with 32.4, and the third-time visitors with 16.6 indicating that there was high interest among tourists in visiting the archaeological sites in Babylon.

B. Descriptive Statistics of the Thematic Items

Table (2): Descriptive Statistics of the Study Sample's Responses to the Questionnaire Items

Item	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean
	No.	%	No.	%	No.	%	No.	%	No.	%	
X1	0	0.0	4	2.6	55	34.9	57	36.9	40	25.6	3.85
X2	5	3.5	4	2.6	40	25.3	72	45.8	35	22.8	3.81
X3	0	0.0	9	6.1	40	25.6	41	26.0	66	42.6	3.99
X4	15	9.6	5	3.5	26	17.0	45	28.8	64	41.0	3.88
X5	11	7.1	8	5.1	4	2.6	37	23.7	96	61.5	4.26
X6	0	0.0	4	2.6	19	12.2	41	26.0	92	59.0	4.41

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X7	0	0.0	9	6.1	21	13.1	43	27.2	83	53.5	4.27
X8	5	3.5	8	5.1	21	13.1	43	27.2	80	50.0	4.16
X9	4	2.6	10	6.1	41	26.0	41	26.0	61	39.0	3.92

Interpretation of the Items:

- (X1) The item *"I prefer using GPT applications to collect information about archaeological sites before visiting them"* received agreement from the study sample, with a mean score of 3.85.
- (X2) The item *"The availability of a hotel or company website for online booking helps facilitate the reservation of tourism programs for archaeological sites"* was approved by the majority of respondents, with a mean score of 3.81.
- (X3) The item *"I prefer staying in hotels that provide smart rooms and digital services"* obtained agreement from most respondents, with a mean score of 3.99.
- (X4) The item *"I prefer using electronic food menus on mobile phones to choose meals and beverages"* achieved agreement from the majority of the sample, with a mean score of 3.88.
- (X5) The item *"The availability of electronic payment facilitates the purchase of various tourism products at archaeological sites"* received strong agreement, with a mean score of 4.26.
- (X6) The item *"I find that digital tourist guidance services facilitate access to accurate information about archaeological sites"* recorded the highest level of agreement, with a mean score of 4.41.
- (X7) The item *"The presence of offers designed using artificial intelligence increases my interest in visiting archaeological sites"* was strongly supported by respondents, with a mean score of 4.27.
- (X8) The item *"The availability of augmented and virtual reality applications motivates me to visualize archaeological sites before visiting them"* achieved a high level of agreement, with a mean score of 4.16.
- (X9) The item *"If self-driving vehicle services were available at archaeological sites, this would greatly increase my interest in visiting them"* also received agreement from the majority of respondents, with a mean score of 3.92.

Conclusion:

Study Results:

- Digital technologies have been adopted as important instruments in the tourism and travel sector according to the current trends on digital tourist behavior, as well as increased dependence of tourist destinations on digital tourism as a means of boosting tourist attraction.
- Digital tourism is based on several new technologies, such as Internet of Things, artificial intelligence, big data, blockchain, virtual reality, and augmented reality.
- Tourists of the twenty-first century more frequently experience digital tourism, beginning with the planning of trips and the collection of digital information, online booking, digital check-in

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process at the airport and hotels, smart accommodation, digital tourist advice, and virtual traveling experiences. Digital technologies have taken the place of all elements and areas of tourism trips.

- Babylon is quite important on the map of the Iraqi tourism because of its archeological attractions which attract both the locals and the international visitors to the archaeological city of Babylon, Babylon Wall, Ziggurat, Ishtar Gate, and royal palaces in the past.
- The research sample was in agreement that digital technology tools need to be activated to support archaeological tourism in Babylon using the digital research tools, online reservation, and smart hotel services.
- Participants were interested in using digital technologies in accessing a hotel, ordering food and beverages, and digital tourist guide services, and electronic payments.
- Implication of the sample is that the use of artificial intelligence and virtual/augmented reality will make an archaeological tourism in Babylon a personalized, memorable and engaging experience.

Study Recommendations:

- Come up with a thorough plan to improve the effectiveness of archaeological sites within Babylon, service delivery and infrastructure to facilitate tourism and promotions.
- Introduce the digital tourism tools and sector digitalization as an inseparable part of national tourism development strategy in Iraq with clear and implementable timeframes.
- Modernize tourism institutions through upgrading tourism programs and practices to ensure that they are in line with the technological changes in digital tourism across the world.
- Fund tourism institutions in coming up with innovative promotional tools and services to match the expectations of the twenty first century tourist.
- Educate human resources in tourism and travel such as companies, hotels and tour guides to learn how to fully utilize digital technologies and come up with new ways of providing tourism services.
- Use the best practices in digital tourism in the world and implement them to the archeological sites of Babylon to mobilize digital technologies and catalyze archeological tourism in Babylon.

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Questionnaire Form

This questionnaire is part of the practical aspect of the research titled: *The Role of Digital Technologies in Activating Archaeological Tourism in Babil Governorate*. Please answer all items by placing a (√) mark next to the option that best reflects your opinion. All information is confidential and will be used solely for academic research purposes.

Personal Information:

Gender	Male ☐ Female ☐
Age	Under 35 ☐ 35–45 ☐ 45–55 ☐ Over 55 ☐
Educational Qualification	Preparatory ☐ Secondary ☐ Bachelor's ☐ Postgraduate ☐
Number of Visits	First time ☐ Twice ☐ Three times ☐ More than three times ☐

Main Items:

No.	Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	I prefer using the GPT applications to collect information about archaeological sites before visiting them.	☐	☐	☐	☐	☐
2	The availability of a hotel or company website for online booking helps facilitate the reservation of tourism programs for archaeological sites	☐	☐	☐	☐	☐
3	I prefer staying in hotels that provide smart rooms and digital services.	☐	☐	☐	☐	☐
4	I prefer using electronic food menus on mobile phones to choose meals and beverages.	☐	☐	☐	☐	☐
5	The availability of electronic payment facilitates the purchase of various tourism products at archaeological sites	☐	☐	☐	☐	☐
6	I find that digital tourist guidance services facilitate access accurate	☐	☐	☐	☐	☐

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	information about archaeological sites.					
7	The presence of offers designed using artificial intelligence increases my interest in visiting archaeological sites	☐	☐	☐	☐	☐
8	The availability of augmented and virtual reality applications motivates me to visualize archaeological sites before visiting them	☐	☐	☐	☐	☐
9	If self-driving vehicles were available at archaeological sites, it would greatly increase my interest in visiting them.	☐	☐	☐	☐	☐

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