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BUSINESS MODELS FOR SUSTAINABLE HERITAGE TOURISM: GENERATING REVENUE WITHOUT DAMAGING ARCHAEOLOGICAL VALUE

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Abstract
Sustainable heritage tourism has become an important field for both business administration and archaeology because archaeological sites can generate economic value while preserving cultural identity. This article examines business models that can support archaeological heritage tourism without damaging archaeological value. The study focuses on revenue diversification, stakeholder cooperation, community participation, visitor management, digital innovation, and evidence-based decision-making. The article uses Afrasiab Museum and Archaeological Site in Samarkand, Uzbekistan, as a case study because it combines high archaeological significance with strong tourism potential. UNESCO identifies ancient Afrasiab as part of the historic city of Samarkand, which developed as a major cultural crossroads and is preserved as an archaeological reserve (UNESCO World Heritage Centre, n.d.-a). The article argues that archaeological sites should not depend only on ticket sales but should develop a hybrid sustainable business model that includes guided tours, museum shops, educational programs, digital experiences, public-private partnerships, and community-based tourism services. The proposed model aims to generate revenue, improve visitor experience, support local communities, and protect archaeological resources for future generations.

Keywords: Sustainable heritage tourism, business models, archaeology, heritage management, cultural preservation, tourism management, Afrasiab Museum.

Introduction

Heritage tourism is one of the most important areas where business administration and archaeology meet. Archaeological sites are not only historical places but also economic resources that can attract tourists, create employment, support local communities, and promote cultural identity (Javed & Tučková, 2019). However, tourism can also create risks if it is not managed properly. Large numbers of visitors may damage archaeological remains, disturb local communities, and reduce the authenticity of cultural heritage (Mrđa et al., 2019).

According to the UNESCO World Heritage Centre (n.d.-b), sustainable tourism at World Heritage properties requires cooperation among stakeholders and the integration of tourism planning with heritage management. This means that archaeological tourism should not focus

only on profit. It should also protect cultural value, educate visitors, and support local communities (Ruoss & Alfarè, 2013). From a business administration perspective, archaeological heritage sites need clear business models. A business model explains how an organization creates, delivers, and captures value. In heritage tourism, value is not only financial; it also includes cultural, educational, social, and environmental value (Boer & Wiffen, 2006).

The importance of this topic is increasing because tourism remains one of the largest global economic sectors. The World Travel & Tourism Council (2026) reported that travel and tourism contributed US$11.6 trillion to global GDP in 2025 and supported 366 million jobs worldwide. These figures show that tourism has strong economic potential, but heritage destinations need sustainable management to avoid over-commercialization and physical damage. Therefore, the main research problem of this article is how archaeological sites can generate revenue without damaging archaeological value (Brown, 2005).

Literature Review

Sustainable heritage tourism refers to tourism that uses cultural and historical resources responsibly while ensuring their protection for future generations. It aims to balance economic benefits, cultural preservation, visitor satisfaction, and community well-being. UN Tourism (n.d.) explains that sustainability principles in tourism are based on environmental, economic, and socio-cultural aspects, and that an appropriate balance among these dimensions is necessary for long-term sustainability. In archaeological contexts, sustainability is especially important because archaeological sites are fragile and non-renewable. Once a site is damaged, its historical value may be impossible to restore.

The International Cultural Tourism Charter states that one of the primary objectives of heritage management is to communicate the significance of heritage and the need for its conservation to both host communities and visitors (ICOMOS, 1999). This principle is important because tourism should not only entertain visitors but also educate them. Managed access is necessary in archaeological tourism. Visitor routes, interpretation boards, trained guides, ticketing systems, and conservation rules can help protect heritage sites while still allowing people to experience them.

Recent heritage tourism discussions also emphasize community participation. ICOMOS (2023) highlights the importance of engaging host communities, including traditional custodians, in tourism planning and management. This is especially relevant for archaeological sites because local residents are directly affected by tourism flows, infrastructure development, and commercialization. If communities benefit from tourism, they are more likely to support conservation and protect local cultural identity.

A sustainable business model for heritage tourism should not depend on only one source of income. Many archaeological sites rely mainly on entrance fees, but this can be risky. If visitor numbers decrease, income also decreases. At the same time, increasing visitor numbers too much can damage the site. Therefore, diversified revenue sources are necessary. Possible revenue sources include entrance tickets, guided tours, museum shops, cultural events,

educational workshops, digital tours, virtual exhibitions, local handicraft sales, public-private partnerships, donations, sponsorships, and community-based tourism services. These models can help archaeological sites earn income while reducing pressure on the physical site.

Methodological Approach

This article is based on a qualitative case study and literature-based approach. It reviews academic and institutional sources related to sustainable tourism, cultural heritage management, business models, and digital heritage tools. The article uses international frameworks from UNESCO, UN Tourism, ICOMOS, and WTTC to analyze how archaeological heritage sites can become financially sustainable without losing cultural authenticity.

The case study method is appropriate because it allows the research to connect theory with a specific heritage site. The study does not use primary field data such as interviews or visitor surveys; instead, it proposes a practical model based on available institutional information, heritage management principles, and business analysis tools. The analysis focuses on four main questions: why a business model is needed, which revenue models are suitable, which software and analytics tools can support the model, and how the model can protect archaeological value.

Case Study: Afrasiab Museum and Archaeological Site, Samarkand

This study uses the Afrasiab Museum and Archaeological Site in Samarkand, Uzbekistan, as a case study. Samarkand is one of the most important historical cities of Central Asia and is included in the UNESCO World Heritage List as "Samarkand - Crossroad of Cultures." UNESCO describes the north-eastern part of Samarkand as the location of ancient Afrasiab, founded in the seventh century B.C. and preserved as an archaeological reserve (UNESCO World Heritage Centre, n.d.-a; Ko, 2020). Archaeological excavations in this area have revealed the ancient citadel, fortifications, the ruler's palace, wall paintings, residential quarters, and craft areas (UNESCO World Heritage Centre, n.d.-a; Mode, 2006).

Description of the Case Study

The Afrasiab Museum is connected with the ancient settlement of Afrasiab and presents the history of ancient Samarkand. The Samarkand State Museum-Reserve website includes museum information, museum collections, science and publications, and virtual visit services, which indicates that the institution already has a basis for developing digital heritage tools (Samarkand State Museum-Reserve, n.d.). The museum and archaeological site are suitable for this case study because they combine three important elements: archaeological value, tourism potential, and the need for sustainable management (Bakry, 2025; Boer & Wiffen, 2006).

Afrasiab attracts visitors interested in archaeology, ancient urban culture, the Silk Road, wall paintings, museums, and the history of Samarkand. At the same time, the site requires careful protection because archaeological heritage is fragile and cannot be replaced once damaged. The site therefore needs a management approach that supports tourism while controlling visitor pressure, protecting archaeological remains, and increasing educational value (Mode, 2006; Ho & McKercher, 2004).

Why Is a Business Model Needed in This Case Study?

A business model is needed for Afrasiab Museum and Archaeological Site because heritage institutions cannot depend only on entrance tickets. Ticket income may be unstable, especially during low tourist seasons, economic crises, pandemics, or changes in travel demand (Brown, 2005). In addition, increasing visitor numbers only to raise income can damage archaeological remains and reduce authenticity. For this reason, a sustainable business model should create income from several sources while keeping conservation as the main priority (Drost, 1996).

A sustainable business model helps Afrasiab achieve three goals at the same time. First, it creates financial sustainability through tickets, guided tours, museum shops, digital tours, educational programs, cultural events, and partnerships. Second, it supports heritage preservation because part of the income can be used for conservation, site maintenance, digital documentation, staff training, and visitor management. Third, it improves visitor experience and education by helping tourists understand the historical and cultural meaning of the site. This approach corresponds with ICOMOS (1999), which emphasizes that heritage management should communicate the significance of heritage and the need for conservation to visitors and local communities (Ruoss & Alfarè, 2013).

Business Models for Sustainable Archaeological Tourism

Ticket-Based Model

The ticket-based model is the most common form of revenue generation. Visitors pay an entrance fee to access the museum, archaeological site, or heritage area. This model is simple and easy to manage, but it has limitations. If the site depends only on ticket sales, managers may try to increase visitor numbers, which can create conservation problems. To make this model sustainable, Afrasiab can use differentiated pricing. For example, local residents, students, and schoolchildren may receive discounts, while international tourists may pay higher fees. A fixed percentage of ticket income should be allocated to conservation and site maintenance (Ho & McKercher, 2004).

Guided Tour Model

Guided tours can increase both income and educational value. Professional guides can explain the historical importance of Afrasiab, the development of ancient Samarkand, archaeological discoveries, and the connection of the site with Silk Road history. Guided tours can also help control visitor movement. Instead of allowing tourists to walk freely in fragile areas, guides can lead them through safe routes. This protects archaeological remains and improves site management (Boer & Wiffen, 2006).

Community-Based Tourism Model

Community-based tourism allows local residents to benefit from heritage tourism. Local people can work as guides, sell traditional products, provide food services, organize cultural performances, or offer homestay experiences. This model is important because it connects heritage protection with local economic development. ICOMOS (2023) emphasizes host community engagement in cultural heritage tourism planning and management. When local communities benefit from tourism, they are more likely to support conservation.

Museum Shop and Cultural Product Model

Museum shops can generate income by selling books, replicas, postcards, traditional crafts, and educational materials. However, products should be culturally appropriate and respectful. Archaeological heritage should not be commercialized in a way that damages its meaning. This model can also support local artisans. For example, local craftspeople can produce handmade items inspired by cultural traditions. This creates income while promoting cultural identity.

Digital Heritage Model

Digital technology offers new opportunities for sustainable heritage tourism. Archaeological sites can create virtual tours, mobile applications, online exhibitions, augmented reality experiences, and digital educational programs. These tools can generate revenue without increasing physical pressure on the site. Digital heritage is especially useful for fragile archaeological areas where visitor access must be limited. Instead of allowing unlimited physical visits, managers can provide digital access to sensitive parts of the site. The existence of virtual visit services on the Samarkand State Museum-Reserve website shows that Afrasiab can further develop digital access and online interpretation (Samarkand State Museum-Reserve, n.d.).

Public-Private Partnership Model

Public-private partnerships can help archaeological sites receive investment for infrastructure, conservation, marketing, and visitor services. Governments may own or protect archaeological sites, while private companies can support tourism services such as cafes, transport, digital platforms, or souvenir shops. However, partnerships must be carefully regulated. Profit should not become more important than preservation. Clear rules are needed to protect archaeological value and ensure that tourism development follows conservation standards (Mrđa et al., 2019).

Tools Used in the Business Model

The proposed business model requires digital and analytical tools because sustainable heritage tourism should be managed through evidence-based decision-making. Tools are needed to measure visitor behavior, revenue, satisfaction, marketing performance, site pressure, and conservation needs. These tools help managers understand how tourism affects both the financial performance and the physical condition of the archaeological site (Davenport & Anderson, 2005).

Software Tools and Analytics Tools

Tool	Purpose	Management Value
Google Analytics 4	Analyzes website visits, online audience behavior, and virtual tour engagement.	Helps understand digital visitors and online marketing performance.
Power BI or Tableau	Visualizes ticket sales, visitor numbers, revenue, and seasonal trends.	Supports financial planning and management reporting.
QGIS or ArcGIS	Maps visitor routes, archaeological zones, risk areas, and conservation zones.	Supports spatial planning and protection of sensitive areas.
CRM system	Manages visitors, partners, schools, universities, and tour operators.	Improves communication, partnerships, and repeat visits.
Online ticketing system	Sells tickets, controls visitor numbers, and supports advance booking.	Reduces overcrowding and improves revenue control.
Social media analytics	Measures performance on Instagram, Facebook, Telegram, and other platforms.	Improves marketing strategy and audience targeting.
Google Forms or SurveyMonkey	Collects visitor feedback and satisfaction data.	Identifies service quality problems and visitor needs.
3D scanning and photogrammetry software	Digitally documents artefacts, monuments, and archaeological remains.	Supports conservation, research, and digital interpretation.
Museum collection management software	Organizes artefact records, descriptions, images, and conservation data.	Improves documentation, research access, and institutional memory.

Analysis Study

The analysis of Afrasiab Museum and Archaeological Site shows that the site has strong potential for sustainable heritage tourism, but it needs a diversified and data-supported business model. The site benefits from its location in Samarkand, its connection with ancient Afrasiab, and its historical importance as part of a World Heritage city. However, depending mainly on physical visitors and traditional ticketing may limit financial sustainability and increase pressure on the archaeological site (Ko, 2020).

SWOT Analysis

Strengths	Weaknesses	Opportunities	Threats
UNESCO World Heritage context in Samarkand.	Dependence on physical visitor flows.	Development of virtual tours and online exhibitions.	Overtourism and possible site damage.
Strong archaeological and historical value.	Limited use of advanced visitor analytics.	Cooperation with universities, schools, and tour operators.	Insufficient conservation funding.
Connection with Silk Road history and ancient urban culture.	Need for more digital marketing and interpretation tools.	Local handicraft sales and community-based tourism.	Over-commercialization of heritage.
Museum and archaeological site can support each other.	Possible shortage of technical skills and training.	Public-private partnerships for responsible services.	Digital inequality and lack of access for some groups.

Business Model Analysis

The proposed hybrid model is suitable because it reduces dependence on one income source. If the museum relies only on entrance tickets, its financial stability depends directly on visitor numbers. However, if income comes from several sources, such as guided tours, digital exhibitions, educational programs, museum shops, and partnerships, the institution becomes more sustainable. This approach also reflects the economic, socio-cultural, and environmental balance emphasized by UN Tourism (n.d.).

The model also protects archaeological value. Virtual tours can provide access to sensitive areas without allowing too many physical visitors. Guided routes can reduce uncontrolled movement. Digital documentation can preserve information about artefacts and structures. Visitor analytics can help managers identify overcrowding periods and control tourist flow. From a business administration perspective, this model supports financial planning, marketing, customer relationship management, and performance measurement. From an archaeological perspective, it supports conservation, authenticity, documentation, and public education (Boer & Wiffen, 2006).

Key Performance Indicators

Indicator	What It Measures
Monthly visitor numbers	Tourism demand and seasonal changes.
Ticket revenue	Basic financial performance.
Average spending per visitor	Income from tickets, shops, tours, and services.
Visitor satisfaction score	Quality of visitor experience.
Digital engagement rate	Use of virtual tours, QR codes, and online content.
Repeat visitor rate	Visitor loyalty and long-term interest.
Conservation cost ratio	Share of revenue used for preservation.
Community income share	Economic benefit received by local people.
Social media reach	Marketing effectiveness.
Visitor flow density	Overcrowding risk in sensitive areas.

Challenges of Business Models in Heritage Tourism

Although business models can support archaeological tourism, they also create several challenges. First, over-commercialization may reduce the authenticity of heritage sites. If archaeological places are treated only as tourist products, their cultural and educational meaning may be weakened. Second, overtourism can damage fragile sites. Too many visitors can cause physical erosion, pollution, and pressure on local infrastructure. Third, local communities may be excluded from economic benefits. If outside companies control tourism income, local residents may not support heritage protection (Davenport & Anderson, 2005).

Fourth, poor management can create financial problems. Without transparent budgeting, revenue from tourism may not be used for conservation. Fifth, digital tourism requires investment and technical skills. Not all heritage sites have enough financial or human resources to develop high-quality digital services. Finally, ethical questions may appear when cultural heritage is commercialized or digitally represented without proper consultation with specialists

and local communities. These challenges show that business models must be carefully planned and controlled (Boer & Wiffen, 2006).

Recommendations

To develop sustainable business models for archaeological heritage tourism at Afrasiab, several recommendations can be made. First, the museum and archaeological site should diversify revenue sources and should not depend only on entrance tickets. Second, a fixed percentage of tourism income should be reserved for conservation, research, digital documentation, and maintenance. Third, local communities should be included in decision-making and business opportunities. This can increase local support for conservation and reduce conflict between tourism development and community interests.

Fourth, visitor numbers should be controlled through online booking systems, guided routes, time-based entry, and site capacity limits. Fifth, digital tools should be used to reduce pressure on fragile areas and increase educational access. Sixth, business planning should be connected with heritage management. Financial goals and conservation goals should be planned together, not separately. Finally, staff training should be introduced in digital literacy, visitor analytics, customer service, conservation awareness, and sustainable tourism management.

Conclusion

Business models for sustainable heritage tourism are important because they connect economic development with cultural preservation. Archaeological sites need revenue to survive, but revenue should not be generated in a way that damages cultural value. The case study of Afrasiab Museum and Archaeological Site shows that sustainable heritage tourism requires a clear and diversified business model based on ticketing, guided tours, digital experiences, museum shops, educational programs, public-private partnerships, and community-based tourism.

The most effective model is not a single model but a combination of several revenue sources. This reduces financial risk and protects archaeological sites from excessive visitor pressure. Software and analytics tools such as Google Analytics 4, Power BI, QGIS, CRM systems, online ticketing platforms, visitor surveys, and 3D documentation tools can help managers collect data, analyze visitor behavior, control tourism pressure, and make better decisions.

From a business administration perspective, sustainable heritage tourism requires strategic planning, marketing, stakeholder management, financial control, and performance measurement. From an archaeological perspective, it requires conservation, authenticity, documentation, and respect for cultural meaning. Therefore, sustainable heritage tourism should be understood as both a business opportunity and a cultural responsibility. The Afrasiab case study demonstrates that archaeological heritage can generate economic value without being damaged, but only when tourism is managed through responsible business models, modern analytical tools, and evidence-based decision-making.

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