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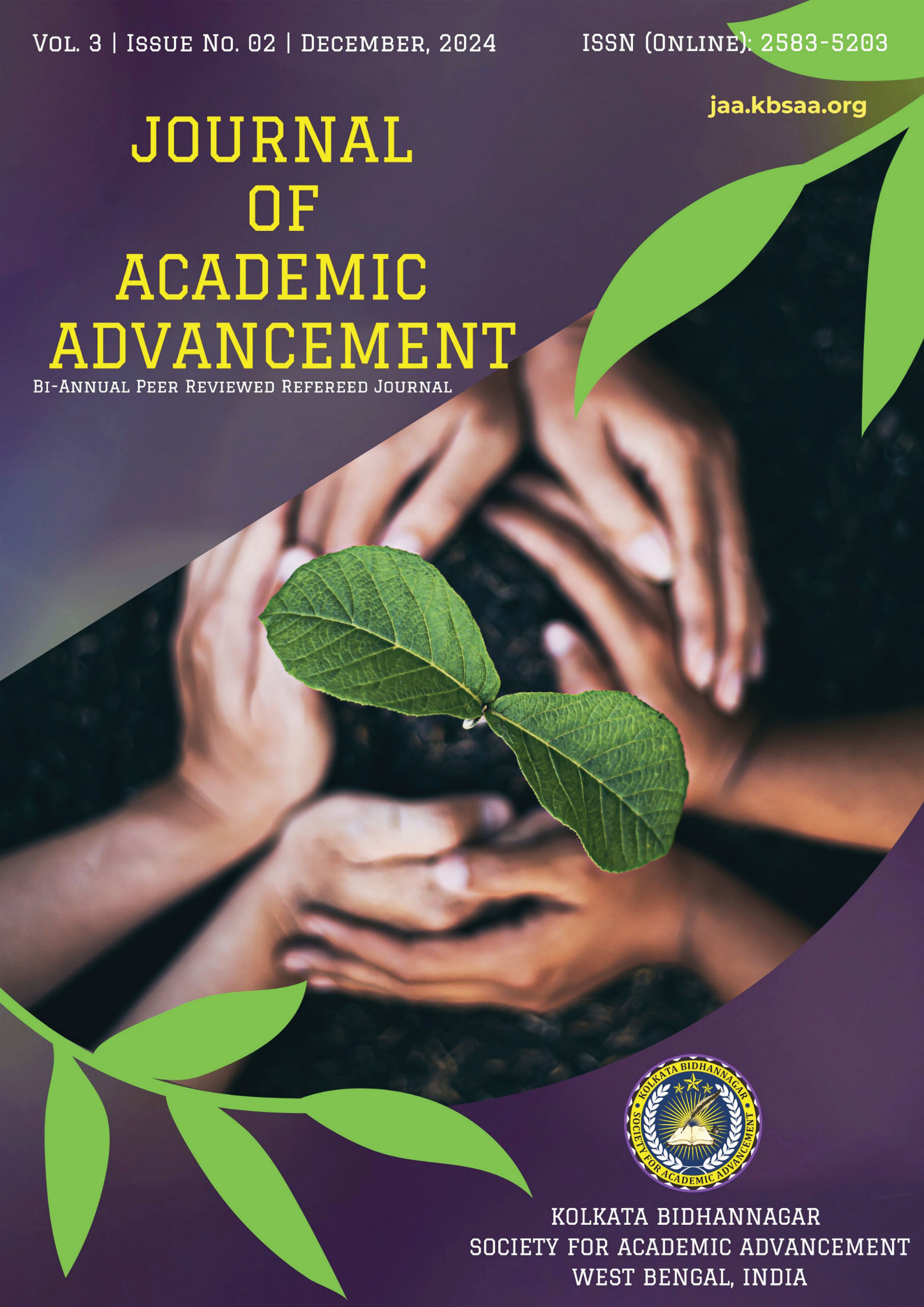

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EDITORIAL

We feel honoured and privileged to present the Bi-Annual Peer Reviewed Refereed Journal, ISSN (Online): 2583-5203, Volume 3, No. 02, December, 2024 among our esteemed readers and academic fraternity.

This Journal is the outcome of the contributions of insightful research-oriented papers/articles by various eminent academicians, and research scholars in a highly organized and lucid manner with a clear and detailed analysis related to the emerging areas in the fields of Social Sciences and Allied Areas.

The views expressed in the research-oriented papers/articles solely belong to the paper contributor(s). Neither the Publisher nor the Editor(s) in any way can be held responsible for any comments, views and opinions expressed by **paper contributors.** While editing, we put in a reasonable effort to ensure that no infringement of any intellectual property right is tolerated.

We also express our sincere thanks and gratitude to all the contributors to research papers/ articles who have taken pain in preparing manuscripts, incorporating reviewer(s) valuable suggestions and cooperating with us in every possible way.

We also express our heartfelt gratitude to all the esteemed members of the Editorial Board, Esteemed Reviewer(s) who despite their busy schedules have given their valuable time, suggestions and comments to enrich the quality of the contributory resears paper(s) in bringing to light this December issue.

Last, but not least, we revere the patronage and moral support extended by our parents and family members whose constant encouragement and cooperation made it possible for us to complete on time.

We would highly appreciate and look forward to your valuable suggestions, comments and feedback at **editorbr2022@gmail.com**

December 31, 2024
West Bengal, India

PEMA LAMA
Editor-in-Chief

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RESEARCH ARTICLE

Internet of Things (IoT) and Transformative Marketing in Heritage Tourism: A Systematic Review in the Context of India

Anjan Bharali[1] ı **Dr. Bipasha Chetia Baruah**[2]

[1]Research Scholar, Dept. of Commerce, Dibrugarh University, Dibrugarh, Assam, India
[2]Associate Professor, Dept. of Commerce, Dibrugarh University, Dibrugarh, Assam, India

Corresponding Author: Anjan Bharali (bharalianjan28@gmail.com)

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ABSTRACT

The growth of the Internet of Things (IoT) and transformational marketing practices have the potential to revolutionize the heritage tourism sector of India where millions of visitors visit annually in the rich cultural and historical sites all over the country. This paper is a small attempt to provide a review of how IoT applications in the sector can be used through transformational marketing strategies. From the Indian context, this review will explore how IoT can enhance the visitor experience through various internet-connected services, and data-driven marketing and also improve the management of the sites.

By reviewing over 30 related studies, this paper suggests the pathway for Indian heritage tourism to utilise the power of IoT for sustainable growth, including the challenges, recent trends and future directions. The key findings reveal that IoT-enabled smart tourism systems can provide personalised experiences, improve preservation of historical sites, protect visitors, enhance information for tourists, increase public-private partnerships as well as improve visitor experience. As the number of tech-savvy tourists increases, it is important to cater to their evolving needs and new marketing strategies need to be implemented in this sector as well.

1. INTRODUCTION

Heritage tourism is one of the major segments in the tourism industry since the culture and history of a country are appealing to many visitors, both domestic and international. Heritage tourism is not only one of the key segments in the Indian Economy but also it is of culturally important as well. Many people easily appreciate seeing the country and its many diverse cultures and histories as an important concept in the economy because of the many World Heritage Sites found in the country. However, as the number of visitors to these sites increases, and visitor education levels rise, these sites have to transform themselves and implement the latest approaches and systems.

The development of IoT creates new opportunities for smart tourism especially, in the system of heritage tourism. IoT is the use of the Internet to support the devices and systems to provide data gathering and processing, plus interactive responses. This technology is a great opportunity to improve visitors' experience, maintain the historical and cultural heritage, and improve the management of destinations. When integrated with innovative marketing initiatives it will assist the government in repositioning consumer experience and perception and the role of IoT in the heritage tourism market can be phenomenal. This can transform the tourism sector and what we are experiencing today.

Heritage Tourism in India

Cultural tourism in India can be explained as tourism based on the destinations oriented on historical, cultural or architectural attractions. Some of the most famous places to visit are the Taj Mahal, Qutub Minar, Ajanta and Ellora Caves, and most of South India contains various temples. The Indian government has paid a lot of attention to supporting this sector mainly because of the high amount of footfall of local as well as foreign tourists and it also has the potential to contribute to GDP, employment and value addition. However, issues like the overcrowding of areas, poor physical facilities and dilapidation of heritage structures point to the fact that there is a need to enhance the use of technology.

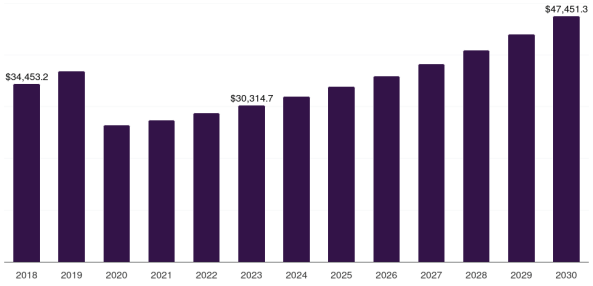
Internet of Things (IoT) in Tourism

IoT technology advances continuously implemented in multiple aspects of the tourism business, improving business logistics and client services. IoT-driven smart tourism ecosystems facilitate data gathering such as the movements of visitors, the environmental conditions affecting the site, or even the movements of the visitors in the sites. Much of this information can be applied to offering targeted services, for enhancing site efficiency, and for environmental conservation, regarding the current debate on sustainable tourism. For example, smart queue systems, IoT-based sensors to detect unwanted movements of tourists in restricted areas, QR codes for enhanced information on objects and the history of the site etc. Many developed countries have implemented these technologies successfully and that can be a stepping stone for India.

Transformative Marketing in Heritage Tourism

Coordinated communication widens the concept of marketing from the traditional definition of the four Ps of marketing mix by targeting the overall consumer experience and seeking to leave a positive lasting impact. In the context of heritage tourism this is not simply meaning offering the visit to a specific site but changing the ways in which a visitor interacts, learn about or perceive history of the site and its importance for the present. By incorporating IoT with transformative marketing, heritage sites can enhance the level of experience delivery to meet the expected experiences of a modern generation tourist.

CHART 1: INDIA'S HERITAGE TOURISM MARKET SIZE AND PREDICTION FOR 2030



Source: Grand View Research. India Heritage Tourism Market Size and Outlook, 2030.

Accessed September 2024.

The Indian Heritage Tourism sector had a business volume of about 303 million US Dollars in 2023 and is estimated to reach about 475 million US Dollars by 2030 at a CAGR of 6.6%. From the sector, in 2023, cultural heritage generated the highest share of revenue and natural heritage sites is predicted to be the highest-growing segment in recent years.

2. REVIEW OF THE LITERATURE

a) IoT for Preservation and Monitoring of Heritage Sites

Nembrini et al. (2019) described the potential IoT use cases in observing the state of the structural condition of the historical structure so that authorities can take the necessary measures and prevent the loss of property at those sites. These technologies enable real-time tracking of aspects like vibrations, temperature and humidity which are crucial towards preserving restrictive architectural old structures. Also, the IoT sensors that are available today can identify initial signs of degradation, which makes it possible to prevent additional expenses on restoration. Carli et al (2021) analysed how the IoT system can increase the durability of the artefacts by controlling the environment in the museum and historical places. These systems can manipulate environmental factors such as temperature, humidity and light with the use of sensors which are critical for artefact conservation. The real-time data and changes in the conditions help to preserve

artefacts from deterioration and pass on the heritage to future generations. Kong et al. (2022) elaborated on how innovative IoT sensors of visitor flow opened up possibilities for heritage site managers to acquire data that would reflect the importance of conservation as well as tourism concerns.ds. This information is crucial to formulating long-term strategies towards tourism about the management of visits to heritage sites with large numbers of tourists.

Sharma & Gupta (2020) opined that IoT can minimize the effects occasioned by heritage tourism on energy utilization and waste production. For instance, while waste management smart systems can self-detect full bins, the information will be relayed to the site managers to avoid congestion of bins. This can improve cleanliness which is seldom seen in Indian heritage sites. López de Ávila et al. (2015) stated that 'smart destinations,' leverage IoT technology to dynamically oversee and control the state of the heritage site. This makes it possible for real-time interventions to improve visitor experience and also for site conservation hence tailoring the technology and the increasing tourist market. According to Das & Singh, (2018), the smart kiosks introduced at Indian heritage sites give travel recommendations and information in multiple languages. These smart kiosks based on IoT add augmented value to the existing educational tourism experience while providing the right direction.

b) IoT for Crowd & Visitor Management

The role of IoT in visitor control through smart sensors was described by Khan et al. (2020) addressing the issue of overcrowding at the Taj Mahal. Problems of crowd management can be solved by using such sensors which collect data on many people and traffic intensity in real time and adjust the flow of visitors accordingly. This enhances the moving experience of visitors while at the same time reducing the amount of traffic that floods the area hence reducing the wear and tear of the monument. For instance, Mukherjee et.al (2020) experimented with the idea that IoT helps free overcrowding problems in Indian historical places by finding out the densities of tourists through IoT. This makes the experience of the visitors better while also avoiding cases of visitors causing damage to the site by stomping on it excessively. This also creates a discipline queue system as well as saves time and stress for the visitors. Yang et al., (2020) added on the use of IoT in improving the experience of visitors by incorporating location-based services into mobile applications with a personalized audio guide and real-time recommendation. This approach can be very helpful in India because of the multilingual support and more importantly context-sensitive information can help different segments of tourists. Using the example of promoted products,

Kotler & Armstrong (2021) pointed out that IoT-based marketing systems are aimed at constant consumer interaction, providing data during the visitor's path. These points can be utilised to create more targeted and effective promotional materials, enhancing visitor endurance for the long term. Also, the strategic points can be found through this data and can be much better used for targeted marketing. Xiang et al. (2017) employed a qualitative research design to examine the ways through which internet marketing technologies like geofencing and location-based advertisements can be used to change promotions depending on the tourist's location within the heritage site. Real-time strategies complement personalisation and increase engagement in sight-seeing. Local products can be targeted to tourists through the use of geofencing techniques which can be used for targeted marketing. As the tourists enter into a periphery, automated marketing communications can notify the visitors about certain local products, foods etc.

Law et al., (2021), discussed that IoT devices give constant insights of the mobility and contact with advertised instruments to form strategic data-driven plans for Destination Marketing Organizations (DMOs). These insights will help to adapt the marketing strategies depending on the different preferences of the tourists. The preferences of the tourists can later be analysed and further strategies can be prepared for the site management. Using a case study of India's heritage sites and applying IoT with the help of predictive analytics, Gupta and Jha (2020) suggested a model. With the data from IoT, heritage managers can predict and marketing strategies can be modified to better engage the visitors, and consequently increase visitation.

c) IoT for Enhanced Visitor Experience

Buhalis and Amaranggana (2015) explained that, through the smart tourism solution, IoT is used to update or guide visitors in real-time. Through individualised schedules and information as regards to the points of interest, as well as constantly responding to the preferences of the visitor regarding the navigation system, the IoT system can greatly improve the visitor's experience in cultural and heritage sites. The authors, Gursoy et al. (2019) stated that smart wear including smart glasses and watches could enhance the tourist experience. With these devices, tourists will be able to obtain individualized histories and instant recommendations, thereby improving their experience of heritage sites. Smart glasses with VR technologies can be adapted for smart destinations which can attract Gen Z and also the kids. This can work as an additional revenue source for the site. According to Hossain et al. (2019), it was established that with IoT support, AR can transform observation into active learning. In historic areas, it is possible with AR guides to place historical data on existing buildings; thus, turning the perceived perception of the tourist site into an informative fun trip. Some sites may not be possible to visit physically or a few areas of the site may be restricted areas which can be reconstructed using Augmented Reality that tourists can experience. Lost heritage sites, damaged objects, and historical stories can be shown through AR technology for better engagement. García & Revilla (2019) explained how systems of IoT and big data are implemented to develop geographical maps and other information services to engage tourists at cultural sites. It is seen that this technology leads to better contact with the environment and thus, a richer view of the surroundings.

Joo et al. (2020) have identified that visitor satisfaction can be enhanced by IoT through organising individualised concrete tours and providing real-time information through the application. This way it will strengthen the bond with the heritage site the tourist was already given a personalized experience. Many times, specially-abled tourists might not be able to experience the site which can be helped through the use of a virtual tour system. This can enhance the overall image and customer satisfaction of the site. In the analysis made by Tussyadiah et al. (2018) on how visitors consider the application of Virtual Reality (VR) in the tourism industry, they found that it is effective in changing travel decisions with spatial presence. The study involving 202 participants using virtual walkthroughs of tourism destinations identified two dimensions of spatial presence: how the individual feels in relation to the VR environment and in the centre of a different place in the virtual reality world. More attention has been paid to this allocation towards the VR environment, as it predicted the expression of spatial presence. Also, analysing the results for post-VR attitude changes towards tourism destinations, it can be concluded that spatial presence possesses a significant impact and is persuasive in VR technology. Notably, the study observed no mediatory effects of the type of the used VR on the obtained results or the prior visitation experience showing a stable positive influence of VR on the targeted destination appeal. Thus, the findings of this research throw a great deal of light on VR and its potential for impacting attitudes among travellers in tourism marketing.

d) IoT for Sustainability

According to Gretzel et al. (2021), IoT systems help to sustain environmental conservation since energy consumption depends on the number of visitors, therefore, minimizing electric power usage. For example, lights that turn on when people enter do not use a lot of energy at famous historic buildings but keep visitors warm.

e) IoT in Marketing & Data Analytics

Kumar et al. (2022) mentioned that big data generated from IoT is valuable for market intelligence. Through visitor behaviour analytics, the marketers in heritage tourism can deliver highly specific campaigns and therefore, even improve the outlook for heritage tourism in India and entice more domestic and international tourists. Peñaloza Venkatesh (2017), It was revealed that through IoT and AR/VR promoting immersive marketing makes the tourists to feel the

heritage sites more engagingly. These technologies can make a historical scene come to life or simply make the story behind an event more interesting. Sigala et al. (2018) highlighted that IoT-enabled marketing capabilities of heritage sites can include real-time marketing messages based on visitor behaviour and preferences that remained consistent with the observations made. This gives the tourist a more 'active' engagement, a 'meaningful' engagement with the site, which makes for enhanced satisfaction.

Shaw et al. (2019) indicated that IoT can complement transformative marketing by measuring the extent of local culture in marketing initiatives. IoT systems can help tourists find the local traditions and crafts and engage the tourists in the communities more enthusiastically. Kim et al. (2019) also explored how IoT CRM systems facilitate marketers in establishing long-term mutual relationships with visitors by using the collected data about their preferences and behaviour. Such an approach can contribute to the generation of more efficient marketing campaigns within the frame of heritage tourism. Buhalis et al. (2019), moreover, also proved that the data generated through the IoT may help tourism marketers in targeting the visitors' behaviour and segmental, better and more effectively. Knowing more about certain specific visitors can help heritage sites to fine tune the products that they offer to their clients. IoT marketing communication was defined by Wang & Fesenmaier (2020) as the messages relevant to the heritage sites that the visitors are interested. Such campaigns can develop a higher understanding of the site's historical past and cultural background as well as contribute to the perception of the site as a whole. According to Carbone et al. (2021), IoT data analytics can help monitor the visitors' attitudes and satisfaction levels, an analysis that will enable heritage site managers to adjust their services. It is perhaps important to note that this data is actually useful in improving the experience of the visitors in the subsequent projects. Aldebert et al. (2017) provide insight into all the various smart tourism B2B business models based on IoT, and how heritage sites can in effect expand otherwise stagnant additional revenues through smart tourism digital platforms. Poria et al. (2018) have described, that IoT implants make visitors' emotional experiences denser and, therefore, enrich visits as interactive, emotionally driven narratives.

f) IoT for Accessibility and Personalization

From the analysis of De Ascaniis & Greco (2021), it was understood that IoT devices enhance heritage tourism accessibility for disabled tourists through the provision of tailored assistance. Services like real-time location tracking, virtual assistants and voice commands can help make the way people experience spaces better. Memon et al. (2021), explained that millions of people use IoT systems to get real feedback, and it also offers facilities to visitors for reporting problems or making suggestions when they are visiting. Such feedback enables the site managers to tend to the complaints made by visitors in order to enhance visitors' experience at the heritage site.

3. OBJECTIVES OF THE STUDY

The objectives of the study are as follows -

- To analyse the previous studies related to IoT integration on the management of heritage sites in India.
- To assess the influence of transformative marketing strategies enabled by IoT in heritage tourism.

4. METHODOLOGY

Systematic Literature Review: The systematic literature review (SLR) method is employed in the development of this paper. This approach was found suitable due to its systematic way of conducting, synthesising and sharing previous research studies.

The review was conducted in five stages —

- Formulating the Research Questions

RQ 1: *In what manner does IoT integration influence the administration of heritage sites and, thus, the visitors' experience across India?*

RQ 2: *To what extent transformative marketing will be useful in advancing the idea of IoT for heritage tourism?*

- Search Strategy

Since this study was focused on the applicability of IoT in heritage tourism, the following terms were used while searching the database: IoT, in heritage tourism, transformative marketing, smart tourism in India and Cultural Tourism. Data was obtained from journal articles, conference papers, and industry reports and journals accessed through peer-reviewed databases.

- Criteria for inclusion of papers

Articles that have been published between the years 2015 and 2023. The studies which have the IoT, smart tourism, and marketing, especially in the Heritage tourism sector; quantities the research that is conducted in India.

- Data Extraction and Synthesis

Starting from 65 papers, a selection was made depending on the relevance, quality, and concentration on IoT and marketing within tourism: 30 papers.

- Data Analysis

This paper adopted a thematic analysis approach for the selected studies to facilitate the identification of emerging trends, opportunities, and challenges in IoT and heritage tourism.

5. FINDINGS

- *Making the visitor experience better:* Based on the analyses, the study establishes that ideas like location-based services, wearable technology, and augmented reality may redefine the experience of visitors through technology in Indian Heritage locations. Real-time collection of information is used for recommendation systems, usage of ticketing, and effective delivery of site information.
- *Smart Site Management:* In general, IoT can greatly enhance the site management at heritage sites in terms of environmental conditions and the flow of tourists while saving on the consumption of resources. In relation to control, intelligent systems also can provide information about over-crowdedness, damages and other possible threats so that preservation benefits will be improved.
- *Marketing Transformation:* Marketing communication in the tourism context is perceived to benefit from the IoT through access to ample data from the consumers to develop effective campaigns. Increased levels of engagement and loyalty to the visitor come from the use of targeting according to visitors' preferences and behavioural data or their current interaction.
- *Sustainability and Conservation:* IoT enables the conservation of the tourism sector by measuring environmental effects like energy and water usage, and waste management through balancing tourism development and preservation of old structures. Smart sensors can reduce energy and also create an image of a sustainable heritage site. Using green energy can also be a smart solution.

6. RECOMMENDATIONS AND SUGGESTIONS

The Major Recommendations are as follows -

- *Public-Private Partnerships:* The government and private businesses jointly with technology companies can promote IoT usage in heritage areas. To support this development, efficient funding and access to other forms of resource contribution will be required in establishing the needful infrastructure.
- *Scalable IoT Solutions:* For smart tourism to be impactful, its solutions such as IoT have to be created taking into consideration the various sites of heritage; hence the need to make the solutions deployable in both large and small sites.
- *Focus on Sustainability:* Monitoring and automating environmental issues have also to be shifted from traditional and integrated with IoT systems. This will guarantee tourism development without being harmful to the management of heritage or the environment. It could also possibly monitor people's traffic, the quality of the air inside and out, and even physical shifts to the monument's most key structures for remedial actions to be made on a need basis.

Furthermore, through IoT, one can increase the chances of sustainable behaviour by the visitors by feeding them messages on the environment-friendly activities to undertake through geofencing. In addition to this, managing the sites today for future implementation serves the purpose of contributing to world goals in sustainability standards while promoting the destination's reputation among tourists. Heritage sites can also work with this data in their advertising message when trying to appeal to the increasing market share of sustainable tourism.

7. CONCLUSION

This paper is a small attempt to understand the potential of IoT in heritage tourism in India. There are many advancements ongoing and implemented in developed countries which can be duplicated in India but there must be proper research on the effectiveness and also the feasibility. But the tourism sector must drive towards innovation and long-lasting impact generation on the tourists rather than relying on the traditional systems. New avenues of revenue generation should be explored which is described in the paper. From this systematic literature review, we can conclude that IoT has potential for the Indian heritage tourism domain, both for site management and the visitors. Specifically, the synergies between IoT and crowd management, conservation of energy resources, and innovative marketing strategies. Marketing with the help of IoT-generated data is a way to revolutionize marketing tactics, customer attraction, value creation and tourist relationships.

The research suggests that there are some barriers: limited infrastructure resources and IoT technology is expensive; however, there are opportunities for the Indian heritage tourism industry. Through the concepts of sustainable development, Public-private partnership modality, and IoT assimilation, India's heritage tourism can respond to the digital challenge and make over legacy structures for future generations.

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