International Journal of Computer Engineering and Technology (IJCET)
Volume 16, Issue 2, March-April 2025, pp. 129-136, Article ID: IJCET_16_02_008
Available online at https://iaeme.com/Home/issue/IJCET?Volume=16&Issue=2
ISSN Print: 0976-6367; ISSN Online: 0976-6375; Journal ID: 5751-5249
Impact Factor (2025): 18.59 (Based on Google Scholar Citation)
DOI: https://doi.org/10.34218/IJCET_16_02_008

HOW GPS TECHNOLOGY AND MOBILE APPLICATIONS AFFECT TOURISM: PRESENT EFFECTS, DIFFICULTIES, AND PROSPECTS

Mr. Ravindra Chauhan[6], Kanika Verma[1], Deepak Mittal[2], Shresth Kumar[3], Deepak Yadav[4], Puneet Kumar[5]

1- R.D. Engineering College, Ghaziabad, U.P, India
2- R.D. Engineering College, Ghaziabad, U.P, India
3- R.D. Engineering College, Ghaziabad, U.P, India
4- R.D. Engineering College, Ghaziabad, U.P, India
5- R.D. Engineering College, Ghaziabad, U.P, India
6 - Associate Professor, R.D. Engineering College, Ghaziabad, U.P, India.

ABSTRACT

This study examines how mobile applications and GPS technologies affect travel, examining how they might improve visitor experiences and generate revenue. By combining knowledge from earlier studies, the study highlights important benefits, difficulties, and potential areas for development. Additionally, it talks on how new technologies like 5G, AI, and augmented reality could lead to further breakthroughs in the future and further transform the travel industry. It also compares the efficiency of the different technologies and mention that in which situation which technology is ideal to use.

Keywords: GPS-technology, mobile applications, tourism, artificial intelligence, over-tourism, data security, sustainable tourism, digital accessibility and smart tourism

Cite this Article: Ravindra Chauhan, Kanika Verma, Deepak Mittal, Shresth Kumar, Deepak Yadav, Puneet Kumar. How GPS Technology and Mobile Applications Affect Tourism: Present Effects, Difficulties, and Prospects. *International Journal of Computer Engineering and Technology (IJCET)*, 16(2), 2025, 129-136.

https://iaeme.com/MasterAdmin/Journal_uploads/IJCET/VOLUME_16_ISSUE_2/IJCET_16_02_008.pdf

1. Introduction

One of the biggest worldwide sectors, tourism aids in both economic expansion and cultural interchange. Tourism has changed dynamically as a result of the quick development of GPS-enabled apps and mobile technologies. Travelers' trip planning, interaction with local cultures with and destination navigation have all been completely transformed by these developments. Real-time navigation, emergency support and location-based suggestions are all provided by mobile applications using GPS technology, which increases accessibility and convenience when traveling.

The widespread use of GPS-enabled mobile applications has significantly benefited businesses in addition and local economies to improving the traveller's experience. These technologies are used by companies in the transportation, hospitality and tour industries to provide individualized and data-driven services. But there are the number of problems still exist in spite of these developments, such as worries about excessive battery usage, data privacy, restricted digital access in isolated areas, and also the problems with overtourism in well-known locations.

In order to increase the use of GPS-based mobile applications in tourism, this study will assess their already existing impact, pinpoint their drawbacks, and suggest future developments. Through the examination of literature, case studies and technology trends, this study will put light on how mobile applications might improve sustainable and responsible travel while tackling the current ethical and technological issues.

In academic research, the impact of technology in tourism has been thoroughly examined. Mobile applications are very important for offering reliable and sustainable tourist solutions, lowering environmental impacts through digital tourism services and improving real-time connection[3]. Mobile technologies have improved from a simple location monitoring to the complex AI-driven travel assistants, dynamically improving the user engagement and destination marketing[2].

Numerous studies have also been conducted on the application of GPS technology in the travel industry. There are many advantages of GPS-enabled mobile applications, including better destination management and reduced travel expenses[5]. Their study did, however, also point out several drawbacks, like as battery usage and the digital divide that affects areas with less developed technology.

Additionally, it is noted that the implementation of smart tourism ecosystems—which integrate AI and big data—can result in more customized travel experiences, travellers use these by their own pace. They proposed that future advancements concentrate on enhancing the scalability and data security across different digital tourism platforms[4].

2. DIFFERENT TECHNOLOGIES AND THEIR PROS AND CONS-

1. Mobile Applications Using GPS -

Positives: Convenient travel is improved by the technology called real-time navigation.

Services that are location-based could enhance the customized experiences.

Travelers' safety and security is increased by emergency tracking tools.

Drawbacks: There is a high battery usage because of the GPS tracking that never stops.

Privacy issues could be the main drawback, with the sharing of location information.

Over Crowding at popular tourist locations as a result of the algorithm-driven suggestions.

2. Navigation and Digital Mapping Systems-

Positives: Data is more precise and up-to-date travellers' data.

In remote locations(isolated), offline map functionality improves the accessibility

There is a Multimodal -navigation choices and also integration with public transportation.

Drawbacks: Totally dependent on internet access to receive changes in real time.

There could be errors in emerging regions' maps.

Developing detailed 3D mapping is Expensive.

3. Voice recognition and smart travel assistants-

Positives: navigation done with voice guidance and no hands.

For foreign visitors, polyglot help improves in accessibility.

Integration with smartwatches and mobile devices done for convenience.

Drawbacks: voice recognition could misinterpret, involving regional dialects and accents.

There are the issues with voice data storage privacy.

For real-time support, it requires continuous internet access.

4. Digital ticketing in tourism and contactless payment-

Positives: It decreases the physical contact and improves the personal hygiene, especially the need after a pandemic.

Hasten the transactions and boosts lodging and also the transportation efficiency.

The prevention of fraud and the ticket loss is aided by the secure digital records.

Drawbacks: It is dependent on digital infrastructure and the steady internet connection. Data breaches and payment fraud are the major security issues. it could not be accepted in every nation or popular tourist location.

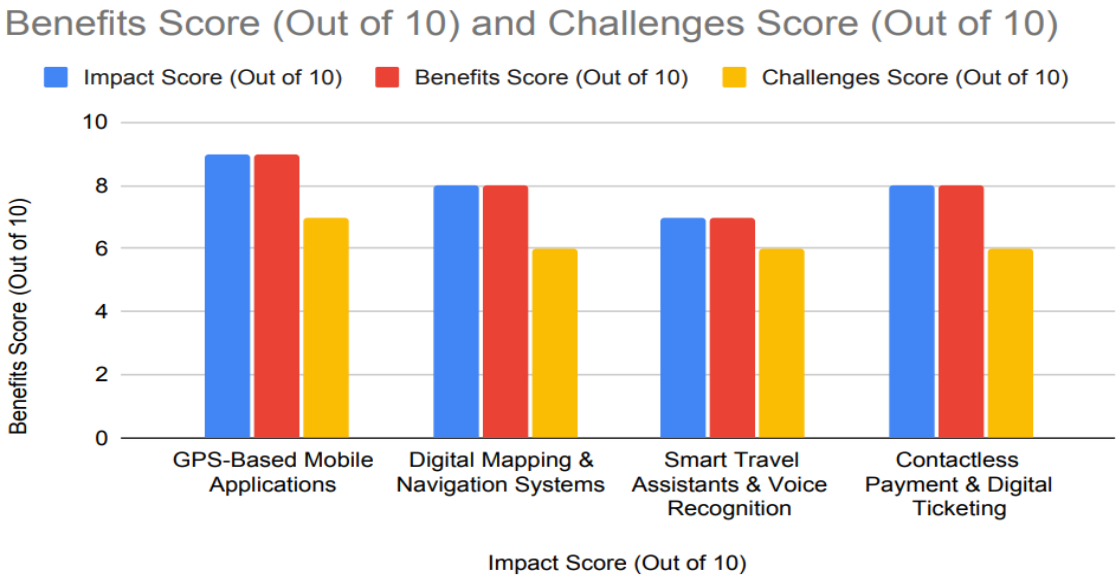
3. FUTURE ADVANCEMENTS GPS AND MOBILE APPLICATIONS FOR TOURISM-

- 5G connectivity: Improved real-time navigation Reduced latency, and smooth AR/VR integration are all made possible by faster data transfer.
- Machine Learning & Artificial Intelligence: AI-powered recommendations will optimize the crowd distribution and customize travel experiences.
- Augmented Reality (AR) & Virtual Reality (VR): Applications that support AR will enhance visitor experiences by offering mesmerising historical and cultural and geographical information.
- Blockchain Technology: Privacy issues of the user will be resolved by transparent data management and safe and secure transactions.
- Integration of Smart Wearables and IoT: To increase the accessibility, smartwatches and IoT-connected gadgets will provide hands-free navigation and real-time updates with easy user interface.
- Sustainable Smart Tourism: The goal of the technology-driven solutions is to make a balance between environmental preservation and tourism expansion.

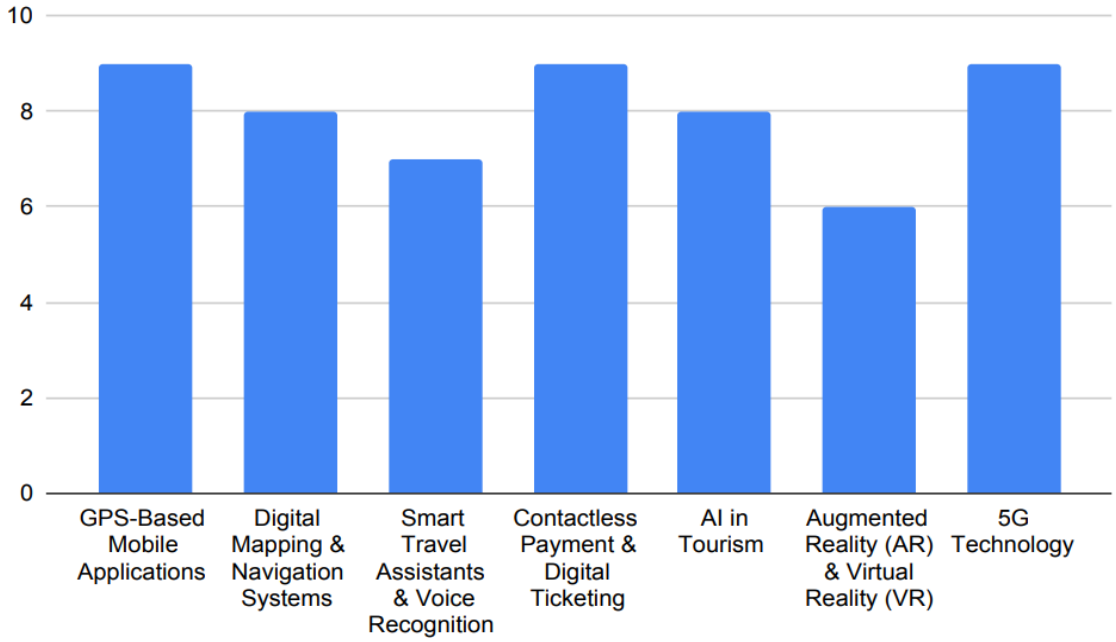
4. RESULT- Comparative analysis of tourist technology reveals the differences in the advantages, disadvantages, and effects of various solutions. Due to their real-time navigation, digital mapping systems, accessibility enhancements, and GPS-based mobile applications offer the greatest advantages (9/10 and 8/10, respectively). They do, however, it has several significant drawbacks, including privacy concerns, high energy usage and dependence on internet access (scoring 7 and 6 out of 10, respectively). Voice recognition and smart travel assistants have a moderate influence (7/10), providing convenience through polyglot support and hands-free navigation. But they have some technological problems including poor privacy issues, speech recognition and reliance on the internet (problems: 6/10).

Because they improve transaction efficiency and security, contactless payment and digital ticketing systems receive the good marks (8/10). Nevertheless, they encounter technical problems including privacy issues, poor speech recognition and reliance on the internet (problems: 6/10).

Due to their ability to improve transaction efficiency and security, contactless payment and digital ticketing systems receive good score (8/10). However, there are moderate problems as a result of the security concerns and limits in the digital infrastructure (6/10). According to the findings, digital technologies could greatly enhance the travel experiences, but they also present real-world issues that must be resolved. These constraints might be addressed or could be resolved by future developments in blockchain security, AI-driven personalization, and energy-efficient GPS, which would result in a more secure, efficient and sustainable travel experience.



The comparison of the different technologies on the basis of the efficiency is shown in the bar graph below-



5. CONCLUSION- The tourism sector has undergone a major and revolutionary transformation thanks to GPS technology and smartphone apps, which offer real-time guidance, increase safety boost and company expansion. To enhance their efficacy, however, issues like power consumption, digital inclusion and data privacy must be resolved. The future of tourism industry is set to become even more customized, streamlined and immersive by utilizing the developments in AI, 5G, blockchain and AR. In order to make sure that these technologies increase the growth of sustainable and responsible tourism, cooperation between legislators, technology developers and industry stakeholders will be essential.

Technology	**Best Situations to Use It**
GPS-Based-Mobile Applications	This technology is Best for route planning, real-time navigation and emergency assistance in urban and rural tourism. Essential for the self-guided travellers.
Digital Mapping & Navigation Systems	This technology is Ideal for tourists in remote areas where internet connectivity is not good as much the cities.

	Offline maps can help in trekking, hiking, and heritage site visits.
Smart Travel Assistants & Voice Recognition	This technology is Useful for the international travellers who require polyglot support and hands-free navigation in smart cities and airports.
Contactless Payment & Digital Ticketing	This technology could be Most beneficial in airports, hotels, public transport and attractions where fast, secure transactions and digital receipts improve the efficiency.
AI in Tourism	This technology Works best in the personalized trip planning, chatbot (AI) assistance, and customer service in large tourism enterprises and smart tourism destinations.
Augmented Reality (AR) & Virtual Reality (VR)	This technology is Best for enhancing cultural tourism, museum visits and historical reconstructions through immersive experiences. It also helps in trips related to some research.
5G Technology	This technology is Suitable for high-tech tourism experiences, including real-time augmented reality, Virtual reality, and live travel updates in the smart cities and also in theme parks.

REFERENCES-

[1] Sonia Dias and Victor Alves Afonso. "Impact of mobile applications in changing the tourist experience." European Journal of Tourism, Hospitality and Recreation 11.1 (2021): 113-120.

[2] Adity Dhungana, "Influence of Mobile Technologies on Tourism: Retrospective and Future Perspectives". Scholar Insight Papers–UNT Global Digital Retailing Research Center June 30, 2020." May 2022,

[3] Dongwook Kim, and Sungbum Kim, "The role of mobile technology in tourism: Patents, articles, news, and mobile tour app reviews." *Sustainability* 9.11 (2017): 2082.

[4] Ulrike Gretzel, et al. "Smart tourism: foundations and developments." *Electronic markets* 25 (2015): 179-188.

[5] Nadire Cavus and Kathy Kefas. "Impacts of GPS-based mobile application for Tourism." *5th World Conference on Information Technology (2013)*. 2014.

Citation: Ravindra Chauhan, Kanika Verma, Deepak Mittal, Shresth Kumar, Deepak Yadav, Puneet Kumar. How GPS Technology and Mobile Applications Affect Tourism: Present Effects, Difficulties, and Prospects. International Journal of Computer Engineering and Technology (IJCET), 16(2), 2025, 129-136.

Abstract Link: https://iaeme.com/Home/article_id/IJCET_16_02_008

Article Link:
https://iaeme.com/MasterAdmin/Journal_uploads/IJCET/VOLUME_16_ISSUE_2/IJCET_16_02_008.pdf

✉ **editor@iaeme.com**