

---

## **TOP 5 TOURISM WEBSITES PERFORMANCE ANALYSIS**

### **USING GOOGLE LIGHTHOUSE**

#### **Group Members:**

Arinah Filzah binti Rosli A23CS0050

Natasha Maisarah binti Zaki A23CS0141

Farah Nabila binti Wan Ismail A23CS0077

**Lecturer's Name:** Assoc. Prof. Dr. Nor Azman bin Ismail

---

#### **Abstract**

With the rapid growth of technology-driven changes, traditional travel agencies are increasingly being overshadowed by tourism websites in influencing tourists' travel decisions. Globally, tourism websites have become the essential platforms for both domestic and international tourists to discover ideal destinations and attractive travel deals. This study aims to conduct a comparative evaluation of these top five tourism websites using Google Lighthouse. Through this evaluation, each website was audited and compared to determine which site delivers the best and worst performance in terms of user experience and technical efficiency. The analysis revealed that TripAdvisor and Airbnb, particularly excel in website's accessibility and search engine optimization (SEO). While Booking.com and Agoda consistently recorded average scores across all metrics, they fall behind in terms of performance. Meanwhile, Trip.com records the worst average scores in most aspects. This study concludes that while these tourism websites generally provide strong content and user engagement features and have become a crucial digital platform, there is still significant room for technical optimization to improve user experience and maintain competitiveness in the digital tourism landscape.

## **Introduction**

Tourism is one of, if not the most, important sources of income for a developing country like Malaysia [9]. Foreign tourists may visit Malaysia to explore its culture and natural beauty, while local tourists often travel domestically for leisure. As people's lives become increasingly busy and technology continues to advance, many aspects of trip planning can now be done conveniently at one's fingertips. Travel websites have become an essential part of the travel planning process, replacing traditional travel agencies for many users. These platforms are preferred for offering cheaper prices, a wider variety of travel deals, and greater convenience [7]. A study conducted in 2015 revealed that the internet is the most frequently used source for trip planning across all generations [7]. Supported by user-generated reviews and ratings, these websites are seen as more credible and trustworthy, and thus helping travelers to make informed decisions [7]. However, the growing popularity of these platforms comes with challenges. As more users rely on them, the resulting high web traffic can cause performance issues, including slow response times, lagging interfaces, and poor user experiences which eventually lead to driving users away [10]. To address this, the present study aims to conduct a comparative evaluation of the top five most-visited global tourism websites namely Booking, TripAdvisor, Airbnb, Agoda, and Uber, sequentially [11]. These websites will be evaluated using Google Lighthouse which is an open-source, automated tool that helps to improve the quality of web pages based on several key web metrics [5]. This study focuses specifically on website performance, providing insights into areas such as loading speed, responsiveness, and interactivity. The findings are expected to benefit both website developers and tourism agencies, helping them deliver a more optimized and satisfying experience for users to plan their next trip.

## **Literature Review**

### **1. Website**

Website is an Internet platform on World Wide Web (WWW) composed of related web pages run on web servers, allowing clients or users to retrieve data or documents easily through web browsers. Website is used to store information regarding businesses, individuals, or topics of interest [6]. Users or clients would request for documents via HTTP protocol, which provides standard form of communication between webs servers and web browsers. Servers in return will provide a URL for the requested document. Different organisations will receive different domain names, for example, .com for commercial hosts such as Booking.com, and .edu for education institutions like UTM.

### **2. Travel and Tourism**

Travel and Tourism is a type of commercial domain under .com Top-Level-Domain (TLD) code, used to promote services and advertisements for global travelling businesses, booking platforms, and tour planning. The industry aims to cater to tourists'

---

needs for a centralized platform to plan and book their travelling to another location, may it be long-distance, short-distance, overseas, or domestic [3]. Some services provided include hotel or accommodation booking, flight tickets, rentals, cruises, food and beverages, as well as tour packages consisting of different services.

3. Booking.com

Booking.com is currently the top Online Travel Agency (OTA) that offers a wide range of accommodation, transportation, and attraction options, allowing users to plan their whole travel in one website [4]. The website allows users to browse accommodations by property type, flights by cheapest ticket, attractions by the locations, and rentals of cars, while offering interesting and exciting deals for users.

4. Tripadvisor.com

Tripadvisor.com provides a user review centered recommendations engine, allowing travelers to share their experiences and stories to other travelers through their Traveller's Choice and Travel Stories page. This unique feature of the website, as well as recommendations of things to do, restaurants to visit, flight tickets, accommodations and car rental, are what allows the OTA to be one of the most used worldwide.

5. Airbnb.com

Unlike the other OTAs that focus on different aspects of travelling, Airbnb.com mainly focuses on providing a suitable accommodation for their users. It allows users to choose their preferred type of accommodation, with the option to find a rental with unique features such as pools, astonishing views, beachfront, or countryside. The website also provides a platform for locals to advertise their property as Airbnb, opening opportunities for side income.

6. Agoda.com

Globally known, Agoda.com is one of the well trusted websites used to help users plan their travel stress-free, as it offers great value deals on a wide global network of hotels and holiday properties worldwide [1]. With its easy to navigate interface, Agoda.com allows users to find their desired hotels, flights, activities, as well as different interesting promotions on their accommodation, flights and activities to help users save their money while enjoying their dream travel.

7. Trip.com

Trip.com is a global one-stop travel service provider with an extensive network of hotel and flight, allowing users to book their accommodation and flights worry-free [2]. The website offers comprehensive traveling services such as flights, trains, car rentals, hotels,

and tours with user reviews as well as exciting features that allow users to price match their offers to other OTAs websites. Trip.com also provides guarantees on their accommodations, allowing users to experience exactly the stay that they expected.

#### 8. Google Lighthouse

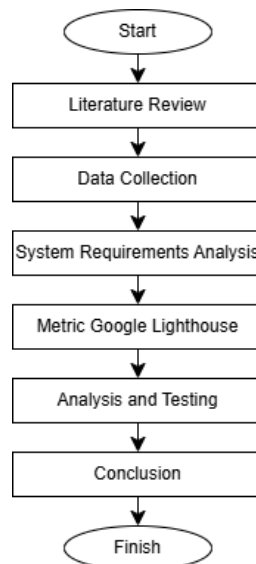
Lighthouse is an open-source, automated tool which helps us to determine the performance, accessibility, best practices, and SEO scores of different websites. The tool will audit the page by using the inspect tool, and generate a report of the scores, which provides an insight to developers on how to improve the website performance [5].

#### 9. Metrics Google Lighthouse

The metric score is determined by converting each raw metric value of performance, accessibility, best practices, and SEO into a metric score of 0 to 100, where 0-49 indicates poor performance, 50-89 indicates that the website needs improvement on that particular aspect, and 90-100 indicates good performance. This scoring allows developers to determine the highest priority performance needed to be fixed [8].

### Method

Before carrying out the investigation, the relevant procedural steps are illustrated in Figure 1 below.



**Figure 1**

This research begins with a review of prior studies from various sources such as articles and journals to support this investigation. Then, data was collected using Google Lighthouse on the

homepages of five top-ranked travel websites in Malaysia that were selected based on Similarweb traffic data as shown in Figure 2 below.

	Domain (10,000)	Traffic Share ↓	MoM traffic change	Country Rank	Monthly Visits	Unique Visitors	Desktop vs Mobile	Visit Duration
1	booking.com	5.24%	↑ 11.90%	#49	488.8M	201.7M	39.8% 60.2%	00:01
2	tripadvisor.com	1.33%	↑ 12.35%	#341	123.7M	76.64M	33.9% 66.1%	00:01
3	airbnb.com	1.04%	↑ 14.95%	#174	96.59M	38.81M	45.6% 54.4%	00:01
4	agoda.com	0.93%	↑ 1.22%	#374	86.33M	41.17M	38.1% 61.9%	00:01
5	trip.com	0.86%	↑ 20.41%	#551	79.88M	43.82M	36.1% 63.9%	00:01

**Figure 2**

Lighthouse evaluates websites based on several key metrics, each scored within a range of 0 to 100. A score of 0-49 is poor, 50-89 needs an improvement, and 90-100 is excellent. Lighthouse generates a comprehensive report covering four primary areas :

1. Performance : Identifying issues such as unoptimized images and blocking scripts, measures loading speed and responsiveness.
2. Accessibility : Measures how easily website content can be accessed by users, including those relying on assistive technologies.
3. Best Practices : Detects non-compliance with modern web development standards and practices.
4. SEO - Assesses how well the page is optimized for search engine indexing and discoverability.

In the analysis and testing phase, each of the selected websites as stated in Table 1 below is audited using Lighthouse. Each audit is accompanied by a reference document that explains why the audit is essential and how it can be improved. The evaluation focuses specifically on the homepage of each site. Results are recorded, analyzed, and compared to identify strengths, weaknesses, and opportunities for optimization.

## Result and Discussion

Based on the data collection received on April 16, 2025, we will continue our analysis and testing with the scan results obtained using the obtained Google Lighthouse data.

**Table 1** Google Lighthouse Comparative Analysis Result Top 5 Tourism Websites

No	Platform	Google Lighthouse Analysis Result			
		Performance	Accessibility	Best Practices	SEO

---

1	Booking.com	62	78	93	92
2	TripAdvisor.com	58	100	96	100
3	Airbnb.com	49	97	100	100
4	Agoda.com	62	93	96	92
5	Trip.com	17	79	70	92

From the results of the run-audit conducted on the top five tourism and travel websites, it can be seen that each platform demonstrates distinct strengths and areas for improvement across key metrics. Booking.com and Agoda.com received the highest scores (62), indicating fast load times. However, it is still categorized as needing improvement to get higher performance. Trip.com scored the lowest in performance (17), highlighting significant issues in speed and optimization. In terms of accessibility, TripAdvisor.com is outperformed with a score of 100, suggesting excellent support for assistive technologies, while Trip.com again ranked lowest (79). Airbnb.com shows an excellent result of 100 points in Best Practices, showing strong adherence to web development standards. For SEO, both TripAdvisor.com and Airbnb.com show a perfect score of 100. This means that both of these sites have passed the checks and ensured that the page has followed basic search engine optimization advice.

Comparing all results, TripAdvisor.com and Airbnb.com consistently ranked highest in Accessibility, SEO, and Best Practices, while Booking.com and Agoda.com maintained balanced scores. However, Trip.com showed consistent underperformance. Trip.com should focus on optimizing scripts, images, and loading behaviours. Booking.com and Agoda.com are recommended to implement lazy loading and image compression to increase their performance.

## Conclusion

Based on the analysis and testing carried out on five major travel and tourism platforms using Google Lighthouse, it reveals key insights into their overall web performance and quality. While all platforms achieved excellent results in Best Practices and SEO, Performance scores differed greatly. Both TripAdvisor and Airbnb scored nearly perfect in accessibility and SEO, demonstrating their commitment to search exposure and user diversity. On the other hand, Trip.com had the lowest performance score, indicating possible problems with resource optimisation and loading speed even if their SEO was adequate. Booking.com and Agoda presented well-balanced results across all metrics, making them reliable benchmarks for consistent web quality. Overall, the audit highlights how crucial it is to optimize for both speed and accessibility in order to provide exceptional user experience, especially in highly competitive online markets.

---

## References

- [1] About Agoda » Agoda: See the world for less. (2024, July 11). Agoda: See the World for Less. <https://www.agoda.com/about-agoda/>
- [2] About Trip.com. (n.d.). <https://www.trip.com/pages/about-us>
- [3] Barten, M. (2025, March 11). Travel and tourism industry; A complete overview of all activities. Revfine.com. <https://www.revfine.com/travel-and-tourism/>
- [4] Booking.com: The largest selection of hotels, homes, and vacation rentals. (n.d.). Booking.com. <https://www.booking.com/content/about.html>
- [5] Google. (2016, September 27) *Introduction to Lighthouse* <https://developer.chrome.com/docs/lighthouse/overview>
- [6] K, A. (2024, July 4). What is a website? Understanding the components and different categories. Hostinger Tutorials. <https://www.hostinger.com/my/tutorials/what-is-website/>
- [7] Kim, H., Xiang, Z., & Fesenmaier, D. R. (2015). Use of The Internet for Trip Planning: A Generational Analysis. *Journal of Travel & Tourism Marketing*, 32(3), 276–289. <https://doi.org/10.1080/10548408.2014.896765>
- [8] Lighthouse performance scoring. (2019, September 19). Chrome for Developers. <https://developer.chrome.com/docs/lighthouse/performance/performance-scoring>
- [9] Shahbaz, M., Solarin, S. A., Azam, M., & Tiwari, A. K. (2019). Tourism-induced income distribution in Malaysia: a practical experience of a truly Asian economy. *Current Issues in Tourism*, 23(23), 2910–2929. <https://doi.org/10.1080/13683500.2019.1697648>
- [10] Sikder, A. S. (2023). Revolutionizing Web User Experience: A Pioneering Investigation into Web Performance Optimization's Impact on User Experience and Business Success: Web Performance Optimization's Impact on User Experience and Business Success. *International Journal of Imminent Science & Technology*, 1(1), 186-198. <https://doi.org/10.70774/ijist.v1i1.8>
- [11] Similarweb. (2025, March 1) *Visited Travel and Tourism Websites*. <https://www.similarweb.com/top-websites/travel-and-tourism/>