USABILITY EVALUATION OF TRAVEL AND BOOKING WEBSITE

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ABSTRACT
This paper presents a usability evaluation report on three travel and booking websites. We conducted an online usability survey with 52 participants. Next, we divided participants into three groups based on their chosen websites: Agoda, Trip, and Booking.com. The evaluation focused on observing satisfaction with the Website Analysis and Measurement Inventory (WAMMI) based on a user-filled questionnaire. The results showed that each site had strengths but also required specific improvements. Key issues identified included loading speed, page request frequency and layout clarity. The software-based usability testing shows that Agoda performs best overall in terms of loading speed and responsiveness, and is the most efficient for users with limited latency patience. Booking.com is favored for its ease of navigation and accessibility of key features, although it has a relatively high number of page requests, which may impact performance on resource-constrained devices. Trip was appreciated for its comprehensive functionality, but had the slowest load times and largest page size, indicating the need for optimization. Overall, addressing these specific usability and technical issues can improve user satisfaction on these platforms.

Keywords
Booking Platform, Agoda, Booking.com, Trip, WAMMI, Website's Evaluation, Travel Platform, Usability Testing, Web Testing

1. INTRODUCTION
In today's increasingly affluent Malaysia, many people will first choose to travel abroad once a year. Users usually book all travel matters on travel and booking platforms. Travel and booking websites search, compare, book and manage a variety of travel services, including flights, hotel stays and excursions. By doing so, users can plan their schedules in advance, reducing the uncertainty of last-minute preparations, eliminating ambiguity, and ensuring a fun experience. People get instant room confirmation, easy and fast booking, and secure payment methods. No hidden fees. Users also occasionally get limited-time offers.

The purpose of this report is to evaluate the usability of three popular travel and booking websites, Agoda, Booking.com and Trip, which are widely used in Malaysia. These platforms are popular for their reliability and competitive pricing. Agoda is a digital travel platform that helps people travel the world for less by offering great deals on a global network of 4.5 million hotels and resorts, as well as flights, activities and more. Agoda.com also has good services, such as being able to use 39 languages in each country and providing 24/7 customer support. Since Booking.com has a comprehensive global reach and simple booking process, it is loved by international and local travelers. Travel is another great option, especially useful for travelers looking for competitive pricing and great support, as well as added features like trip management and real-time trip updates.

Usability testing is a crucial method for assessing the functionality and effectiveness of these websites. By observing real users interact with these platforms, usability testing enables a deeper understanding of how well these sites serve their audience. Key aspects evaluated include design of website(Attractiveness), clarity of information(Control) , efficiency in the booking process(Efficiency), provide clear instruction(Helpfulness) and difficulty level of use (Learnability). Conducting usability testing helps understand the difficulties users may encounter, allowing developers to improve and improve usability. This approach can identify potential issues at the outset and enhance the website to improve user experience.

2. METHODOLOGY
Three travel and booking websites were selected for usability evaluation in this research.The Uniform Resource Locator (URL) of each travel and booking website is shown in Table 1.

Travel and Booking Website	URL
Agoda	https://www.agoda.com/
Booking	https://www.booking.com/
Trip	https://my.trip.com/

Table 1 : URL of Travel and Booking Website

2.1 USER-BASED USABILITY EVALUATION METHODS
This type of methods include experimental methods, observation methods, questionnaire methods, interview

methods, physiological monitoring methods, etc. This article conducted a small questionnaire survey. A total of 50 people responded to this questionnaire, from which feedback from 10 people each was extracted. Before answering the questions, participants must complete the following tasks:

1. Register or log in to the website
2. Find some travel information (e.g. flights, hotel accommodation, etc.)
3. View the payment interface
4. View past transaction records
5. Find the website's FAQ section

These steps prevent stereotypes and misunderstandings about your website. After completing the above steps, participants can start answering a total of 20 questions in line with the WAMMI questionnaire. The questionnaire was designed to collect feedback from users across five usability categories defined by WAMMI (Website Analysis and Measurement Inventory): Attractiveness, Controllability, Helpfulness, Efficiency and Learnability. Each category had four questions that appeared randomly in the questionnaire. The questions are shown in Table 2.

Attractiveness	
1	You find the overall design of this travel and booking website visually appealing
6	The website's layout and colour scheme work well in creating a pleasant browsing experience.
11	I enjoy using this website.
16	The website is designed to encourage users to explore travel options.
Control	
2	The website allows you to easily navigate and control your booking options.
7	Finding specific travel information (such as hotel or flight details) on this website is easy.
12	Easy to modify your booking details (e.g., dates, number of travellers) on the website
17	You have enough options to customize your search when looking for travel packages.
Efficiency	
3	You can quickly complete the booking.
8	The booking process on this website was efficient and straightforward.
13	Often encounter delays or loading issues while using the website.
18	Rarely encounter any technical problems (e.g. broken links, error messages) while using the website
Helpfulness	
4	You think the information provided (e.g. description, review, etc.) will be helpful in making a travel decision.
9	Easy to find help or support on the website if you encounter an issue.
14	The website explains any fees or additional charges during the booking process well.
19	The website's FAQ or help section is clear and informative.
Learnability	
5	Able to easily understand icons or symbol used on the website (e.g., for facilities, transportation, etc.)
10	Easy to understand and use the search and filter functions for finding travel options.
15	The instructions provided for using the website's features (e.g., booking process, payment) cleared.
20	Your process of registering or creating an account on the website is intuitive.

Table 2 : WAMMI Questionnaire

2.1.1 ATTRACTIVENESS

Attractiveness is visually pleasant, and also offers much of direct interest to the intended users, whether it be functionality or information. It's about the look, feel, and emotional appeal of the website. Design aesthetics, emotional engagement and user enjoyment are key aspects. Attractiveness can influence a user's willingness to explore the site further.

	Agoda	Booking	Trip
Sum	222	244	211
Mean	13.059	12.842	13.188
Median	13	13	13
Standard Deviation	2.193	2.141	2.316
Std.Error	0.532	0.491	0.579

Table 3 : Summary Table for Attractiveness

Source	Degree of Freedom,df	Sum of Squares,SS	Mean Squares,MS	F-Stat	P-value
Between Groups	2	1.08	0.538	0.110	0.896
Within Groups	49	239.90	4.896		
Total	51	240.98			

Table 4 : ANOVA Table for Attractiveness

The F-statistic is 0.110, and the associated P-value is 0.896. Since the p-value is significantly higher than the significance level 0.05, we can suggest that there is no statistically significant difference between the mean values of the three groups.

2.1.2 CONTROL

Controllability evaluates how easy it is for users to find information and control transactions on the website. When users feel that the use of the website is in their control, it proves that the usability of the website is very good.

	Agoda	Booking	Trip
Sum	221	247	204
Mean	13	13	12.75
Median	13	12	13
Standard Deviation	2.574	2.427	2.569

Std.Error	0.624	0.557	0.642

Table 5 : Summary Table for Control

Source	Degree of Freedom,df	Sum of Squares,SS	Mean Squares,MS	F-Stat	P-value
Between Groups	2	0.692	0.346	0.055	0.947
Within Groups	49	310.996	6.347		
Total	51	311.688			

Table 6 : ANOVA Table for Control

Based on the ANOVA results, the F-statistic is 0.055, and the P-value is 0.947. Since the p-value is much higher than a typical significance level 0.05, this result indicates that there is no statistically significant difference between the mean values of Agoda,booking, and Trip.

2.1.3 EFFICIENCY

Efficiency measures how quickly and effectively users can complete their tasks on the website, such as finding information, making a purchase, or submitting a form.High efficiency ensures that users don't waste time, making the website feel more functional and user-centered. Efficient sites are especially valuable for goal-oriented users who need to complete tasks quickly.

	Agoda	Booking	Trip
Sum	200	237	198
Mean	11.765	12.474	12.375
Median	12	12	12
Standard Deviation	1.985	1.611	2.655
Std Error	0.482	0.370	0.664

Table 7 : Summary Table for Efficiency

Source	Degree of Freedo	Sum of Square	Mean Squares,MS	F-Stat	P-value
	m,df	s,SS			
Between Groups	2	5.128	2.564	0.583	0.562
Within Groups	49	215.547	4.399		
Total	51	220 674			

Table 8 : ANOVA Table for Efficiency

Based on the ANOVA results, the F-statistic is 0.583, and the P-value is 0.562. Since the p-value is much higher than a typical significance level 0.05, this result indicates that there is no statistically significant difference between the mean values of Agoda,booking, and Trip.

2.1.4 HELPFULNESS

Helpfulness checks how well a website helps users understand content and solve problems. Useful websites often have an initial introduction that guides users on how to use the site or provides assistance when they need help, thus increasing satisfaction and engagement.

	Agoda	Booking	Trip
Sum	213	249	211
Mean	12.529	13.105	13.188
Median	13	13	13
Standard Deviation	2.528	2.378	1.642
Std Error	0.6131	0.546	0.411

Table 9 : Summary Table for Helpfulness

Source	Degree of Freedom,df	Sum of Squares,SS	Mean Squares,MS	F-Stat	P-value
Between Groups	2	4.365	2.183	0.438	0.648
Within Groups	49	244.462	4.989		

Total	51	248.827			

Table 10 : ANOVA Table for Helpfulness

Based on the ANOVA results, the F-statistic is 0.438, and the P-value is 0.648. Since the p-value is much higher than a typical significance level 0.05, this result indicates that there is no statistically significant difference between the mean values of Agoda,booking, and Trip.

2.1.5 LEARNABILITY

Learnability measures how easy it is for new users to start using a website without guidance and help. High learnability is important for targeting new users or users who don't frequently use similar sites because it minimizes the barrier to use.

	Agoda	Booking	Trip
Sum	231	258	213
Mean	13.588	13.579	13.313
Median	13	13	12.5
Standard Deviation	2.623	2.610	2.152
Std Error	0.636	0.599	0.538

Table11 : Summary Table for Learnability

Source	Degree of Freedom,df	Sum of Squares,SS	Mean Squares,MS	F-Stat	P-value
Between Groups	2	0.813	0.461	0.066	0.936
Within Groups	49	302.177	6.167		
Total	51	302.990			

Table 12 : ANOVA Table for Learnability

Based on the ANOVA results, the F-statistic is 0.066, and the P-value is 0.936. Since the p-value is much higher than a typical significance level 0.05, this result indicates that there is no statistically significant difference between the mean values of Agoda,booking, and Trip.

2.2 SOFTWARE-BASED USABILITY EVALUATION METHODS

Software-based usability evaluation methods use the tools automatically for determining how user-friendly and effective a software system is. By using these methods, loading time,page size and page request are observed. Two websites are used to evaluate the usability of travel and booking websites.

2.2.1 GTmetrix

GTmetrix is a web-based tool that provides an analysis of website speed. It will analyze a site's load time, size, and requests happening, and then generate a score with recommendations to improve it. GTmetrix breaks down your page performance in an easy to read, summarized report.

2.2.1 DebugBear

DebugBear is a cloud-based website monitoring solution that helps businesses track site speed on different devices across the world. It provides in-depth comparative reports, which enables employees to identify the cause of a regression or spot opportunities for improvement.

3. RESULT AND DISCUSSION

3.1 USER-BASED USABILITY EVALUATION METHODS

After the questionnaire is completed, we can summarize the analysis based on the feedback. Descriptive statistics for participants are shown in Table 4. According to the survey results, 55.8% of the participants were male and 44.2% of the participants were female.65.4% of participants frequently use travel and reservation websites while the other 34.6% do not.

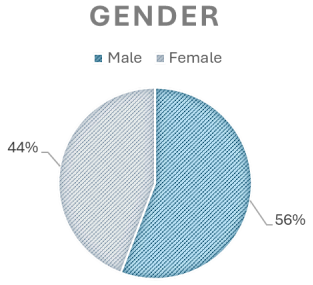

Figure 1: Gender

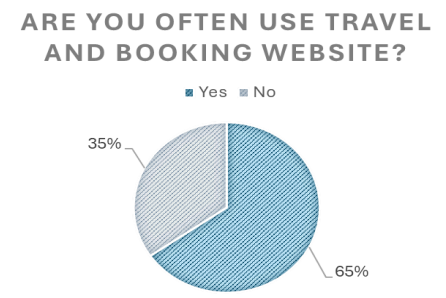

Figure 2: Frequency Use Travel and Booking Website

The questionnaire also asked about the purpose of using the website. Figure3 shows that 26.9% of users believe that the main purpose is to read reviews and ratings from other travelers. 23.1% of participants each believed that finding travel information and recommendations was as important as booking flights and renting a car. Next, 13.5% of people thought it was to find and compare air ticket and hotel prices, manage travel itineraries and view booking details. Afterwards, the questionnaire showed that 36.5% of the people preferred Booking.com, followed by 32.7% of the participants who preferred Agoda, and finally 30.8% of the participants preferred Trip.

Figure 3: Purpose For Using Travel and Booking Website

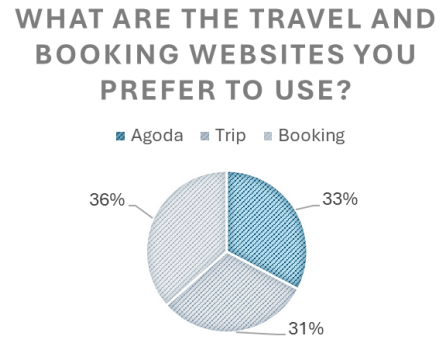

Figure 4: Preferred Travel and Booking Websites

3.2 SOFTWARE-BASED USABILITY EVALUATION METHODS

By using GTmetrix and DebugBear, we can obtain some parameters such as loading time, page size and page requests.We will calculate the average for all aspects.

Features	GTmetrix	DebugBear
Loading Time	✓	✓
Full TTFB	✓	✓
First Contentful Paint	✓	✓
Largest Contentful Paint	✓	✓
Total Blocking Time	✓	✓
Largest Content Element	✓	×
Page Size	✓	✓
Page Request	✓	×

Table 13: Feature in Website Usability Testing

3.2.1 LOADING TIME

Load time is the time it takes for a webpage to become fully accessible and functional after a user initiates opening or loading of a website.By using GTMetrix, we can test the total load time that includes onload time and time to interactive. Trip takes the longest time which is 15.9s, then Booking.com takes the middle time which is 12.95s and the fastest speed website is Agoda which takes 9.0s. Therefore, Agoda is the best performer, it can effectively reduce user waiting time and bring a better experience.

	Agoda	Booking	Trip
GTmetrix	10.2s	11.7s	12.2s
DebugBear	7.8s	14.2s	19.6s
Mean	9.0s	12.95s	15.9s

Table 14: Mean of Loading Time

3.2.2 Page Size

Page size defines the amount of data that can be transferred between main memory (RAM) and secondary storage (such

as a hard drive) during each page swap or load. In page size consists of Photos, Java Script, CSS StyleSheets, Fonts, HTML and others. According to Table 4, we can find that the total page size of Trip is 6.64MB, followed by Agoda which total page size is 5.98MB, Finally, the total page size of Booking is 5.30MB. A larger page size may be better suited for applications with high memory bandwidth needs, while a smaller page size may be better suited for memory-constrained systems.

	Agoda	Booking	Trip
GTmetrix	5.98MB	5.30MB	6.46MB
DebugBear	6.01MB	5.83MB	6.82MB
Mean	6.0MB	5.57MB	6.64MB

Table 15: Mean of Page Size

3.2.3 Page Requests

Page request occurs when a program needs to access a page of memory that is not currently loaded in the main memory (RAM).A page request occurs when a program needs to access a memory page that is not currently loaded into main memory (RAM). According to GTMetrix, we can find that Trip's total page requests total 177, consisting of 32.2% other, 28.8% Java scripts, 22% photos, 12.4% CSS style sheets, 3.4% fonts, and 1.1% HTML. Next, Agoda's total page requests are 236, including 42.8% photos, 29.7% Java scripts, 16.9% other, 5.5% HTML, 4.7% CSS style sheets and 0.4% fonts. Finally, the total requests for the Booking page were 285, including 34.4% Java script, 28.4% other, 16.8% photos, 15.4% CSS style sheets, 3.2% HTML, and 1.8% fonts. Since frequent page requests, especially if they result in frequent page faults, can slow down a system since the system spends a lot of time swapping pages in and out of RAM. Therefore, Booking can put the greatest strain on system resources due to high page request counts, which can impact overall performance, especially on systems with limited RAM. Agoda seems a bit resource-intensive, but not as demanding as Booking. Trip may have minimal impact on memory. resources, making it more suitable for memory-constrained environments.

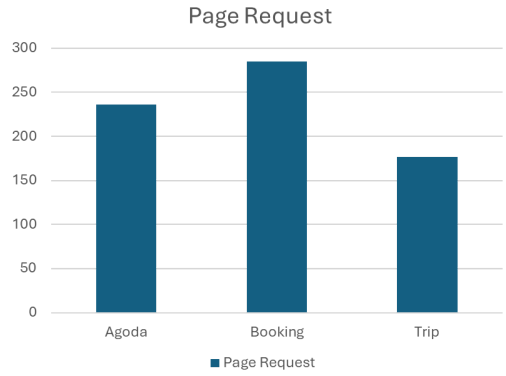

Figure 5 : Page Request

4. CONCLUSION

This usability evaluation explored three popular travel and booking websites—Agoda, Booking.com, and Trip—to assess their performance in terms of user satisfaction and technical efficiency. The study used a combination of user-based and software-based evaluation methods, with 50 participants completing usability questionnaires, and with GTmetrix and DebugBear assessing page speed, size, and request load.

The user-based evaluations revealed that while each website meets essential usability criteria, there are several areas for improvement. Commonly cited issues included ease of control, response time, and clarity of information, all of which can directly impact the user experience. The feedback from the WAMMI questionnaire highlighted differences in attractiveness, controllability, efficiency, and learnability among the sites. Users favored Booking.com for its ease of use, while Agoda was preferred for its speed and efficient interface. Trip was noted for its feature-rich offerings, although it requires optimization to enhance load times and page requests.

The technical evaluation supported these user insights. According to GTmetrix and DebugBear, Agoda had the shortest load times, offering a smoother user experience. In terms of page size, Trip had the largest size, which can impact loading efficiency and is something that might benefit from further optimization. Booking.com, with the highest number of page requests, poses a potential challenge for memory-constrained systems, which may slow down the site's performance. These results suggest that while each website has strengths, there are specific areas in page load time, page size, and resource demand that need to be addressed.

In conclusion, this study highlights the importance of usability testing in identifying key areas for improvement in travel and booking websites. Agoda, Booking.com, and Trip could enhance their user satisfaction and performance by addressing the identified usability and technical issues. Optimizing these aspects will likely lead to greater user retention, higher conversion rates, and an overall more enjoyable experience for users planning their travel on these platforms.

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