Enhancing Digital Travel Experiences: A Performance Case Study of Key Websites in India

Nitin Reddy, Peddi Gowtham Balaji, Chamikar P, Yenuganti Omkar Chowdary and Radha D
Department of Computer Science and Engineering, Amrita School of Computing, Bengaluru, Amrita Vishwa Vidyapeetham, India

Keywords: Performance Optimization Tools, Page Load Speed and Efficiency, Core Web Vitals Insights, Actionable Improvement Suggestions, Global Testing Capabilities, Mobile Responsiveness Focus.

Abstract: Website speed and efficiency play important roles for delivering excellent users experience especially in high traffic Website 3 and Website 4 whereby users interaction, conversion rates, and their perceived attitude towards a Website is influenced by the availability and speed of the Website. This work then performs an assessment of the said travel websites to identify how well they are performing through key performance indicators including FCP, LCP, TTI, TBT, CLS and TTFB. Using site analytics tools including but not limited to Google Lighthouse, Google PageSpeed Insights and GTmetrix, this research aims at gauging performance across the two platforms, the areas of strength as well as the opportunities for enhancements. The findings offer practical knowledge about how such platforms operate in practice, and may reveal specific impediments to rapid operating velocity, active user participation, and visual constancy. On this basis, this study provides specific recommendations for improvement in loading time, blocking scripts, layout stability, and overall usability at desktop and mobile web platforms.

1 INTRODUCTION

Website performance is one of today's essential components that either positively or negatively influences user experiences concerning various web-based interfaces, including travel plat- forms such as Website 3 and Website 4, Website 5, Website 2, Website 1, Website 6. Used by millions of users to book hotels, airlines, and vacation packages slight delays will lead to abandonment, and negative perception towards the brand or company. This work presents an analysis of Website 3 and Website 4 with an emphasis on time to first byte, page speed, interactivity, and reliability. Our goal, therefore, is to establish a benchmark for these sites based on the findings of analyses using sophisticated tools such as Google Lighthouse, PageSpeed

Insights, and GTmetrix to determine what strengths these sites have and what weaknesses should be leveraged or fixed to capture user attention and encourage interaction.

The market features increased competition from players in the travel and booking platforms domain, with users implying high standards from performance, load speed, and relevancy within search results. These are the specific questions that this study aims to answer: What specific measures define Website 3's and Airbnb's KPI, and what do Website 4 KPI include? We aim to provide insights into their SEO strategies, traffic patterns, and performance efficiency, which are crucial for maintaining market share and user satisfaction.The rest of the paper is structured as follows: Section II is the Literature Review, Section III is the Experiments, Section IV is the Analysis, and the final section is Conclusion Future Work.

2 RELATED WORK

Kumar et al. (Kumar, Kumar, et al. 2021). emphasize the vulnerability of websites and stress the idea of monitoring and analyzing the performance of Web sites with respect to accessibility, usability and security. Some of the tools used for audits include the SEOptimer and the Qualidator and these give important changes that need to be made for the user to have a better experience as well as pointing out the

Reddy, N., Gowtham Balaji, P., P, C., Chowdary, Y. O. and D, R.
Enhancing Digital Travel Experiences: A Performance Case Study of Key Websites in India.
DOI: 10.5220/0013593000004664
Paper published under CC license (CC BY-NC-ND 4.0)
In *Proceedings of the 3rd International Conference on Futuristic Technology (INCOFT 2025) - Volume 2*, pages 389-397
ISBN: 978-989-758-763-4
Proceedings Copyright © 2025 by SCITEPRESS – Science and Technology Publications, Lda.

strengths in security. For this reason their studies demonstrate the importance of such tools to identify and prevent the issues that might interfere with the user interaction or draw attention to the existing security threats. According to the study, performance check is suggested as best practice that can be adopted in the ever growing technological environment for constant evaluation of quality and safety of the website.

The work focus on the effect of web analytics on SMEs in the kingdom of Saudi Arabia especially in e-commerce business.

(Pradana, and Suprayogi, 2021). The study focused in the quan- titative characteristics of the internet and/web data part within the managerial perception of the SMEs that employ tools such as the GA to evaluate their performance. Through interviews with eight Saudi SMEs, the authors identified four key themes: the types of the web analytics tools, which are required for the organizations, the factors, that make organizations start using web analytics tools, and the impacts, which the tools have on financial and non-financial performances and the decision making process. The study found that the utilization of these tools was useful in the enhancement of performance of SMEs and to SMEs, they assisted in decision making by providing direction in form of KPIs. This study emphasizes on the importance of adopting WAM to boost the business performance of SME and advocates for a better understanding of KPI by policy makers. However, the study also has its limitations; the number of participants is limited and the study focuses only on particular kind of industries; therefore, the researchers should use a larger and more heterogeneous population and geographic area.

The author aims at optimizing the SFV website (Panduwika, and Solehatin, 2024) which consists of applying Google PageSpeed Insight optimization techniques. This optimization comprised of down-scaling images by 30per and converting them to webp format with respect to the image quality and determine the increase in the website loading speed. This improvements increased the PageSpeed score from 47 to 63 and proved that such optimizations are effective. From social experiment conducted among twenty users it was revealed that 82 per cent users were satisfied with the improvement in features of website such as speed, image, etc. Therefore, it reiterates the importance of periodic assessment of the site and changes in factors connected with the User Experience.

The author aims at examining the effect of employing web analytics tool on the performance of small and medium en- terprises SMEs in Saudi Arabia focusing on the e-commerce segment (Almatrafi, Alharbi, et al. 2023). In the present research, with the data obtained from eight interviews of the employees of SMEs, the authors interested in identification of usage of Google Analytics, Zid Analytics and other tools. Some of the major benefits realised when using web analysis tools are;; improved financial and or non-financial performance, improved decision making, and realisation of general business strategies. From the research, the enhancement of the above tools improves business performance, clients' satisfaction and organization effectiveness.

Muhammad Saad, et.al. (Saad, Zia, et al. 2022) uses a cross-sectional survey re- search method to evaluate usability characteristics of healthcare web sites. The articles chosen are mostly comprised from the year 2017 to 2021 From the identified digital libraries like IEEE, ACM, Scopus, ScienceDirect and other scholarly journal databases. From the initial search, we found 10,512 papers out of which 55 papers were selected based on research questions and quality assessment They exactly used usability Features like identifying and emphasizing special characteristics that affect interaction and experience in health care websites, usability testing methodolo-gies that were used to measure or assess gains associated with linkage to usability related issues, frequently encountered test challenges for users and developers. This extended approach should provide significant inputs which can be useful lines, and Challenges faced by them are Qualifying common usability issues arising from user and developer.

The paper focuses on the deem of e- government website efficiency for which DEA as a non-parametric method is employed (Supriya, Rathinavel, et al. 2024). It also considers stacking for improving its predictive performance, and the method by which models and methods can be combined for the purpose of achieving such a function with attention given to the statistical, computational, and representational thereof. As for the future research, of course, other models of DEA, ensemble and data mining techniques can be used to enhance the evaluation phase of the current paper where DEA is integrated with the DMS to evaluate Jordan's e-Government portals.

The author made a comparative analysis of journal coverage among three major databases: SciVerse Web of Science, Sco- pus, and Dimensions database (Singh, Singh, et al. 2021). When they compared it with the latest master journal lists they found out that in terms of coverage it was a lot lower; Web of Science had the smallest coverage while Dimensions

offered the largest and most comprehensive coverage. Thus, 99.11per of the 58,620 total journals inside of WoS are also inside both Scopus and Dimensions, while records inside of Scopus are 96.42per inside of Dimensions. The study also revealed cross-sectional differences in article production rates and discipline orientation for the 20 coun- tries between the years 2010- 2018. The present study suggests that the choice of database can influence bibliometric analysis rather substantially and also, this study opens the possibility that Dimensions may be of particular value as it is somewhat more comprehensive.

(Kumaladewi, Rahajeng, et al. 2023) applied WebQual 4.0, Importance Performance Analysis (IPA), and GTmetrix to a study of user satisfaction and web performance. The survey was carried with 84 students and got web quality average of the WebQual index at 81per points, which indicates the Web site quality and Usability 79per and Information Quality 83per and Service interaction quality 83per. The above analysis provided by IPA identified essential areas of concern relating to learnability or the capability to teach or discuss the site in addition to the ease of navigation improvement in contrast to the performance test by GTmetrix that rendered the site a Grade C implying rather satisfying but somewhat improvable technical performance. In all, the study shows that the hypothesis that website is positively evaluated is true though there is need to target certain areas to make user satisfied and improve the performance of the website.

The work examines the flow dynamics of a website from the e- business standpoint Cociorva (Narassima, Shriram et al. 2022) using multiple analytics tools to measure critical parameters, including performance, accessibility, and SEO. Analytically, this paper elucidates how a detailed approach can be important in comprehending the pattern of users and the efficiency of the e-commerce business in order to fine tune strategies for improved operational results. There is already a highly expressiv emphasis on the systematic processing of the issues at hand and finding keen and efficient ways to improve the satisfaction of the users along with raising the business yield. In his study, More specifically, there is a use of fixation of web analytics for managing innovative business models for sustainable competitive advantage in digital economy.

The author developed a web-based application for performance testing of e-commerce site with using the WebpageTest, Page- Speed Insight GTmetrix performance testing tools (Dhivvya, Dath, et al. 2024). The present research deals with nine performance parameters like Load Time, First Byte, Total Blocking Time and the like and out of which ten e-commerce sites of Bangladesh will be considered for analysis. The website is built in PHP/MySQL, CSS/HTML, thus, you can just paste the URL of a website in order to check its speed automatically. It was seen from this study that; WebpageTest and GTmetrix provided more elaborative results where site7 took the least TBT of 0.03 seconds and site10 took the most LT of 17.78 seconds. Planned improvements for the update is making the mobile version of the site, and improving testing.

3 EXPERIMENT

3.1 Google Lighthouse Tools

Google Lighthouse is an optimization tool from which we use and analyze such indicators of web page performance as FCP, LCP, SI, TTI. It highlights issues to do with performance and provides measures to use as far as loading time, rendering, and CSS/Javascript are concerned. For example there are such recommendations as lazy load or code split, it means that, Insites, for example, estimates not only the DOM Themes but also the adaptability of the site to Web Standards. It also estimates the following – how well the layout is suited for mobile devices, how stable the layout is (CLS), correct accessibility aspects for instance color difference, text for the visually impaired, ARIA labels.

3.2 Page Speed Insights Tools Overview

PSI measures the Web page load on a mobile and desktop using the various KPI, which are FCP, SI, LCP, TTI, and CLS. That of which invaluable that it provides advice on how to limit superfluous JS that loads, also servers optimised images apart from the choice of removing resources that slow down the rendering process as well as caching resources. Lab data along with field data are used in this tool for performing analysis for performance and checking for mis configurations as well as common breaches like WebP images and redirects. In particular, metrics that are valuable to the user such as TTI and Total Blocking Time (TBT) need to be optimized.

3.3 GTmetrix

GTmetrix is a web-based service that evaluates website perfor- mance for the desktop and mobile versions of a site using Page- Speed Insights and YSlow. Performance scores: It gives different scores where the page loading times are perfect, and a waterfall chart makes it easy to find out what caused the delay such as large images or scripts. These tools keep record of the history of the processes and trends on them while also having the video replay which as McCormick said shows where loading issues are. It also expands the mobile site for testing and consumer targeting with first priority given to the international market. However, due to the guidance for front-end and backend optimization tips, GTmetrix enhances engagement with the audience, hence reducing bounce rates and improving better responsiveness and performance of websites to rank higher in SERP.

4 ANALYSIS

4.1 Google Lighthouse Tools

Specifically, the Lighthouse report for website 1 shows that its performance score is 65; this means that further improvements must be made with regard to the load speed optimization. On this aspect, the site achieved an impressive 91, which indicates good accessibility for users of different abilities and a possibility of a small improvement. Improved score for the best practices is 93 which means that their conformity to web standards and security protocols is good and they can and still improve a little. However, the SEO score of 42 is very poor, emphasizing the high potential for work on the website's increase of scores in rankings.

Some of the others important findings of the report include; at first contentful paint the slow motion has been recorded at 2.3 seconds on average while the acceptable norm is 1.8 seconds on average. The Largest Contentful Paint (LCP) is at 2.4 seconds, and while it has a passing score, there exist room for improvement. A considerable Total Blocking Time of 3,290 milliseconds is demonstrated, which shows that scripts or processes interfere with interactivity. The Speed Index is calculated at 2.8 seconds, and reflects the average time to receive the first painted pixel which is the visible part of the page, so it seems that there is potential for increasing the speed of page loading for the sake of convenience for the users. However, the CLS is 0, which means there is no shift of the page layout during loading and this is favorable for end users.

Possible for enhancing the performance of the whole Website 1, for example, is the decrease of TBT through the improvement of the load speed of scripts and resource sizes for faster interaction. Other peculiarities of SEO that would be helpful in making this website more noticeable include meta tags optimization, improving the texts and ensuring their mobile compatibility. By doing the above, it can be easier for Website 1 to improve on the areas of weakness so as to make it easier for the customer to access and use the site and hence improve on the quality of services offered.

According to the Lighthouse report for the webpage 2, the score is 90 which dispositions it to the high performance and good optimization and speed. However, the accessibility score obtained at this site is 73; this merely means that every contenye is accessible but there is still a great chance of making this site suitable for all users especially the disabled. The practice gap is best at 93, meaning that there is good compliance with web standards and security needs with little to focus on. On the flip side, the provided SEO score is 50, which is again low and there is good potential for increased visibility on the search engines.

Head Measurement indicates that First Contentful Paint achieves a value of 2.7s which is not very welcoming since it basically shows the ability of the website to load first time to the user. The Largest Contentful Paint stands at 3.0s, slightly above the threshold of 2.5s and optimal improvements exist to maximize the UX for the customers. On the positive side Total Blocking Time is 0 milliseconds. Excellent. That means no blocking resources or heavy scripts slow down the interactivity of the proposed prototypes. The Speed Index is at 2.8 at the range of which is tagged good performance, the CLS was 0 meaning no instances of layout shifts throughout the loading. Hopefully it is perfect for us for a complete transition to making user experience hassle free.

This will make the overall performance better if Website 2 ensures the measures such as resource loading for focusing on first content paint which deals with loading of critical assets or optimizing the images to impact the largest contentfull paint.

Other problems like contrast and correct alt texts for images can be solved to allow more consumers into a website. Meta tags should be optimized, and the page content should be improved to raise the SEO practice. The effect will be even more visibility on SERP. In these aspects, Website 2 is more about further enhancing general user involvement and satisfaction alongside taking the lead in travel information.

Table 1: Performance analysis of various Travel Websites

	Website-1	Website-2	Website-3	Website-4	Website-5	Website-6
Performance	65	90	29	76	71	62
SEO	42	50	100	50	42	50
Accessibility	91	73	92	67	90	73
Best Practices	93	93	57	96	89	100

Table 2: Performance and Structure Metrics of Various Travel Websites as Analyzed by GTmetrix

	Website-1	Website-2	Website-3	Website-4	Website-5	Website-6
GTmetrix Grade	D (67%)	C (78%)	E (59%)	A (95%)	C (75%)	B (86%)
Performance Score	63%	85%	43%	97%	63%	86%
Structure Score	74%	67%	82%	93%	92%	86%
Largest Contentful Paint	832 ms	1.1s	2.0s	1.2 s	1.4 s	1.1s
Total Blocking Time	1.6s	235ms	1.6 s	0 ms	616 ms	224ms
Cumulative Layout Shift	0.01	0.02	0.09	0.03	0.01	0
Total Page Size	7.23MB	3.81 MB	6.23 MB	1556KB	1.70 MB	2.06MB

Analyzing Website 3 using Lighthouse we come across a score of 29 which proves this website to be rather poor example in terms of optimization and loading speed. By definition, this site is in the low-performance area; that is how I became aware of this site at this stage in the first place to work on the improvement of its performance and usability. On the other hand, the access score is 92 that shows the site is almost perfect and provides good use experience for a huge amount of users including disabled. The score by the best practices is 57, which barely meets the average levels of adherence to the web development standards as well as security protocols, indicating that much more work needs to be done in this aspect. But at the same time, what I also like about the site is that it comes with a perfect SEO score at 100 best for search presence and makes the site easily accessible to the users as-well.

In the primary performance metrics, major problems can be seen: The first paint can take as long as 4.6 seconds, that is slow enough and the first view of the page can already give a prejudiced view of the website's speed. The Largest Contentful Paint sits at a scary 7.1 seconds which is way high compared to the threshold value of 2.5 seconds. It indeed needs a faster enhancement to make the use of the website more effective and impressive for the users. In addition, the Total Blocking Time is 4,300 milliseconds. This shows that heavy scripts or blocking resources are greatly affecting interactivity and could eventually frustrate users. The interaction time pointed by Speed Index is 9.6 seconds, therefore overall time for loaded visible content is slower. This hurts user experience. The CLS of the CLS on the other hand is 0.041 meaning there are very fewer layout shifts during the page load and therefore supports a visually stable experience.

All the above-taken performance issues would be eliminated if only Website 3 will dedicate its efforts towards bringing the load time of main resources and scripts as well as the First Contentful Paint, the Largest Contentful Paint into perspective. Some of the ways of enhancing the responsiveness include, performing code splitting, image optimization, and the loading of non critical resources without interrupting the flow because best practices improvement around web standards as well as security protocols would in fact serve to enhance the reliability of websites as a whole. It would focus on the areas to increase number of users, to decrease bounce rates and to enhance the customer confidence in using the online booking, thereby making it more efficient as well as effective in long run.

That is according to the Lighthouse report of the website 4 it has performance score of 76. Any rate, this is a good score as far as optimization is concerned; nevertheless, it has a very fast load speed, so it occupies the rank of middle performance.

Therefore the accessibility score according to the EAG is 67. This implies that the usability for persons with impaired ability could have been enhanced; however, there exists a significant improvement endeavor in respect to this aspect. It came up with 96 for best practices which makes it probable for the site to be in compliance with good modern internet standards and security best practices. The SEO score is at 50 meaning that there are a number of places where search engine result has to be enhanced.

Some other key metrics show the performance of the site: FCP is at 3.1, thus a little above the optimal level and can be adopted in straining for increasing the impressions of the users. Largest Contentful Paint stands at 3.5 seconds, which is higher than the target of 2.5 seconds and, therefore, indicate that something needs to be done to improve this figure so that the user experience can be optimized. On the other hand the Total Blocking Time is as low as 280 ms which means that the blocking of scripts and other interactions does not significantly affect user interactivity. A Speed Index of 5.3 seconds means the time required to load only visible content and hints at certain improvements that can potentially increase the 'happiness' of a user. The score for the Cumulative Layout Shift is 0.00; that indicated that there are no disturbing shifting of formats during the loading of the site that would cause instability and discomfort to views. Thus, any kind of optimization in FCP and LCP times will be beneficial for the general performance of the system. Some drawbacks include poor access arrangement should be enhanced and proper optimization technique will greatly improve both user experience and site exposure. All these areas of improvement will not only increase the site's performance metric, but it would also increase the level of satisfaction of users once on the platform.

The optimization and load speed of the website5 stand at 71 out of 100 hence classified as; in the medium-performance optimization and load speed according to the Lighthouse re- port. This website shows good accessibility, which equals to 90, therefore is an example of a very accessible website for people with disabilities. Moreover, the best practices score is 89Key performance metrics provide further insights: Regarding the First Contentful Paint (FCP), the result is good and make users satisfied because they have to wait only 1.5 seconds. For page rendering, LCP equals to 2.5 seconds that is on the edge of the advised top mark, so even the minor optimization increases the chances of user satisfaction. However, the Total Blocking Time is significantly high and causes 1,500 milliseconds; fixing this problem is good for user interaction. The Speed Index is high and the record achieved is 2.2, which is a good performance loading time for the visible parts of the website, which Benefits the user experience.

Also, with the value of 0, the website passes all the CLS criteria, meaning that a user will not experience any a heavy shifting or re-flowing of the page's elements while loading the web page.

The enhancements to be applied to the Website 5 to raise the overall performance include decreasing the Total Blocking Time and increasing the efficiency of SEO optimization to raise the ranking in the search engine. If these concerns are to be addressed, then there are possibilities where the website can improve on user experience and in return, the number of users would increase giving out maximum user satisfaction hence improving on repeat use.

The performance report of the website 6 done by the Light- house report has indicated a poor performance by giving the result of 31 meaning its slow to load and poorly optimized. The implication of such a score is that there is a lot that needs to be done to optimize for faster page loading speed experience from the users' perspective. The total and maximum possible accessibility score should be around 85 and which when broken down should be at medium because the general accessibility of the site is fairly good but there are areas of considerable need for improvements in order to provide for non-disabled user's better services. Using best practice matrices, the score stands at 64 which is technically below the average and pointing towards a list of problems with web standards, security, and development practices for enhancements. However, the SEO score is quite moderate with the website securing an average score of 78 before it can be exposed more to several search engines. The most important metrics raise concern; the FCP is rated at 3.9 seconds which is slow and can be improved by reducing image size, optimizing servers etc. Largest Contentful Paint (LCP) is worse with taking 5.5 seconds to load while the threshold should have been a mere 2.5 seconds – twice as worse impacts the overall user experience. The Total Blocking Time is also equal to 1,500 ms, and, again, it is critical; decreasing the above-mentioned heavy scripts and increasing the third-party resources would make the site faster. The Speed Index is 6.2 seconds, all the loading time to the visible

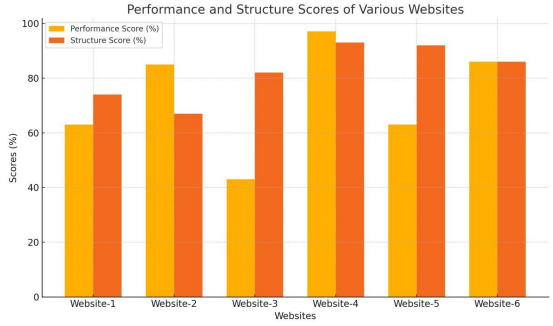

Figure 1: Visualization plot for website analysis

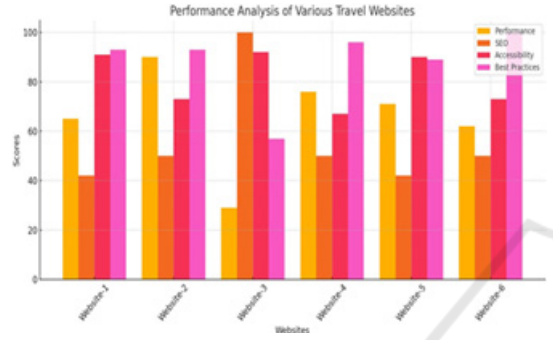

Figure 2: Bar Graph for Performance and Structure Scores of Various Websites

elements is below the threshold that is considered good feel by the users. Finally, there is CLS score which is 0.15 meaning that pages have tiny sized layout shift during loading that results in reduction of quality of user experience when a user tries to engage with content that is partially loading.

4.2 GTmetrix

4.2.1 Website-1

For website 1, it is clear that there are opportu- nities for improvement when it comes to performance metrics; on 'GTmetrix Grade' the site is rated at 63per which, on the scale used, indicates that the site performance is only slightly above average or just below average; depending on how the score is interpreted. Moving to the happier note, Largest Contentful Paint happens at 832ms which all denote the largest element seen loads rather well. But TBT is high at 1.6 sec; therefore, there is a sign of slowness in the user Interface as well as the response time. They outline very low CLS, at 0.01, suggesting that the page is asey with almost no fluctuation in layout. Nevertheless, because the total page size is good size, 7,23 MB, and it generates 228 requests, it will be likely to negatively influence overall speed. Nevertheless, reducing the blocking time and optimising the page sizes might further increase the satisfaction and thus engagement of visitors like website1

4.2.2 Website-2

2 performance metrics that were analyzed on the website 2 have shown decent efficiency but there are still potentialities for further enhancement. Indeed, the website gotten a Gtmetrix grade of C at 78per, as well as a performance score of 85. This is actually a type of satisfying and already indicates an upward trend. Its Structure Score is even lower and equals to 67per, which means that it could perform significantly better in terms of the website structure optimization. At 1.1 seconds it boasts of a great largest Contentful Paint to signify good load time for the largest visible element. Total Blocking Time amounted to 235ms which hints at some latency affecting the resource's interaction side for the user. The CLS is again low at 0.02 which refers that there is pinpoint stability of the screen with little distortion. In addition, the site is generating high requests, the entire page is also very heavy and weighs 3.81MB, which means that high requests of 583, would slow. In sum, to improve utilization and follow the likely occurrence of quick and easy access to the web site, TripAdvisor should improve the established structure of its site and reduce its requests.

4.2.3 Website-3

The performance metrics of the website 3 are concerning as it scores only a low GTmetrix Grade at E level and just 43per Performance Score. Measuring the LCP to 2.0 seconds, it is below average about the time that will take in loading the largest visible element, which might provoke an annoyed user. The TBT stands at 1.6 seconds; this indicates the extent of blocking times that still obstruct user interaction and responsiveness. At a Cumulative Layout Shift of 0.09, there is slight visual instability. While this score seems low and likely shouldn't have manifested itself as it did, it does uncover problem spots on the website. The total page size is 6.23MB, meaning it is pretty big-a probable reason for slower loads-generating a significant 330 requests across the site. Booking.com needs to emphasize optimizations that prioritize decreasing page sizes and requests while maximizing load speeds in order to drive broader performance improvements. These are the enhancements that improve user experience and ensure sustenance in customer engagement on the platform.

4.2.4 Website-4

The performance metrics for the website 4 are excellent, reflecting the perfect effectiveness with which it strives to provide a fast and responsive user experience. This is achieved by having scored a remarkable GTmetrix Grade of A (95per), where the site clearly boasts a striking Performance Score of 97per and scores 93per on the Structure Score. Some key indicators of speed comprise a Largest Contentful

Paint of just 1.2 seconds, reflecting a swift load time for the most important visible element. TBT is also 0ms, meaning there is no blocking problem and has a completely responsive page. CLS is at 0.03, which shows a minor visual instability but within acceptable limits. The total size of the page is highly efficient at 156KB, suggesting quick loading time, and the website requires only 14 requests to load everything, which further improves general performance. These metrics reflect how MakeMyTrip performs on the technical front but also covers points that promote user satisfaction. The end result would be smooth browsing, higher user engagement, better conversion rates, and customer loyalty.Website 4 website performs exceptionally well, with high performance and structure scores. It has a fast load time, no blocking issues, and minimal layout shifts, ensuring a smooth and responsive user experience.

4.2.5 Website-5

The performance metrics of the website 5 indicate moderate overall effectiveness in many areas with some to be improved. The GTmetrix Grade C suggests 75per performance whereas the performance score only has 63per, showing a lot of room for improvement. The Structure score is quite good at 92per, and it suggests a very well-organized website. The LCP measures at 1.4 seconds, which is quite fast but has some more room for optimization. However, the Total Blocking Time (TBT) is surprisingly high at 616ms, which creates quite large responsiveness problems that would affect the user experience. The best thing is that the Cumulative Layout Shift (CLS) is excellent, at 0.01, with very stable visual presentation and very nearly no layout shifts. With these strengths, however, the site brings a total page size of 1.70MB, and it makes 106 requests, which is far higher than ideal for an efficient load time. For better performance, Goibibo could focus on the reduction of blocking time and the number of requests as such improvements might result in a user experience of less blocks and more engagement that leads to better customer satisfaction and retention.

4.2.6 Website-6

Performance metrics for Lastminute.com are rather good with a GTmetrix Grade of B (86per). The website has a good score in terms of performance, with 86per and is paired along with a structure score at 86per hence indicating the quality design and functionality. Largest Contentful Paint is at an impressive 1.1 seconds, pointing to a good load time for the most significant visible element. It also has Total Blocking Time quite low at 224ms and shows excellent response with minimal delays when a user interacts with the page. An absolutely interesting aspect of information is that the website scores a total of Cumulative Layout Shift, which is 0; thus, no visual instability is witnessed when loading, improving overall usability. With a total page size of 2.06MB, the site remains in a moderate size and supports easy loading. Also, the site generates 129 requests, which is very efficient. The response given by users regarding Lastminute.com has been smooth and interactive, which makes it an excellent platform for online travel services.

5 CONCLUSION AND FUTURE WORK

In each website exhibits specific areas for improvement to enhance overall user experience and functionality. website-3 should focus on Performance improvements, particularly in page speed and reducing blocking time, to complement its excellent Accessibility and SEO scores. website-1 and website-5 can boost user satisfaction by enhancing speed and optimizing loading times to improve their moderate Performance scores. website-4 performs well but could increase Accessibility to ensure a more inclusive experience. website-6.com has strong security and standards compliance due to its high Best Practices score but could improve on speed and user interface fluidity by optimiz- ing blocking time and accessibility features. website-2 is well- rounded; however, slight improvements in Accessibility would make it more user-friendly for a broader audience.Ultimately, website-2 emerges as the top performer due to its strong balance across metrics, closely followed by website-4 for its competitive scores in key areas. website-5, website-1, and website-6.com also show commendable performance but have room for targeted improvements. Despite website-3's high SEO and Accessibility scores, it ranks lowest overall due to substantial gaps in speed and Best Practices,

highlighting specific opportunities to optimize user experience.

6 FUTURE WORK

Future work could focus on a broader analysis by testing additional travel websites to gain a comprehensive understanding of performance trends in the industry. Expanding the performance tests to include detailed security audits, as well as examining the impact of design changes on user engagement, could yield deeper insights. Furthermore, given the increasing use of smartphones for travel-related web access, exploring the impact of these opti- mizations on mobile devices would be beneficial.

Conducting user satisfaction surveys could also complement technical evaluations, ensuring that both technical performance and user experience are addressed comprehensively.

REFERENCES

Kumar, N., Kumar, S. and Rajak, R., 2021, December. Website Performance Analysis and Evaluation using Automated Tools. In 2021 5th International Conference on Electrical, Electronics, Communication, Computer Technologies and Optimization Techniques (ICEECCOT) (pp. 210-214). IEEE.

Pradana, F.A. and Suprayogi, S., 2021. Critical discourse analysis on Chinese and American news websites reporting South China Sea territorial dispute. Linguistics and Literature Journal, 2(2), pp.84-92.

Panduwika, P. and Solehatin, S., 2024. Performance measurement implementation on the smart fisheries village website using page speed insight. Journal of Soft Computing Exploration, 5(2), pp.161-172.

Almatrafi, A.M. and Alharbi, Z.H., 2023. The impact of web analytics tools on the performance of small and medium enterprises. Engineering, Technology Applied Science Research, 13(5), pp.11753-11762.

Saad, M., Zia, A., Raza, M., Kundi, M. and Haleem, M., 2022. A comprehensive analysis of healthcare websites usability features, testing techniques and issues. IEEE access, 10, pp.97701-97718.

Supriya, M., Keshav Rathinavel, and Divya Radhakrishnan. "Development of a Comprehensive Learning Management System using Full Stack Technology: A Modern Approach to Educational Platforms." In *2024 5th International Conference on Data Intelligence and Cognitive Informatics (ICDICI)*, pp. 1426-1431. IEEE, 2024.

Singh, V.K., Singh, P., Karmakar, M., Leta, J. and Mayr, P., 2021. The journal coverage of Web of Science, Scopus and Dimensions: A comparative analysis. Scientometrics, 126,

Kumaladewi, N., Rahajeng, E. and Arif, B., 2023, November. Analyze and Measure Website Quality Using WebQual 4.0, Importance Performance Analysis Methods and GTMetrix. In 2023 11th International Conference on Cyber and IT Service Management (CITSM) (pp. 1-6). IEEE.

Narassima, M. S., Shriram K. Vasudevan, K. Vimalkumar, and S. P. Anbuudayasankar. "Blockchain-based seamless end-to-end shipping with android application." International Journal of Internet Technology and Secured Transactions 12, no. 3 (2022): 265-285.

Dhivvya, J. P., Guru Aswini Dath, Mahesh Kumar Chinta, and Ankit Karki. "Granular Network Traffic Classification on Mobile Application Service for Better Parental Control." In 2024 IEEE International Conference on Interdisciplinary Approaches in Technology and Management for Social Innovation (IATMSI), vol. 2, pp. 1-6. IEEE, 2024.

SCITEPRESS SCIENCE AND TECHNOLOGY PUBLICATIONS