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Optimization of tourism evaluation through a website analytics dashboard at Travelogin Tour and Travel

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Abstract: This study aims to optimize the tourism evaluation process through the design and implementation of a website-based analytic dashboard at Travelogin Tour and Travel. The research was motivated by the inefficiency of conventional methods such as Google Forms, which often result in low response rates and slow data processing. Data was collected through user feedback submitted directly on the newly developed dashboard interface, replacing the previous manual collection via Google Forms. The system was developed using the Waterfall model, consisting of stages including requirement analysis, system design, implementation, and testing. The dashboard was built using Laravel, Bootstrap, and MySQL, and features Net Promoter Score (NPS) visualizations, participant statistics, and automated summaries of feedback. The main results show that the dashboard significantly streamlines the evaluation process, facilitates faster complaint resolution, and enables more effective data-driven decision making. These improvements contribute to better tracking of customer satisfaction, enhanced service quality, and increased competitiveness for Travelogin in the tourism sector. This research demonstrates that integrating website-based analytic tools in tourism operations can support more efficient evaluation mechanisms and improve organizational performance.

Keywords: Data Visualization, Tourism Evaluation, Travel Agency System, Website Analytic Dashboard

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Introduction

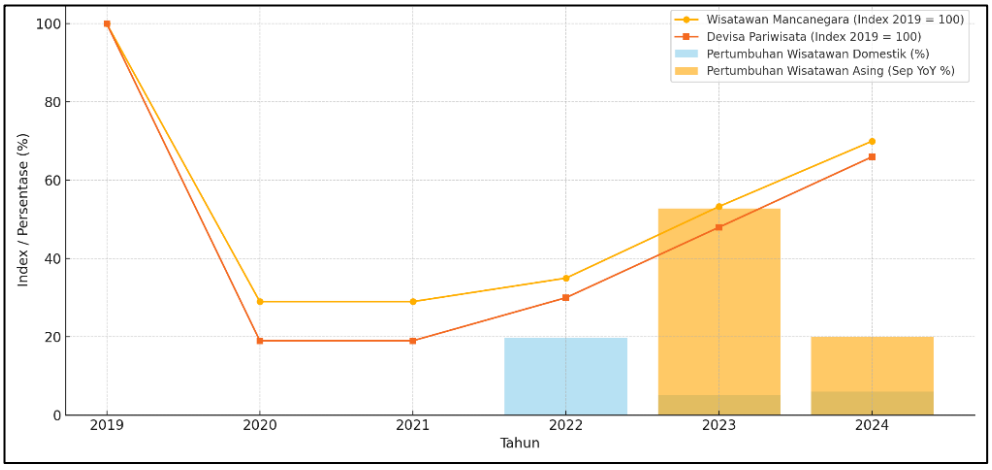
The tourism industry plays a vital role in increasing national revenue and contributes significantly to the local economy. As stated by Alamsyah et al., (2021), the tourism sector in Indonesia contributes to state income, employment, business growth, infrastructure development, and supports socio economic advancement. According to Suban, as cited in Hasibuan et al., (2023), the tourism industry has experienced rapid growth over the past few decades and has become one of the most prominent industries globally. Alongside technological advancements and the rise in consumer purchasing power, Indonesia's tourism sector continues to show a positive trend. Maulana & Koesfardani (2020) noted that the number of international and domestic tourist visits in Indonesia increases consistently each year. Statistical data further illustrates the national growth in tourist travel from year to year, as shown in Table 1.

Table 1. Growth of national tourist travel

Year	Number of Tourist Trips
2022	3.540.542
2023	7.515.224
2024	8.946.794

This upward trend reflects the accelerating growth of the tourism industry. In response, the Indonesian government continues to develop priority destinations and enhance the appeal of tourism through various strategic policies. These efforts include improving service quality,

strengthening the creative economy sector, and promoting tourism based on cultural and natural assets. The development of the tourism sector in recent years can be illustrated in Figure 1.



(Source: Processed data, 2025)

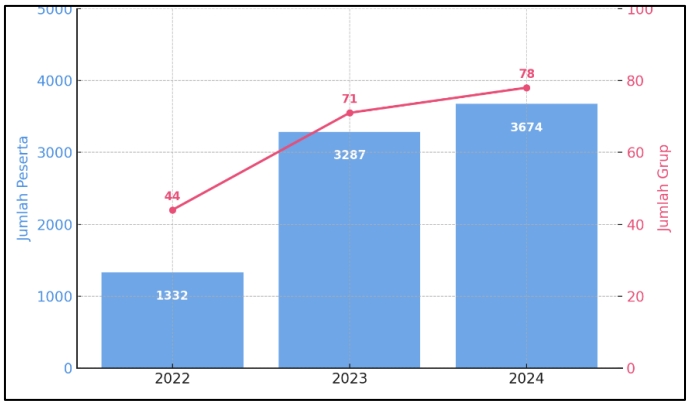
Figure 1. Growth of the tourism sector in Indonesia

Following its peak in 2019, Indonesia's tourism sector experienced a significant decline due to the COVID 19 pandemic, with a 71% drop in international tourist arrivals and a nearly 81% decrease in tourism revenue compared to 2019 (Restikadewi et al., 2021). Signs of recovery began to emerge in 2022, coinciding with the easing of travel restrictions. Domestic travel volume increased by 19.82% compared to 2021 and even surpassed the 2019 level by 1.76% (Central Bureau of Statistics, 2023a). This positive trend continued into 2024, marked by a 52.76% surge in foreign tourist arrivals in September 2023 compared to the same period the previous year (Central Bureau of Statistics, 2023b). Throughout 2023, Indonesia recorded over 13.9 million international tourist arrivals (The Global Statistics, 2024).

This growth presents a significant opportunity for tourism industry stakeholders to continuously adapt and enhance their competitiveness. Service innovation, the integration of digital technologies, and effective marketing strategies have become key factors in attracting tourists and maintaining customer satisfaction. As public interest in travel continues to rise, companies such as travel agencies must implement regular evaluations of tour operations to better understand customer needs and expectations. A study by Permana et al., (2024) on the travel agency Discova Indonesia revealed that tourists' experiences have a significant influence on customer satisfaction. Periodic evaluation of these aspects enables travel agencies to identify the most critical service elements and make targeted improvements.

Travelogin Tour and Travel is a company engaged in tourism services, offering various travel solutions ranging from ticket bookings and tour packages to accommodation arrangements. Since 2017, Travelogin Tour and Travel has been developing tailored travel packages to meet the increasingly diverse demands of travelers.

According to internal data from Travelogin Tour and Travel, the number of tour participants and travel groups has shown a positive trend between 2022 and 2024. It can be seen in Figure 2. In 2022, the company recorded 1,332 participants across 44 groups. This Figure 2 rose significantly to 3,287 participants in 71 groups in 2023. However, growth began to slow in 2024, with only 3,674 participants in 78 groups. The company fell short of its target of a 50% increase over the previous year, achieving only 74.5% of the projected 4,930 participants a shortfall of 1,256 participants. This condition highlights the need for more effective evaluation strategies and data driven service improvements.



(Source: Travelogin Tour and Travel, 2025)

Figure 2. Number of tour participants and groups of travelogin tour and travel (2022–2024)

To date, Travelogin Tour and Travel has conducted travel evaluations using Google Forms. While these methods are commonly used, their implementation faces several challenges. These include the time lag of three to five days between the end of the trip and the completion of the evaluation form, which leads to low participation rates and reduced feedback accuracy due to memory decay or limited respondent interest. Furthermore, the time consuming process of distributing and processing data hinders the timely identification of issues and delays necessary service improvements.

These challenges indicate that the previous administrative evaluation system is no longer effective in supporting service improvement efforts. Therefore, a more integrated and automated information technology based system is required. One potential solution is the development of a Website Analytic Dashboard that can collect, analyze, and present customer satisfaction data in real time.

Various previous studies have shown that the implementation of information technology, particularly analytic dashboards, can provide valuable insights into tourist experiences and preferences. For instance, Marwati et al., (2024) stated that "effective data visualization can assist companies in analyzing trends and customer behavior patterns, thereby facilitating data driven decision making."

This study offers novelty in applying an analytic dashboard that integrates the evaluation of tourism activities through Net Promoter Score (NPS) visualization, participation statistics, and automated feedback summaries. In addition to its practical innovation, this research contributes to the field of hospitality and tourism by providing a reference model for the use of digital analytic tools in performance evaluation and service improvement. Academically, it strengthens the discussion on how data driven systems can be implemented to enhance evaluation efficiency and decision making accuracy in tourism management. From an industry perspective, the developed dashboard offers a concrete solution for travel agencies such as Travelogin Tour and Travel to improve service quality, customer satisfaction, and overall competitiveness in the tourism sector.

Methodology

System Design Methodology

This study employs a qualitative descriptive method combined with a design and development approach, utilizing the Waterfall model for system development. The qualitative method is appropriate because the research does not involve statistical analysis. As stated by Ali and Yusuf (2011) in Arieon et al., (2023), studies that do not apply statistical procedures fall under qualitative research. The Waterfall model was chosen due to its structured and sequential nature, making it well suited for the systematic development of web based information systems. This model facilitates clear documentation and validation at each development stage, from requirement analysis to maintenance (Putri & Taufik, 2024)

The system was developed using the Laravel 10 framework with PHP 8.2, integrated with MySQL as the database engine and Bootstrap 5 for responsive front end design. Development

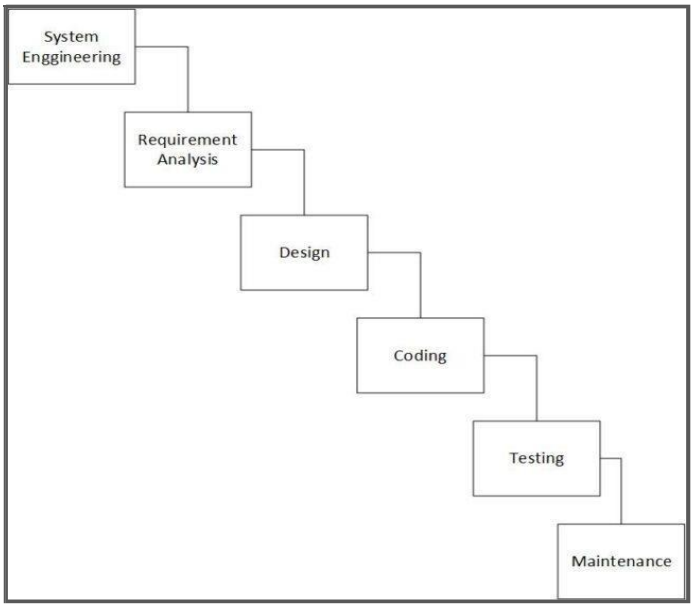
was carried out using Visual Studio Code as the Integrated Development Environment (IDE), with Figma utilized for user interface (UI) design. System testing employed the Blackbox testing method, focusing on input output behavior without considering internal code structure.

Primary data were collected through structured interviews with the management of Travelogin Tour and Travel to obtain information related to system requirements and the company's evaluation process. To support this stage, system testing was also carried out to assess how effectively the designed Website Analytic Dashboard could be used by Travelogin users. The testing involved 12 respondents, who were active customers of Travelogin Tour and Travel and had previously participated in the company's tour programs, and was also conducted directly by internal parties, namely the admin and the tour operator of Travelogin Tour and Travel. Each participant was given access to the developed website to provide feedback on their travel experience, review the data visualizations displayed on the dashboard, and, for internal users, to ensure that all system features functioned properly and were easy to operate.

The questionnaire used during the interview and testing process was developed through several stages. It began with a review of previous studies related to tourism information systems and digital evaluation models to identify relevant aspects for measuring system performance and user experience. Based on this review, a draft containing semi open ended questions was prepared to explore administrative challenges, user expectations, and functional needs of the new system. Subsequently, the draft instrument underwent expert validation through consultations with an academic advisor and a representative from Travelogin's management. Their feedback was used to refine the wording, ensure conceptual clarity, and confirm alignment with the study's objectives before the final version was adopted for data collection.

Waterfall Method

According to Darisman & Widianto, (2019), the Waterfall model—also referred to as the "classic life cycle model"—is a traditional, linear methodology in software development that progresses through a sequence of well defined phases. It is particularly effective for projects with fixed requirements and emphasizes meticulous documentation and validation at each step, which aligns with the structured operational model of Travelogin Tour and Travel. The model progresses in a linear fashion, where each phase must be completed before the next one begins, resembling the flow of a waterfall. It can be seen in Figure 3.



(Darisman & Widianto, 2019)

Figure 3. Waterfall model phases

The phases of the Waterfall model, as outlined by Widianto, are described as follows:

1. System Engineering
   This phase begins by identifying the overall system requirements that are to be implemented in the software. It includes defining the system architecture and its interaction with external elements.
2. Requirements Analysis
   In this phase, the system developer engages in communication with stakeholders to understand the desired functionalities and constraints of the software. Data is typically collected through interviews, discussions, or direct surveys.
3. Design Specification
   The requirements gathered in the previous stage are analyzed and transformed into a system design blueprint. This includes both high level architectural design and detailed component design.
4. Coding
   At this stage, the design specifications are translated into source code. All components of the system are developed using the appropriate programming languages and tools.
5. Testing
   Once the code is implemented, the system undergoes testing to ensure functionality and accuracy. This research employs black box testing, which focuses on evaluating the system's outputs based on a given set of inputs, without considering the internal code structure.
6. Maintenance
   This final phase involves deploying the system and performing regular maintenance to ensure ongoing performance. Maintenance activities address any issues or bugs that may arise during operational use, ensuring system reliability over time.

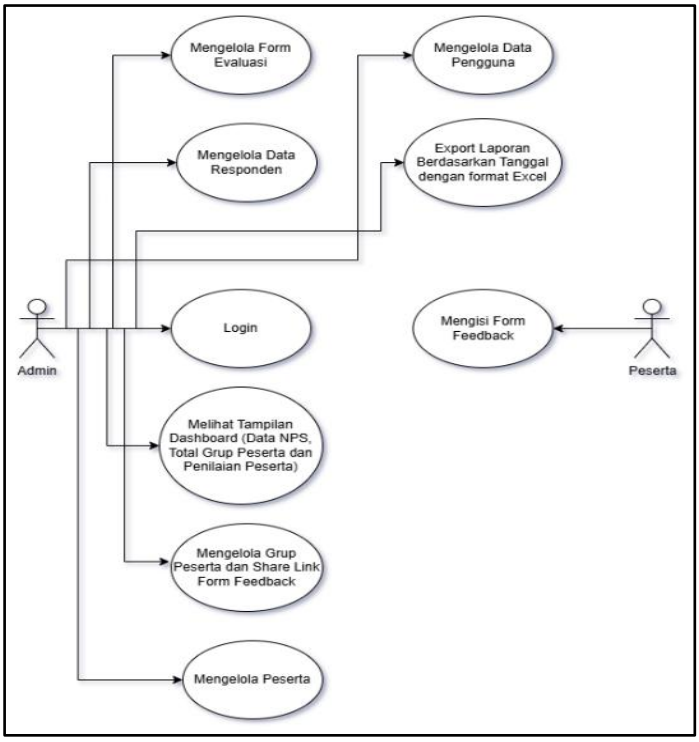
The development process in this study is consistent with the Waterfall model described by Darisman & Widianto (2019). The project followed a linear and sequential lifecycle, beginning with the identification of Travelogin's evaluation inefficiencies, followed by requirements analysis through stakeholder discussion, system design using Laravel based architecture, implementation of the dashboard, black box functional testing, and deployment with ongoing maintenance. Since the system requirements were fixed and clearly defined at an early stage, the structured and documentation-oriented nature of the Waterfall model was appropriate and effectively supported the orderly development of the evaluation dashboard.

Results and Discussions

Results

The design of the Website Analytic Dashboard began with a system requirement analysis based on the tourism evaluation process at Travelogin Tour and Travel. This analysis served as the foundation for developing the Use Case Diagram and Class Diagram, which represent the system's workflow and data structure.

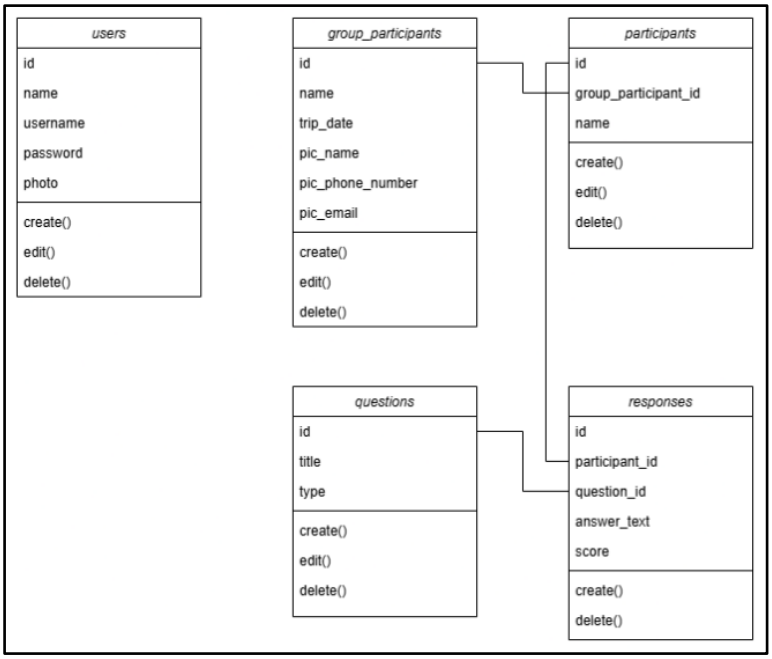
The Use Case Diagram illustrates interactions between two main actors, namely the Admin and Participants (Rachmatika et al., 2025). The Admin has full access to manage evaluation data, while Participants are only authorized to fill out feedback forms. This diagram provides a comprehensive overview of the roles and functionalities of each actor within the system, as shown in Figure 4.



(Source: Processed Data, 2025)

Figure 4. Use case diagram in Indonesian language

The diagram highlights that the Admin holds complete control over the system, including managing participant data, evaluation forms, and feedback results. Meanwhile, Participants interact with the system solely through form submissions. Further, the system structure was detailed through the Class Diagram, which represents the relationships between entities, data attributes, and methods utilized during the evaluation process. This structure is visualized in Figure 5.



(Source: Processed Data, 2025)

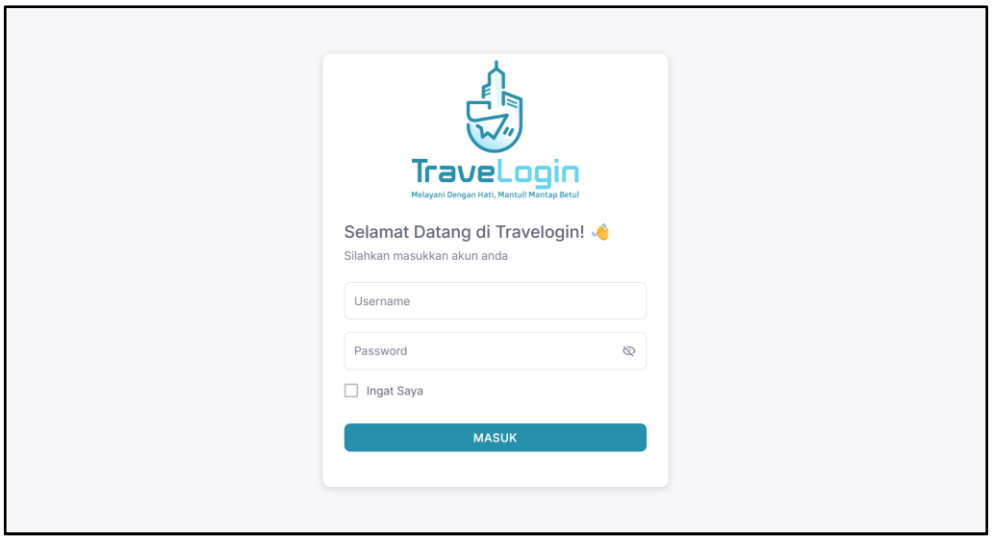
Figure 5. Class diagram

The Class Diagram showcases five main entities—users, group_participants, participants, questions, and responses—that are logically interconnected within the system, with each class containing specific attributes and standard methods to support dynamic data input, updates, and presentation on the dashboard. The developed dashboard displays essential information such as the Net Promoter Score (NPS), tourism participant trend graphs, and automatically compiled participant feedback, all of which are designed to help the Admin monitor customer satisfaction and make quick, data driven decisions.

Website Analytic Dashboard Interface

The Website Analytic Dashboard designed for Travelogin Tour and Travel consists of several core pages that support a systematic, efficient, and interactive tourism evaluation process. Each feature is developed based on the needs of the Admin and Participants, with the primary goal of enhancing the effectiveness of feedback collection and analysis.

The Login Page serves as the initial authorization gateway, ensuring that only verified Admins can access the system. Upon successful login, the Admin is directed to the Main Dashboard, a control center that displays summarized information such as the Net Promoter Score (NPS), customer satisfaction trends, and the three most recent evaluations. Main dashboard interface of travelogin analytic website can be seen in Figure 6.



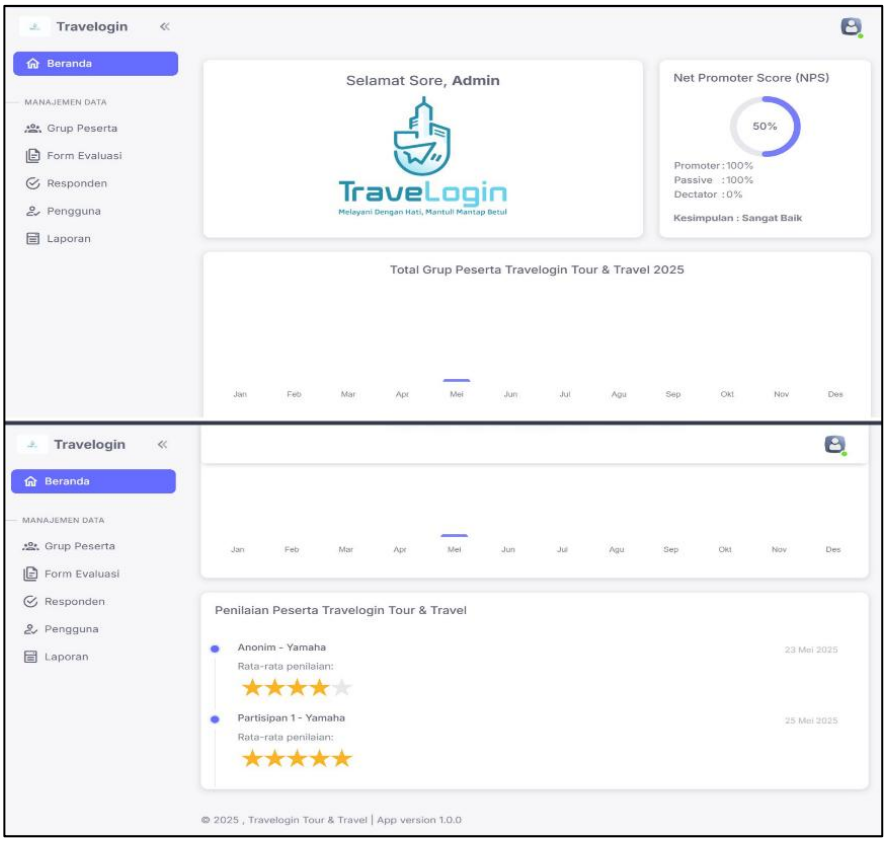
(Source: Processed Data, 2025)

Figure 6. Main dashboard interface of travelogin analytic website

The NPS visualization on the main page enables management to assess customer loyalty and satisfaction. It can be seen in Figure 7. NPS is categorized into Promoters, Passives, and Detractors, and is presented through an annual graph to detect customer satisfaction trends and seasonal patterns.

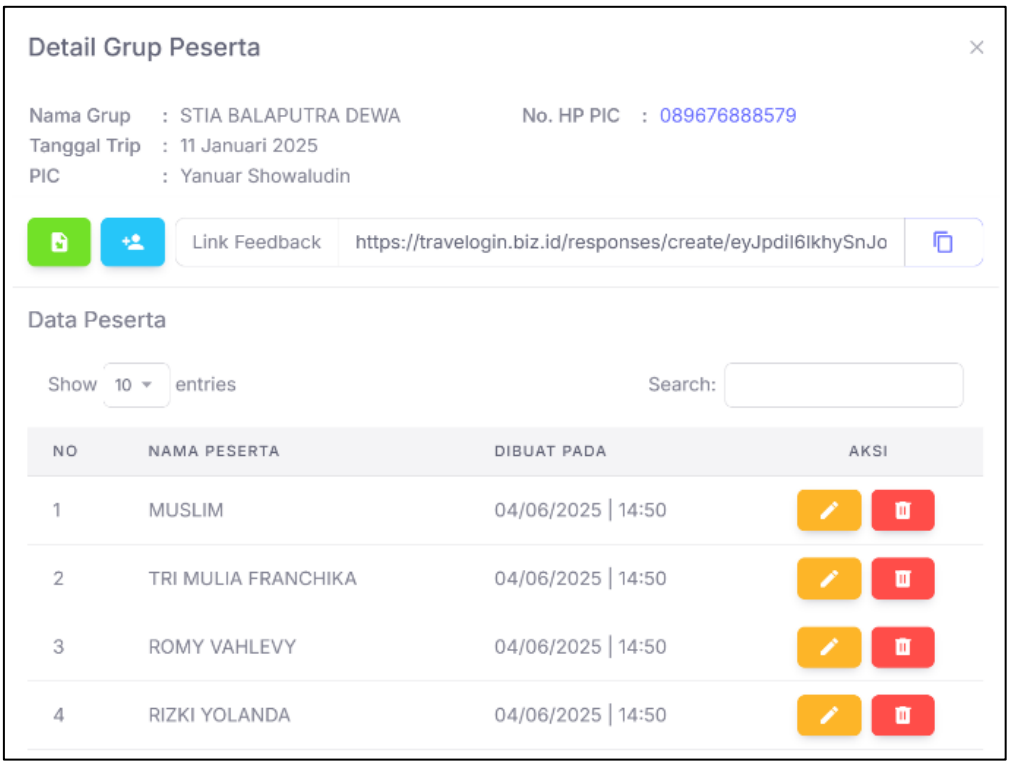
The Top 3 Latest Feedback feature presents the most recent responses, complete with participant scores and comments, enabling prompt managerial action. Additionally, the system offers Group Management and Detail Pages, allowing Admins to manage group data, upload participant information via Excel files, and distribute unique evaluation form links. It can be seen in Figure 8.

Participants can submit evaluations without logging in, via a simple and interactive interface that includes a star rating scale and open comments. These submissions are automatically stored and monitored on the Respondents Page. It can be seen in Figure 9.



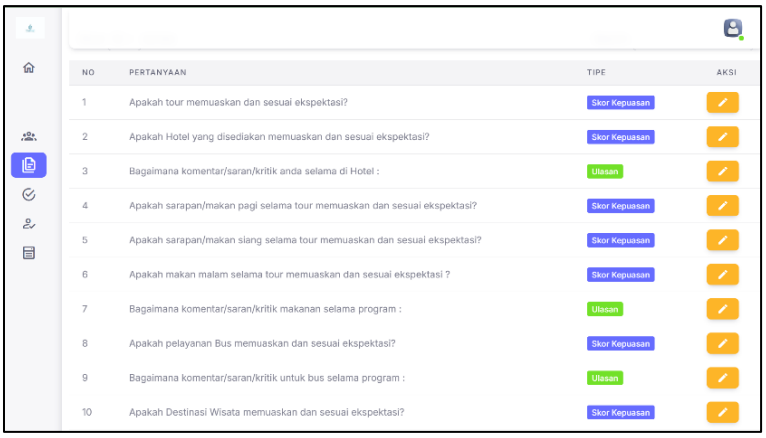
(Source: Processed Data, 2025)

Figure 7. NPS and annual graph display



(Source: Processed Data, 2025)

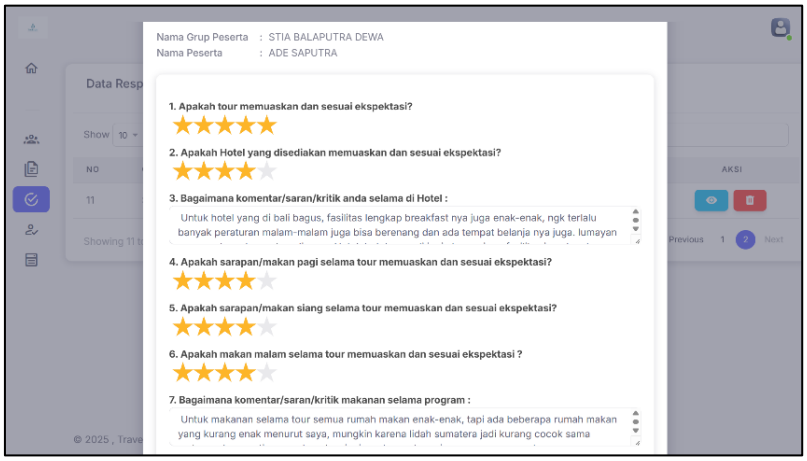
Figure 8. Group detail page and evaluation link



(Source: Processed Data, 2025)

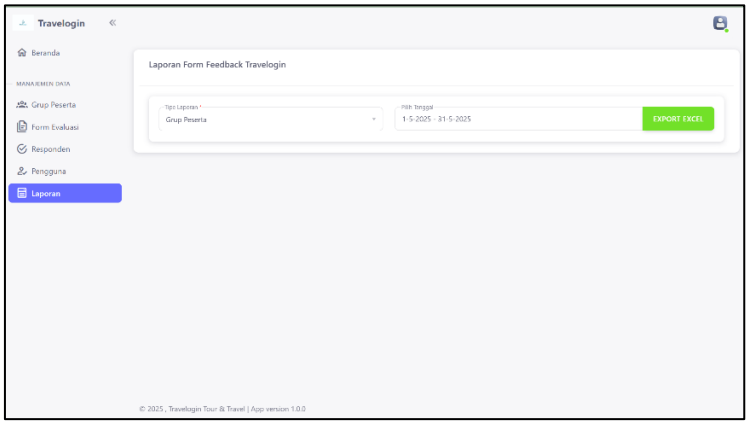
Figure 9. Participant evaluation form display

The Admin can monitor individual participant data, including scores and comments, via the Respondents Page, which is integrated with group data. It can be seen in Figure 10. This page enables real time monitoring of participant responses and helps identify both positive and negative feedback.



(Source: Processed Data, 2025)

Figure 10. Respondents page display



(Source: Processed Data, 2025)

Figure 11. Report page display

This information is invaluable for further analysis of service quality and serves as a basis for formulating strategies to improve service standards. Moreover, the system provides a Report Page to present evaluation summaries in the form of graphs and tables, along with support for data export in Excel format. It can be seen in Figure 11.

All user accounts are managed through the Admin Data Page, enabling the primary Admin to add or remove accounts based on operational needs. This feature ensures system security and limits access to authorized personnel only.

Discussions

The system testing results affirm that the Website Analytic Dashboard for Tourism Trip Evaluation effectively fulfills the operational requirements of Travelogin Tour and Travel. Using the Black box testing method similar to the one applied in the Tenta Tour web based system this approach validates functionality without examining internal structures and successfully identifies potential errors (Kawi & Suprihadi, 2023). Additionally, a case study on tourism website construction in Southeast Minahasa demonstrated the effectiveness of black box testing in validating front end features like map based navigation and visitor data visualization (Melo et al., 2021).

User feedback highlighted strong satisfaction with ease of navigation, interface aesthetics, and clarity of information. This resonates with usability studies in tourism contexts, such as the Jogja Smart Tourism mobile app, which achieved high scores in learnability (98.8%), efficiency (87.5%), and memorability (84.5%) using metrics aligned with ISO standards (Harwati & Widodo, 2017). Similarly, a usability evaluation of a tourist management system in Bali showed that administrators found the system efficient, effective, and satisfying, though effectiveness varied by user role (Arijaya et al., 2019). These findings further support the importance of user centric design and robust usability practices in tourism dashboards.

The dashboard's strengths real time feedback visualization, data driven decision support, cross device accessibility, and flexible export features enhance operational efficiency and strategic oversight. Comparable research on responsive mobile tourism websites confirms that streamlined navigation significantly boosts efficiency and task success, especially under varying interface conditions (Groth & Haslwanter, 2016). Furthermore, the aesthetic usability effect where aesthetically pleasing designs are perceived as more intuitive underscores how interface aesthetics can elevate perceived usability and overall satisfaction. This suggests that enhancements in the visual design of the dashboard could further amplify user engagement and satisfaction. Nevertheless, dependence on stable internet connectivity remains a notable limitation. Many of the referenced studies also point to connectivity issues as a barrier, especially in mobile or rural tourism contexts (Harwati & Widodo, 2017). Addressing this, future developments could consider offline mode support, progressive web app designs, or synchronization mechanisms to maintain usability under intermittent connectivity scenarios.

From a methodological standpoint, this discussion aligns with best practices in usability evaluation by combining black box testing with direct user feedback and performance metrics mirroring approaches in comprehensive usability studies (Sari & Henim, 2022). The integration of quantitative (task completion rates, UI responsiveness) and qualitative (user comments, satisfaction ratings) insights makes the findings robust and applicable to real world deployment. Regarding the research objective whether a website analytic dashboard can enhance tourism service evaluation the answer is unequivocally affirmative. The dashboard provides a structured, efficient, and accessible evaluation mechanism, fulfilling the study's aims. This supports broader literature on the critical role of analytic tools in facilitating data driven decision making and service improvement in tourism operations. From a theoretical perspective, the findings of this study contribute to the existing body of knowledge in hospitality and tourism management by reinforcing the role of technology driven evaluation systems in enhancing service quality and customer satisfaction. The integration of website based analytic dashboards supports the theoretical framework of technology acceptance and service quality models, particularly by demonstrating how perceived ease of use, efficiency, and real time feedback mechanisms can strengthen organizational responsiveness. These results also extend the application of usability and information system success theories within the tourism context, showing that system

functionality and interface aesthetics jointly influence user satisfaction and engagement. Therefore, the study not only provides a practical tool for tourism evaluation but also enriches the theoretical understanding of how digital analytic systems contribute to continuous service improvement and data driven decision making in the hospitality industry.

Future Research Directions

1. Offline or Hybrid Accessibility: Develop offline capable versions to maintain functionality in low connectivity areas.
2. Advanced Analytic: Incorporate AI driven summarization of feedback, anomaly detection, or NPS trend forecasting.
3. Scalability & Integration: Expand the dashboard's use across multiple tour agencies or integrate with ecosystem platforms such as CRM systems.
4. Aesthetic Enhancement: Apply user centered design principles and aesthetic–usability insights to elevate visual appeal and intuitiveness.

Conclusions

This study successfully addresses the evaluation limitations previously experienced by Travelogin Tour and Travel, particularly those related to low participant engagement and delays in data processing using Google Forms. By implementing a Website Analytic Dashboard featuring real time data visualization, Net Promoter Score (NPS) metrics, and automated feedback integration, the research demonstrates a significant improvement in the effectiveness of service evaluation processes. The use of Laravel, Bootstrap, and MySQL frameworks has resulted in a responsive, secure, and user friendly system. Overall, the developed dashboard supports faster decision making, enhances operational efficiency, and strengthens the competitive advantage of Travelogin Tour and Travel within the tourism industry.

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