Design of Website-Based Tourism Travel Information System (Case Study : Tenta Tour)

R. Gibranto Kawi *
Faculty of Information Technology, Universitas Kristen Satya Wacana, Salatiga City, Central Java Province, Indonesia.
Email: 672019062@student.uksw.edu

Suprihadi
Faculty of Information Technology, Universitas Kristen Satya Wacana, Salatiga City, Central Java Province, Indonesia.
Email: suprihadi@uksw.edu

Abstract: The Information System Design for the Tenta Tour Application, hosted on a website, is a critical component of modern tourism services. This research employs the rigorous Black Box Testing methodology to comprehensively evaluate the application's functionality, disregarding its internal structure. The study focuses on identifying potential errors and areas for improvement to enhance the quality and reliability of the system in delivering travel services to users. Through systematic Black Box Testing, the research investigates the Tenta Tour Application Information System on the web platform, with a primary emphasis on functionality rather than delving into the intricacies of the internal system structure. Test data is meticulously analyzed to uncover potential errors and opportunities for enhancements, all aimed at elevating the reliability and quality of travel services. The research findings successfully meet established criteria by effectively identifying potential functional errors within the Tenta Tour Application Information System when deployed on a website. The application of the Black Box Testing methodology has proven instrumental in uncovering functional issues that can be proactively addressed. These discoveries constitute a substantial contribution to enhancing the reliability and overall quality of travel services accessible through the application. In conclusion, this research underscores the efficacy of the Black Box Testing method in assessing the Tenta Tour Application Information System hosted on a website. The test results have proficiently identified potential functional errors and provided invaluable insights to enhance the application's reliability. The implementation of improvements informed by these findings is anticipated to significantly raise the standard of travel services rendered through this platform.

Keywords: Black Box Testing; Tenta Tour; Website; Tourism; Application.

1. Introduction

The rapid evolution of Information Technology (IT) in the current era of Industry 4.0 has ushered in a profound transformation. Among the notable developments is the proliferation of online services, which have become instrumental in enhancing the efficiency and effectiveness of various industries and businesses. A compelling example of this technological progress is witnessed within the domain of tourism. Tourism encompasses recreational journeys, entertainment, as well as preparatory and actual travel activities. It is regarded as a potent sector with significant positive impacts, including the growth in tourist numbers and the generation of employment opportunities [1]. A startup named Tenta Tour has embarked on the development of an application tailored to facilitate study tours and tourist excursions. Tenta Tour represents an innovative application operating within the tourism sector. Delivered through a website-based platform, the application offers a range of services such as transportation, tourist destinations, lodging options, and dining choices for both individual travelers and groups. Moreover, users can select from an assortment of pre-packaged tour options that align with their preferences and budgets. By providing well-structured tour packages and a user-friendly interface, Tenta Tour simplifies the travel planning process for users.

During the system testing phase, rigorous evaluation is conducted using acceptance test documentation, including Black Box Testing. The primary objective of this testing is to solicit feedback and insights from end-users. This research endeavors to elucidate the Black Box Testing process as applied to the ongoing development of the Tenta Tour application. Through Black Box Testing, the aim is to ensure that the resulting information system aligns with quality standards and user requirements, catering to the needs of both end-users and administrators tasked with its future management and development. This research seeks to conduct an evaluation of the Tenta Tour website-based application

employing the Black Box Testing methodology, with the paramount goal of identifying potential issues within the developed information system.

2. Research Method

The methodology employed in this research is qualitative research, which aims to describe the test results by interpreting the data. Software testing is a crucial stage in ensuring the quality of the developed software [2]. Testing software is essential during or after the development of any software since errors can occur during the software creation process, and these errors may vary from one software to another [3]. Therefore, software testing is necessary to verify and validate that the program created aligns with the needs and desires of the company. Incomplete and ineffective testing can lead to problems and losses when the software is used [4]. Hence, the author employs Black Box Testing to ensure that each process functions according to the expected requirements. Testers interpret the sets of conditions during the testing, focusing on the functionality of the system. Therefore, the testing aims to discover errors or issues that can then be rectified to ensure the system's suitability for use [5]. The research methodology employed in this study is Black Box Testing on the Tenta Tour application, and it will be systematically described through the steps illustrated in Figure 1.0. The research stages are as follows: 1) Literature Review, 2) Implementation of Black Box Testing, 3) Analysis of Evaluation Results, 4) Drawing Conclusions & Recommendations, 5) Writing Research Report.
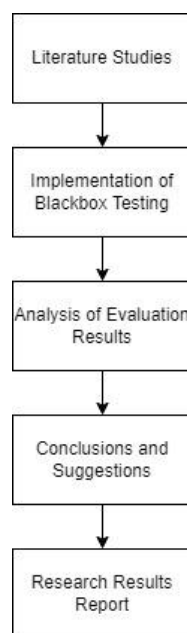

Figure 1. Research Stages

The research stages in Figure 1 can be explained as follows: 1) The research begins with a Literature Review, which is conducted to support problem-solving and the achievement of research objectives. By studying theories related to the research, it helps in gaining a deeper understanding of the subject matter. Subsequently, Black Box Testing is conducted on the Tenta Tour web-based application to identify deficiencies and improvements in both its user interface and system. Black Box Testing is performed without specific information about the interior design or parts being tested for input/output, or utility testing. It relies on inputs and outputs without focusing on the program's details, making it accessible to testers without programming knowledge [6]. This testing method also aims to verify the system's interface, ensuring it operates according to the specified requirements without display errors or malfunctions during program demonstration. The Analysis phase is conducted during the application demonstration, where each feature is tested, and actions are performed based on the findings from the literature review. After executing the tests as per the previous research or similar studies, an analysis of the testing results is carried out and discussed in detail. Upon concluding the testing phase and analyzing the results, conclusions are drawn about the tested program. Recommendations are provided if the program does not align with user needs or the requirements of the developers who created the application.

2.1. Methodology and System Design

This section provides an in-depth exposition of the selected development methodology employed in this research, encompassing methodologies like Waterfall, Prototyping, or other pertinent approaches. It meticulously outlines the various stages integral to the chosen methodology and articulates the anticipated outcomes at each juncture. Furthermore, this section systematically delineates the approach undertaken to verify and test the product's performance, with particular

emphasis on scenarios involving system implementation. Additionally, it expounds on the sophisticated techniques harnessed for the rigorous analysis of testing data. Furthermore, this section introduces and expounds upon an array of pivotal system design and modeling facets. These elements are underpinned by a comprehensive analysis of both functional and non-functional requirements. The repertoire of system designs encompasses a diverse spectrum of components, including but not limited to Integrated/System-wide Architecture Design, Functional and Process System Design, Database Design (if deemed applicable), and the intricacies of logical/system design (including algorithms). The section meticulously aligns the chosen design tools, whether structured such as DFD, ERD, Flowchart, or underpinned by an object-oriented paradigm like UML, with their direct relevance to the system's functional attributes, all stemming from the exhaustive requirements analysis.

2.2. System Architecture

This section offers a comprehensive and systematic delineation of the sequential procedures or stages integral to the meticulous modeling of the system architecture. It provides clear and concise specification of the anticipated outcomes, meticulously defining and contextualizing the expected results for each stage of the architectural modeling process. Moreover, this section effectively elucidates the research's primary focal points, underscoring the pivotal roles and significance of respondents as primary data sources (particularly pertinent if the research encompasses non-literature-based facets). It methodically outlines the meticulous methodology employed for the judicious selection of respondent samples, while simultaneously offering a discerning insight into the intricate techniques adroitly employed for the collection of data and information pertinent to the research or system study. Additionally, it offers a judicious and comprehensive elucidation of the exacting methods and approaches meticulously harnessed for the subsequent data analysis integral to the entire research process.

(a) Reservation Menu

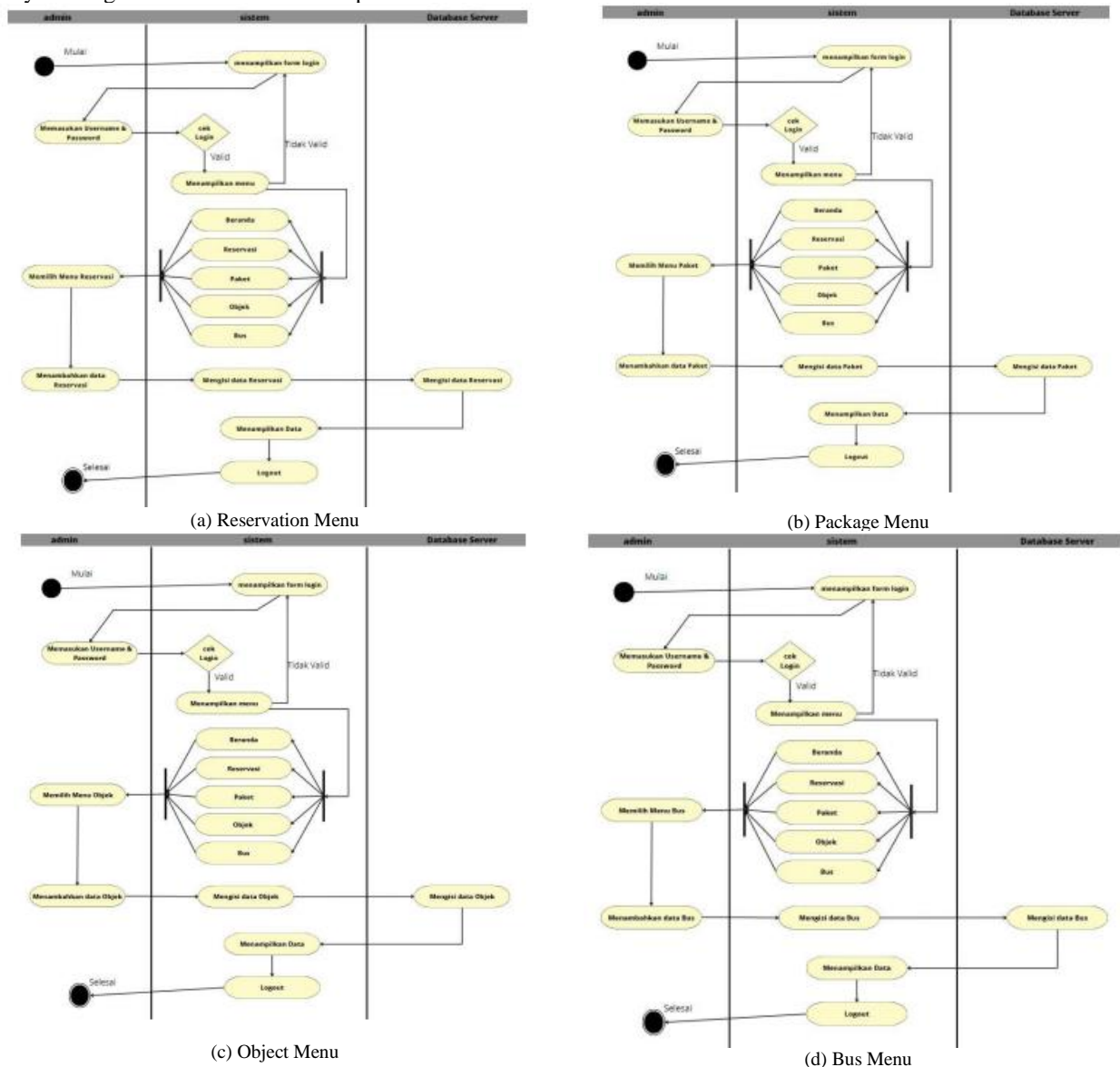(b) Package Menu

(c) Object Menu

(d) Bus Menu

Figure 2. Activity Diagram

The activity diagram presented in Figure 2 provides a visual representation of four key menu components within the system: (a) Reservation Menu, (b) Package Menu, (c) Object Menu, and (d) Bus Menu. Each of these menus plays a distinct role in the overall system functionality. The Reservation Menu facilitates the booking process, allowing users to reserve their desired services or experiences. The Package Menu encompasses various tour packages, providing users with options for comprehensive travel itineraries. The Object Menu deals with the management of various tourist attractions and destinations, enabling users to explore and plan their trips efficiently. Finally, the Bus Menu caters to transportation-related aspects, helping users coordinate their journeys seamlessly. Together, these menus create a cohesive and user-centric system that enhances the overall travel experience for users.

3. Result and Discussion

3.1 Results

In the testing conducted on the Tenta Tour web-based application, it featured the following interface:

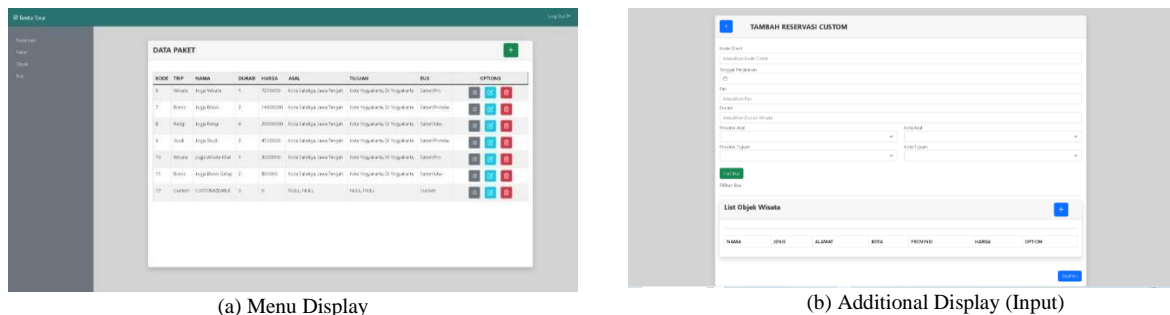(a) Menu Display   (b) Additional Display (Input)

Figure 3. Application Interface

The interface displayed exhibits similarity across different menus, and for brevity, only a few have been presented. However, in this testing, each feature within the application's web-based interface was examined, and the functionality of each button was scrutinized. The application was tested using the Black Box Testing technique, which involved trying out each button, identifying any unusual conditions, and assessing the overall appearance of the application. During this phase, Black Box Testing was used to evaluate the functionality without delving into the program's execution flow but rather focusing on whether each function within the application was working as intended. The results of the application testing are presented in the table below.

Table 1. Test Results.

No	Module Tested	Input Data / Conditions	Expected Result	Test Result	Status
1	Login User	Correct username and password entered	Successful login	Successful login	Valid
		Incorrect username and password entered	Login failed	Login failed	Valid
2	Register	Button clicked	Redirected to Registration Page	Not redirected	Improvement Required
		Button not clicked	No redirection to the registration page	No redirection to the registration page	Valid
3	Reservation Menu	Reservation input provided	Reservation data displayed	Reservation data displayed	Valid
		No input provided	No reservation data displayed	No reservation data displayed	Valid
4	Action button (Edit) in Reservation Menu	Button clicked	Display of previous reservation data	Display of previous reservation data	Valid
		Button not clicked	No results displayed	No results displayed	Valid
5	Action button (Delete) in Reservation Menu	Button clicked	Deletion of existing reservation	Deletion of existing reservation	Valid

		Button not clicked	Reservation data still listed	Reservation data still listed	Valid
6	Custom action button in Reservation Menu	Button clicked	Redirected to Custom Reservation Page	Redirected to Custom Reservation Page	Valid
		Button not clicked	Remained on Reservation Data Page	Remained on Reservation Data Page	Valid
7	+ button in Reservation Menu	Button clicked	Redirected to Add Reservation Page	Redirected to Add Reservation Page	Valid
		Button not clicked	Remained on Reservation Data Page	Remained on Reservation Data Page	Valid
8	Package Menu	Package data input provided	Display of package data	Display of package data	Valid
		No input provided	No display of package data	No display of package data	Valid
9	Action button (Edit) in Package Menu	Button clicked	Display of previously executed package data	Display of previously executed package data	Valid
		Button not clicked	No results displayed	No results displayed	Valid
10	Action button (Delete) in Package Menu	Button clicked	Deletion of existing package	Deletion of existing package	Valid
		Button not clicked	Package data still listed	Package data still listed	Valid
11	Detail Package button in Package Menu	Button clicked	Redirected to Package Detail Page	Redirected to Package Detail Page	Valid
		Button not clicked	Remained on Package Data Page	Remained on Package Data Page	Valid
12	+ button in Package Menu	Button clicked	Redirected to Add Package Page	Redirected to Add Package Page	Valid
		Button not clicked	Remained on Package Data Page	Remained on Package Data Page	Valid
13	Object Menu	Object data input provided	Display of object data	Display of object data	Valid
		No input provided	No display of object data	No display of object data	Valid
14	Action button (Edit) in Object Menu	Button clicked	Display of previously executed object data	Display of previously executed object data	Valid
		Button not clicked	No results displayed	No results displayed	Valid
15	Action button (Delete) in Object Menu	Button clicked	Deletion of existing object	Deletion of existing object	Valid
		Button not clicked	Object data still listed	Object data still listed	Valid
16	+ button in Object Menu	Button clicked	Redirected to Add Object Page	Redirected to Add Object Page	Valid
		Button not clicked	Remained on Object Data Page	Remained on Object Data Page	Valid
17	Bus Menu	Bus data input provided	Display of bus data	Display of bus data	Valid
		No input provided	No display of bus data	No display of bus data	Valid
18	Action button (Edit) in Bus Menu	Button clicked	Display of previously executed bus data	Display of previously executed bus data	Valid

			Button not clicked	No results displayed	No results displayed	Valid
19	Action button (Delete) in Bus Menu		Button clicked	Deletion of existing bus data	Deletion of existing bus data	Valid
			Button not clicked	Bus data still listed	Bus data still listed	Valid

3.2 Discussion

The Black Box Testing conducted on the Tenta Tour web-based application has provided valuable insights into its functionality and usability. Notably, the login process was successful when correct credentials were entered, but it failed to handle incorrect login attempts gracefully. Similarly, the registration button did not redirect users to the registration page as intended, requiring attention to ensure smooth user onboarding. The reservation, package management, object handling, and bus modules generally performed well when input data was provided. However, there is a need for input validation to prevent issues related to empty or invalid entries. The action buttons for editing and deleting data in these modules worked as expected, allowing users effective management of their reservations, packages, objects, and bus listings. One notable concern is the application's language inconsistency, with certain pages displaying content in both English and Indonesian. To enhance the user experience, maintaining a consistent language interface is essential. Black Box Testing results highlight the application's potential but also point out areas that require improvement, such as login and registration handling, input validation, and language consistency. Addressing these issues will significantly contribute to the application's usability and overall quality, ensuring a more user-centric and robust travel platform. Future development efforts should prioritize these areas to enhance the application's functionality and user-friendliness.

4. Related Work

Previous research has highlighted shortcomings in tour agent applications in Indonesia, particularly in the reservation process. Traditional tour agent packages often come with fixed schedules, meal plans, and predetermined destinations, limiting travelers' flexibility in exploring tourist attractions. In contrast, the Tenta Tour application offers customizable booking options that empower travelers to tailor their trips based on their preferences and interests, providing a more adaptable and personalized approach to tourism [1]. Several earlier studies have explored fundamental principles and best practices in software testing, with a particular focus on black box testing. For instance, "Software Testing: Principles and Practices" delves into the fundamental concepts and techniques of black box testing, shedding light on its significance in the software testing domain [10]. Furthermore, "A Comparative Study of Black Box Testing Techniques for Web Applications" by A. Ansha and Dr. G. Sankaraiah conducts a comparative analysis of various black box testing techniques used in web application development, assessing their strengths, weaknesses, and effectiveness [8]. Additionally, "Black Box Testing of Web Application: A Survey" by Vimala Balakrishnan and Dr. V. Vijayakumar provides a comprehensive overview of commonly used black box testing methods in web application testing. This survey encompasses functional testing, non-functional testing, security testing, and vulnerability testing, offering a holistic understanding of the techniques employed in web application testing [9]. These prior studies, which are related to service and tourism applications, particularly those web-based, bear relevance to the evaluation of the Tenta Tour application due to their shared focus on information systems and web-based testing. By referencing these studies, the evaluation of the Tenta Tour application can be conducted more efficiently, benefiting from insights into similar or related application development endeavors [1][8][9].

5. Conclusion

Based on the research and testing conducted, it can be concluded that the evaluation of the Tenta Tour website-based application using the black box testing method provides significant benefits for both the development of the application and the company behind it. This system facilitates monitoring for the company's owners and addresses common challenges faced by users who may find travel planning confusing. Black box testing serves as a bridge for travelers or groups looking to embark on well-structured and organized journeys. Furthermore, it aids in archiving transaction records and documentation, making it easier for administrators and users to plan future trips within their budgets. Therefore, the Tenta Tour website-based application has successfully tackled various challenges in the tourism industry and offers a more efficient solution, simplifying the travel planning process for adventurers.

References

[1] Putra, R.A., Susilo, B. and Setiawan, Y., 2019. Evaluasi Usability Terhadap Sistem Promosi Pariwisata Berbasis Android dan Web (Studi Kasus: Objek Pariwisata di Provinsi Bengkulu). *Rekursif: Jurnal Informatika*, *7*(2). DOI: https://doi.org/10.33369/rekursif.v7i2.9163.

[2] Pratala, C.T., Asyer, E.M., Prayudi, I. and Saifudin, A., 2020. Pengujian White Box pada Aplikasi Cash Flow Berbasis Android Menggunakan Teknik Basis Path. *J. Inform. Univ. Pamulang*, *5*(2), p.111.

[3] Akiladevi, R., Vidhupriya, P. and Sudha, V., 2018. A Study and Analysis on Software Testing Tools. *International Journal of Pure and Applied Mathematics*, *118*(18), pp.1783-1800.

[4] Rosalina, A., Rassi, A.A., Hadi, G.Y., Ubaidillah, R. and Desyani, T., 2020. Pengujian Black Box pada Sistem Informasi Penjualan HI Shoe Store Menggunakan Teknik Equivalence Partitions. *Jurnal Informatika Universitas Pamulang*, *5*(1), pp.26-29.

[5] Nurudin, M., Jayanti, W., Saputro, R.D., Saputra, M.P. and Yulianti, Y., 2019. Pengujian Black Box pada Aplikasi Penjualan Berbasis Web Menggunakan Teknik Boundary Value Analysis. *J. Inform. Univ. Pamulang*, *4*(4), p.143.

[6] Maulana, B.A., Mawarni, E., Hidayattuloh, M.Y., Suryawijaya, V. and Saifudin, A., 2023. Pengujian Black Box pada Sistem Informasi Barang Berbasis Web Menggunakan Metode Boundary Value Analysis. *OKTAL: Jurnal Ilmu Komputer dan Sains*, *2*(06), pp.1747-1753.

[7] Ambler, S., 2005. The agile unified process (aup). *Recuperado de http://www. ambysoft. com/unifiedprocess/agileUP. html*.

[8] Sharma, C., Sabharwal, S. and Sibal, R., 2014. A survey on software testing techniques using genetic algorithm. *arXiv preprint arXiv:1411.1154*. DOI: https://doi.org/10.48550/arXiv.1411.1154.

[9] Rizky, S, W. 2021. *Black box testing of web Application: a Survey*. Cv Seribu Bintang

[10] Desikan, S. and Ramesh, G., 2006. *Software testing: principles and practice*. Pearson Education India.