

System Efficiency and User Experience in the FlySmart Booking System

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Abstract

The airline industry is changing fast with digital technology. This means people want booking systems that work well and are easy to use. This study looks at how the FlySmart Booking System works and what people think of it. We want to know how things like how fast the system responds, how quickly it processes transactions, and how reliable it is. How secure it is affecting how happy people are, with the system, and how much they use it. We used a combination of looking at numbers and asking people what they think to see if the FlySmart Booking System is really working. The FlySmart Booking System is really good at helping people book flights. It has an interface that is easy to use, and it makes sure that payments are secure. The FlySmart Booking System makes it easier for people to book flights. It does not take long. The FlySmart Booking System is also good at getting the ticket information right. People can use the FlySmart Booking System on their phones or computers. It works well on all these devices. The FlySmart Booking System has menus that're easy to understand and the steps to book a flight are simple. This makes people happy. They trust the FlySmart Booking System more. They are more likely to use the FlySmart Booking System because it is easy to use, and it works well. The FlySmart Booking System is good for customers. It helps them have a better experience when they book flights. This study highlights the importance of integrating technical performance optimization with user-centered design principles in airline reservation platforms. The results provide insights for developers and airline service providers seeking to improve digital booking solutions while maintaining high standards of efficiency, reliability, and customer satisfaction.

KEYWORDS: *System Efficiency, User Experience, Airline Booking System, Performance Optimization, User Interface Design, Digital Reservation Platform, Secure Payments, Smart Travel Technology, Customer Experience.*

1. Introduction

The airline business has changed a lot with technology over the ten years. Now people mostly use the internet to book their flights and manage their travel. Because there are many airlines, they really need to have good websites and apps that work well and are easy for people to use. People want the airline's websites to be quick and safe and easy to figure out. They also want to be able to use them on their phones or computers. If the website is slow or does not work right or is hard to use, people will get upset. Might not want to fly with that airline anymore. The airline industry needs to make sure their digital platforms are good, so people will keep using them [2]. Airlines have to make sure their websites work well on all devices. Therefore, improving system efficiency and enhancing user experience are critical factors in the success of modern airline booking platforms.

Moreover, the diffusion of innovations theory suggests that perceived advantages and ease of use influence how quickly new technologies are adopted by users. Measuring user experience requires systematic evaluation through usability metrics such as task completion rate, error rate, time-on-task, and satisfaction scores [13].

The FlySmart Booking System is made to fix problems that people have with style booking systems. These problems include things taking time to happen in interfaces that are hard to use and worries about safety when people pay online. When we talk about the FlySmart Booking System being efficient, we mean that it works well from a point of view. This includes how fast it is, how accurate it is, how well it works all the time, how well it can handle a lot of people using it at the time, and how well it keeps people's information safe [5]. The FlySmart Booking System is about making these things better. When we think about the system, we need to consider how easy it is for users to use it [1]. The user experience is about making sure users can interact with the system in a comfortable way. This means they should be able to complete tasks like booking without any trouble [14]. They should also be able to access services like selecting a seat or paying for their booking. Getting confirmation of their booking is also important [15]. The user experience is really about making all these things easy for users to do. The FlySmart Booking System is what we are looking at. We want to see how the system works and how it affects the people who use it. If the scenes part of the system is working well then people do not have to wait long and things are less likely to go wrong. The FlySmart Booking System also needs to be easy to use so people can book their flights without any problems [4]. When the technical part of the FlySmart Booking System and the user interface are working together, it makes a big difference. The airline operators and the customers both benefit from the FlySmart Booking System when it is working smoothly.

The purpose of this study is to analyze the relationship between operational efficiency and user interaction quality in the FlySmart Booking System [12]. By evaluating system performance metrics alongside user feedback, this research aims to identify key factors that contribute to improved customer satisfaction, higher adoption rates, and enhanced operational productivity [6]. The findings of this study may provide valuable insights for developers, system designers, and airline service providers seeking to develop advanced, efficient, and user-friendly booking solutions in the evolving digital travel industry. The FlySmart Booking System is designed to address these challenges by integrating optimized system architecture with user-centered design. This research investigates how system efficiency influences user experience and overall booking performance.



Fig 1: FlySmart Booking System Interface and Performance Model

2. Literature Review

The airline industry has changed a lot because of digital technologies. One big change is in booking systems. People who study this say that how well the system works and how easy it is to use are very important for customers to be happy and to use technology. Delone and McLean said in 2003 that the quality of the system is very important for it to be successful. This includes things, like the system working quickly and being secure. When systems are efficient, they make things run smoother. People think the company is more credible and trustworthy. The airline industry needs online booking systems to keep customers happy.

When we talk about how well a system works, we usually look at things like how it can process things if it is available when we need it if it can handle a lot of users and if it makes mistakes when we do things like make a purchase. Nielsen said in 2012 that if a system takes a long time to respond, people will not be happy with it [3]. Even if it is a little slow, it can make people not want to use it. For example, with systems where we can book things like hotel rooms or flights if the pages take too long to load or if the booking does not go through, people will often just give up and not finish the booking. This can make people not want to use the system, and they will not be loyal to the company. System efficiency is very important for reservation systems because people want things to happen quickly and easily. People who study online shopping think that if a website is always working and loads quickly, users will want to keep using it. This is what some researchers found out when they looked at how people use services. They saw that when a website is reliable and fast, people are more likely to come and use it again like what Kim and Lennon said in 2013 about e-commerce.

When we talk about user experience, we are not just talking about how something works from a point of view. User experience is about how people feel and think when they use something. For example, user experience is about what people think of the way something looks and how it makes them feel. Some researchers, like Hassenzahl and Tracinski, said that user experience is a concept that includes several

things, such as whether something is easy to use if it looks good if it is fun to use and if people think it is worth using [17]. In the travel and hospitality sector, it is very important that websites are easy to use. If a website is easy to use, people can find what they want quickly and easily. They can book what they want without getting confused. This is because a simple and easy to use website reduces the amount of thinking people must do and it makes people happy with the website. This is what Moriuchi and Smith found out in their research in 2016. User experience like we said before is very important for websites, for travel and hospitality websites because it helps people to have a good time when they are using the website.

People do a lot of research on how to make systems work better for users. Kujala and Basten said in 2019 that it is not enough to have a system that works well technically. The system also needs to be easy for people to use. If it is not easy to use, people will not like it. Other people like Srinivasan and his team did some research in 2023. They found out that digital platforms that work well on the inside and are also easy to use on the outside are more popular with users. These platforms also keep their customers longer. So, system efficiency and user-centered design are both important for platforms. Although prior research has explored system quality and UX independently, limited studies focus on their combined impact within airline booking systems. The FlySmart Booking System provides an opportunity to analyze how operational efficiency and user interaction quality contribute to improved booking performance and customer satisfaction. By synthesizing insights from information systems theory and UX research, this study aims to bridge the gap between technical performance evaluation and experiential design in digital airline platforms. E-commerce UX Frameworks in Airline Systems: When we look at the websites that airlines use to sell tickets, we see that how people feel about using these websites is very important. It is not about how easy it is to get around the website and how well it works. People also think about how they trust the website if they want to try out all the features and if the website is good to use in different

situations. For example, a study of people who book flights online found out that many things about the website can affect how happy people are with it and if they like to use it. These things include if people trust the website and if the website is good, for what they need.

Airline e-commerce platforms are very important. People who use them think about airline e-commerce platforms a lot when they are booking flights online. Airline e-commerce platforms can be better if they think about all these things. Similarly, comparative studies that apply established UX frameworks (e.g., User Experience Questionnaire or UEQ) reveal the importance of dimensions like efficiency, dependability, and attractiveness in evaluating system usability. These findings have practical implications for system designers aiming to optimize interface attributes across diverse user groups. As the travel industry changes with technology, booking systems need to be accurate and fast, and they also need to be easy for users to interact with. The FlySmart Booking System needs to be efficient and give users experience. This research show well System Efficiency works. Things like how fast it responds to how reliable it is, how accurate the transactions are, and how secure it is. Affects how happy users are with the FlySmart Booking System and how much they trust it. The insights from this study provide valuable guidance for system developers, researchers, and airline service providers aiming to create competitive and sustainable digital booking platforms in the evolving aviation industry.

3. Research Methodology

3.1. Research Design

This study adopts a mixed-method research design to examine the relationship between system efficiency and user experience in the FlySmart Booking System. The mixed-method approach combines quantitative data analysis with qualitative user feedback to provide a comprehensive evaluation of system performance and user satisfaction. Quantitative data is used to measure system efficiency metrics, while qualitative data captures user perceptions, preferences, and challenges during interaction with the platform. The study has two parts [10]. One part looks at how the system works. It checks things like how fast it's how well it does its job. The other part asks people what they think about the system. It wants to know if they are happy with it and if it is easy to use. By doing both things, the study wants to get an understanding of how the system affects the way people interact with it. The system's performance is very important because it can make a difference in the quality of user interaction with the system. Evaluative Research – Assesses how effectively the system meets usability standards and user expectations.

3.2. Research Approach

A descriptive and analytical research approach is applied in this study. The descriptive component focuses on identifying the existing performance level of the FlySmart Booking System, while the analytical component examines how system efficiency influences user experience outcomes. The study aims to establish correlations between technical performance indicators and user satisfaction levels. Population and Sample: The people we are looking at are those who have used the FlySmart Booking System to book flights or manage their travel [5]. We pick up a group of these users in a way that's easy, for us because we choose them based on how easy it is to reach them and if they have used the system before. We are looking at a group of people

that's between 100 and 200. This is a number for doing research. The people in this group are students, people who have jobs, and people who travel a lot. These people have used websites to book flights. We want to see what they think about airline booking platforms.

3.3. Data Collection Methods

The information for this study is gathered from sources and secondary sources. We get information from sources and secondary sources to make this study. The study uses information that comes from sources and secondary sources.

3.3.1. Primary Data: Primary data is collected through: Surveys of the people in the study. Interviews with the people who're experts on the subject of primary data. Observations of what people do when it comes to primary data. Experiments that test the primary data to see what happens. Focus groups where people talk about their thoughts, on primary data Structured Questionnaire Survey: We made a list of questions to see what people think about how a system works and how easy it is to use. We want to know what people really think, so we are using a scale that goes from Strongly Disagree to Strongly Agree. The list of questions is divided into parts that cover things, like System efficiency, user experience of the system itself which's basically the system efficiency and the user experience of the system. System response time, System reliability and availability, Security and data protection, Ease of navigation, Interface design clarity, Overall user satisfaction, User Feedback and Open-Ended Responses: Ended questions are helpful because they let people talk about the problems they have when they use the system, and they can also tell us how we can make the system better [11]. The system is what we are focusing on. We want to know what people think about the system. So, when people answer these ended questions, they can say what they like and do not like about the system.

3.3.2. Secondary Data: We get data from: Academic journals and research articles, Books on software engineering and usability, Industry reports related to airline booking systems, Relevant theoretical models on information systems and user experience.

3.4. Sample Selection

The study uses a random sampling technique to select participants who have experience using online airline booking platforms. A sample size of approximately 100–150 users is considered adequate to ensure reliability of survey results. Participants include students, working professionals, and frequent travelers to obtain diverse perspectives. Variables of the Study: The study identifies two main variables: Independent Variable: System Efficiency, Response time, Transaction speed, System reliability, Data security, Error rate. Dependent Variable: User Experience, Ease of Use, Interface clarity, User satisfaction, Trust in System, Intention to reuse. Data Analysis Techniques: The information we have gathered is looked at using things like: We use statistics, like the mean and percentage, to summarize what people say. We also look at the deviation to get a better idea of the responses [7]. Descriptive statistics help us understand the responses. Correlation Analysis to examine the relationship between system efficiency and user experience. Regression Analysis to determine the impact of system efficiency on user satisfaction. We look at what people say in detail. That is done using thematic analysis. This is where we find the things that people talk about and the patterns that come up [16]. We do this with responses,

and it helps us understand what people are saying. Qualitative responses are very important. We use thematic analysis to make sense of them. Quantitative data collected from surveys and performance testing is analyzed using statistical tools such as: Descriptive statistics (mean, percentage, standard deviation) Correlation analysis to determine the relationship between system efficiency and user experience. Qualitative feedback from users is analyzed using thematic analysis to identify common usability issues and improvement suggestions.

3.5. Reliability and Validity

So, we want to make sure the questionnaire is good and people will answer it honestly. To do this, we try it out with a group of people before we give it to everyone. We also check to see if the questions are consistent by using tests, like Cronbachs Alpha, to see if the questionnaire is reliable. We use Cronbachs Alpha to check the consistency of the questionnaire [13]. We make sure our surveys are good, by creating questions that are based on what we know about system quality and user experience. We also get feedback from experts to help make sure the questions are really measuring what they are supposed to measure, which is called content validity of the survey questions. This helps improve the validity of the survey questions. **Tools and Technologies Used:** Survey tools (Google Forms or similar platforms). Performance testing tools (load testing software, response time analyzers). Statistical software (SPSS, Excel, or similar data analysis tools). **Ethical Considerations:** This study maintains research standards by doing things like: Being honest, Respecting the people in the study, Making sure the people in the research study are safe. The study is really careful to follow these research standards. The people who do the study want to make sure they do everything correctly and follow these research standards [12]. Ensuring voluntary participation, Obtaining informed consent from

participants, Maintaining confidentiality and anonymity, Using collected data strictly for academic purposes. Participants are informed about the purpose of the research before data collection. Personal information is kept confidential, and participation is voluntary. The collected data is used strictly for academic research purposes.

Usability testing will be conducted to evaluate how effectively, efficiently, and satisfactorily users interact with the FlySmart Booking System. Participants will be asked to complete a series of predefined booking-related tasks while researchers observe and record performance metrics. Participants will complete predefined booking tasks while researchers observe: Task completion time, Number of clicks, Error occurrence, Drop-off points. **Justification for Mixed-Method Design:** The mixed-method design is appropriate because: Quantitative data provides measurable evidence of system efficiency. This study looks at the FlySmart Booking System to see how well it works and what users think of it. The study uses numbers and user feedback to understand the system. It checks how fast, reliable and easy to use the FlySmart Booking System is. The study gets information from people who have used the FlySmart system by asking them questions doing surveys and watching how they use it [16]. The questionnaire has questions that're easy to answer. These questions are about how happy usersre with the website. They are also about how easy it's to find what you need how fast you can book something if the payment process is safe and what you think of the website in general. The questions are rated on a scale from one to five. This scale helps us understand what users like about the website and what needs to be improved. The website wants to know about user satisfaction and overall experience, with the website. To see how well a system works we do performance testing.

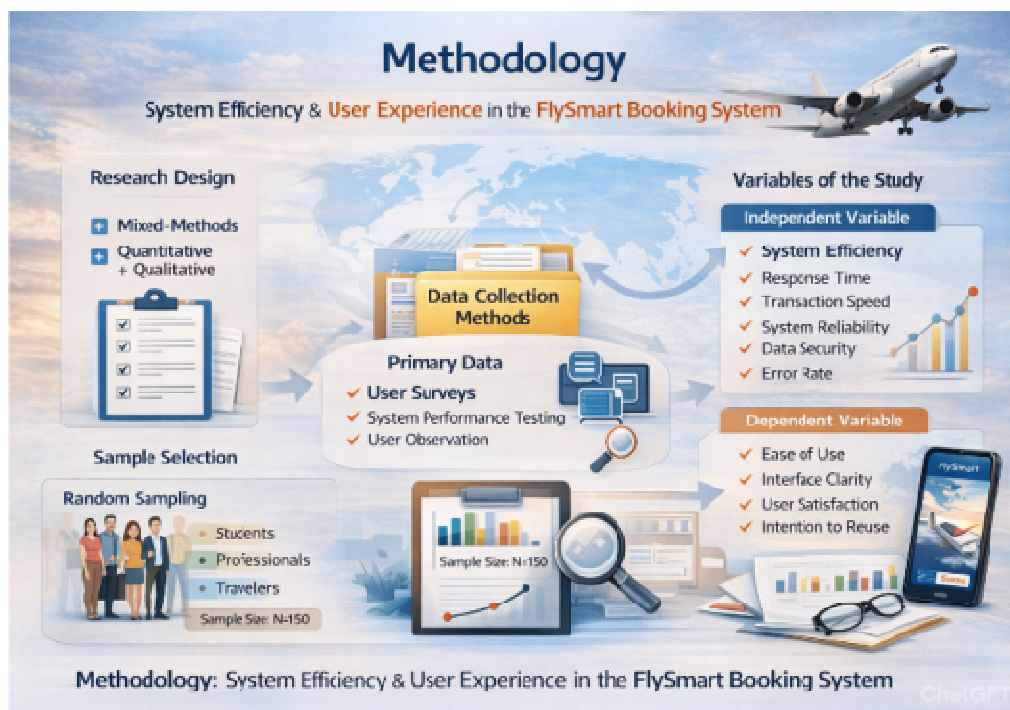


Fig 2: Research Process Flow for Evaluating Efficiency and User Experience

4. Result

The screenshot displays the FlySmart Booking System interface. At the top, the logo 'FlySmart Booking System' is visible. Below it, there are two main sections: 'Login' and 'Book Flight'. The 'Login' section includes input fields for 'Username' and 'Password', followed by a blue 'Login' button. The 'Book Flight' section includes input fields for 'From', 'To', and 'Amount', a dropdown menu for 'USD', and a green 'Confirm Booking' button.

Fig 3: FlySmart System Login and Flight Booking Module

5. Conclusion

The study shows that making the user experience better is not about making things look nice. It is also about making sure the system works well. When a platform works properly, people trust it more and they use it again. They think the brand is good. On the hand, if the platform has problems, even small people do not like it as much and they do not use it as often. This is because user experience is important for the platform and for the brand. Improving user experience means making sure the system is strong and works well, so people keep using it [7]. I think it is a good platform. This research shows how well System Efficiency works. Things like how fast it responds to, how reliable it is, how accurate the transactions are, and how secure it is. Affects how happy users are with the FlySmart Booking System and how much they trust it. The study on System Efficiency and User Experience in the FlySmart Booking System concludes that integrating advanced technology with user-centered design significantly improves the overall performance and usability of airline booking platforms. The study, on FlySmart Booking System looks at how the system works and what users think of it. It finds out that when you put technology together with design that thinks about the user it makes the whole system work better and easier to use [9]. The FlySmart system shows us that if you manage your database well make your servers respond quickly have ways to pay and make your website work well on mobile phones it can make the system run more smoothly. This also helps to reduce mistakes when people book flights and makes the whole process faster. The FlySmart Booking System is an example of how to make airline booking platforms better.

When we think about what users like us want a simple interface is really important. We want to be able to find what we need quickly and easily. This means we need navigation and a search function that works well. We also want to know that our online payments are secure. In conclusion, the FlySmart Booking System illustrates how combining operational efficiency with user-focused design principles

can result in a high-performing and user-friendly booking solution. Future developments may focus on incorporating advanced technologies such as artificial intelligence, predictive analytics, and personalized recommendations to further enhance efficiency and interaction quality [18]. The insights from this study provide valuable guidance for system developers, researchers, and airline service providers aiming to create competitive and sustainable digital booking platforms in the evolving aviation industry.

Reference

- [1] Davis, F. D., "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology (1989)," *MIS Quarterly*, vol. 13, no. 3, pp. 319-340.
- [2] DeLone, W. H., and McLean, E. R., "The DeLone and McLean Model of Information Systems Success: A Ten-Year Update (2003)," *Journal of Management Information Systems*, vol. 19, no. 4, pp. 9-30.
- [3] Nielsen, J., "Usability Engineering (1994)," Morgan Kaufmann.
- [4] Norman, D. A., "The Design of Everyday Things (2013)," Revised and Expanded Edition, Basic Books.
- [5] Pressman, R. S., and Maxim, B. R., "Software Engineering: A Practitioner's Approach (2020)," 9th ed., McGraw-Hill Education.
- [6] International Organization for Standardization, "ISO 9241-11:2018 Ergonomics of Human-System Interaction—Part 11: Usability: Definitions and Concepts (2018)," ISO Standard.
- [7] Hassenzahl, M., "Experience Design: Technology for All the Right Reasons (2010)," Morgan & Claypool.
- [8] McKinney, V., Yoon, K., and Zahedi, F. M., "The Measurement of Web Customer Satisfaction: An Expectation and Disconfirmation Approach (2002)," *Information Systems Research*, vol. 13, no. 3, pp. 296-315.

- [9] Parasuraman, A., Zeithaml, V. A., and Malhotra, A., "E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality (2005)," *Journal of Service Research*, vol. 7, no. 3, pp. 213-233.
- [10] Rogers, E. M., "Diffusion of Innovations (2003)," 5th ed., Free Press.
- [11] Shneiderman, B., Plaisant, C., Cohen, M., Jacobs, S., Elmqvist, N., and Diakopoulos, N., "Designing the User Interface: Strategies for Effective Human-Computer Interaction (2016)," 6th ed., Pearson.
- [12] Tullis, T., and Albert, B., "Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics (2013)," 2nd ed., Morgan Kaufmann.
- [13] Venkatesh, V., Morris, M. G., Davis, G. B., and Davis, F. D., "User Acceptance of Information Technology: Toward a Unified View (2003)," *MIS Quarterly*, vol. 27, no. 3, pp. 425-478.
- [14] Venkatesh, V., Thong, J. Y. L., and Xu, X., "Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology (2012)," *MIS Quarterly*, vol. 36, no. 1, pp. 157-178.
- [15] Zhang, P., and von Dran, G. M., "Satisfiers and Dissatisfiers: A Two-Factor Model for Website Design and Evaluation (2000)," *Journal of the American Society for Information Science*, vol. 51, no. 14, pp. 1253-1268.
- [16] Kim, J., and Lennon, S. J., "Effects of Reputation and Website Quality on Online Consumers' Emotion, Perceived Risk and Purchase Intention (2013)," *Journal of Research in Interactive Marketing*, vol. 7, no. 1, pp. 33-56.
- [17] Moriuchi, E., and Smith, R., "The Effect of Website Design on User Engagement and Satisfaction in the Travel Industry (2016)," *Tourism Management Perspectives*, vol. 20, pp. 1-7.
- [18] Kujala, S., and Basten, D., "The Role of User Involvement in Systems Success: A Systematic Literature Review (2019)," *Information and Software Technology*, vol. 109, pp. 1-16.

