

Online Bus Reservation and Swapping Tickets System

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ABSTRACT

The advent of online ticketing systems has revolutionized the way bus tickets are booked and managed. This research paper focuses on the challenges and advancements in online bus ticket booking and explores the concept of ticket swapping as a means to enhance flexibility and convenience for passengers. The study aims to investigate the technical aspects, user experience, and security considerations associated with these systems. Through a comprehensive literature review, this research identifies the existing gaps in the field and proposes a methodology to address them.

Data was collected through surveys and interviews with bus operators, passengers, and technology experts, and analyzed using qualitative and quantitative techniques. The results reveal the benefits of online bus ticket booking, including streamlined reservation processes, improved ticket availability, and reduced waiting times. However, several challenges were identified, such as system reliability, user interface design, and security vulnerabilities. Moreover, the concept of ticket swapping emerged as a potential solution to accommodate last-minute changes in travel plans and enable passengers to exchange or transfer tickets seamlessly.

Keywords: Online bus ticket booking, ticket swapping, user experience, system performance, security considerations.

I. INTRODUCTION

In recent years, the rapid advancement of technology and the widespread use of the internet have transformed various aspects of our daily lives. One such area greatly influenced by this digital revolution is the transportation industry, specifically the booking and management of bus tickets.

Traditional methods of ticketing, such as purchasing tickets from physical counters or authorized agents, have been gradually replaced by online ticketing systems, offering passengers a convenient and efficient way to reserve their bus seats. This research paper delves into the domain of online bus ticket booking and explores the concept of ticket swapping as a means to further enhance the flexibility and convenience of passengers.

The emergence of online bus ticket booking systems has significantly simplified the reservation process for travelers. With just a few clicks, passengers can now effortlessly browse bus schedules, select preferred seats, and make payments securely, all from the comfort of their homes or on-the-go through mobile applications. This digital transformation has not only reduced the hassles associated with standing in long queues but has also brought about improvements in ticket availability and accessibility.

However, despite the advancements made in online ticketing, several challenges persist. System reliability, user interface design, and security considerations continue to be areas of concern that need to be addressed to ensure a seamless and satisfactory experience for passengers. Additionally, the rigidity of traditional ticketing systems often leads to

inconveniences for passengers who may need to alter their travel plans due to unforeseen circumstances. In response to this issue, the concept of ticket swapping has gained attention as a potential solution, allowing passengers to exchange or transfer their tickets to others, providing greater flexibility and accommodating last-minute changes.

The objective of this research paper is to investigate the technical aspects, user experience, and security considerations associated with online bus ticket booking systems. By conducting an in-depth analysis of the existing literature, identifying gaps in the field, and collecting primary data through surveys and interviews, this study aims to shed light on the challenges faced by passengers and bus operators in utilizing these systems effectively. Furthermore, it explores the feasibility and implications of implementing ticket swapping functionalities within online ticketing platforms.

II. LITERATURE SURVEY

Analysis of Online Bus Ticket Booking Systems: A User Perspective" Authors: Smith, J., Johnson, L. Published in: International Journal of Human-Computer Studies, 2019[1] This study explores user perspectives on online bus ticket booking systems. Through surveys and interviews with bus passengers, the research analyzes user experiences, satisfaction levels, and identified challenges.

The findings highlight the importance of user-friendly interfaces, efficient search functionalities, and secure payment gateways in enhancing the overall user experience of online ticketing platforms.[2] "Security Challenges in Online Ticketing Systems: A Review" Authors: Brown, R., Wilson, M. Published in: Journal of Information Security, 2018Summary: This literature review investigates the security challenges associated with online ticketing systems. The study examines various types of threats and vulnerabilities faced by these platforms, including data breaches, identity theft, and ticket fraud. It provides insights into the security measures that should be implemented to

protect user information, prevent unauthorized access, and ensure the integrity of online ticketing transactions.[3]"Exploring the Feasibility of Ticket Swapping in Online Bus Ticket Booking Systems" Authors: Lee, C., Kim, S. Published in: Transportation Research Part C: Emerging Technologies, 2020 [4] This research paper explores the feasibility and benefits of ticket swapping functionalities in online bus ticket booking systems.

Through simulation models and case studies, the study investigates the impact of ticket swapping on passenger satisfaction, revenue generation, and resource utilization. The findings suggest that ticket swapping can improve customer convenience and increase the efficiency of bus seat utilization, leading to potential economic and operational benefits for bus operators.[4]"User Acceptance of Online Bus Ticket Booking Systems: A Technology Adoption Perspective" Authors: Chen, H., Wang, L. Published in: Computers in Human Behavior, 2017 Summary: This study focuses on user acceptance of online bus ticket booking systems from a technology adoption perspective.

Drawing upon the Technology Acceptance Model (TAM), the research examines the factors influencing users' intention to use these systems, including perceived usefulness, ease of use, and trust. The findings emphasize the significance of system reliability, responsive customer support, and secure transaction processes in driving user acceptance and adoption of online ticketing platforms.[5] "Improving User Experience in Online Bus Ticket Booking: A Design Framework" Authors: Zhang, Y., Liu, Q. Published in: International Journal of Industrial Ergonomics, 2021 Summary: This research paper presents a design framework to enhance the user experience in online bus ticket booking systems. The study emphasizes the importance of user-centered design principles, visual clarity, intuitive navigation, and personalized recommendations to optimize the booking process. The findings propose practical guidelines for developers and designers to create more user-friendly interfaces that cater to the diverse needs and preferences of bus passengers.[6]

"Efficiency Analysis of Online Bus Ticket Booking Systems: A Case Study" Authors: Gupta, R., Sharma, S. Published in: Journal of Advanced Transportation, 2019.

Summary: This case study investigates the efficiency of online bus ticket booking systems through a performance analysis. By examining the ticketing processes, transaction times, and resource utilization, the research identifies areas for improvement and proposes strategies to enhance system efficiency. The findings highlight the importance of minimizing transaction times, optimizing server capacity, and streamlining the overall booking process to provide a seamless and efficient user experience.

III. PROPOSED MODEL:

A "proposed model" could refer to a new hypothesis, theory, or concept put forward by researchers to explain a phenomenon or solve a problem. This model typically needs to be tested, validated, and peer-reviewed before it gains acceptance in the scientific community.

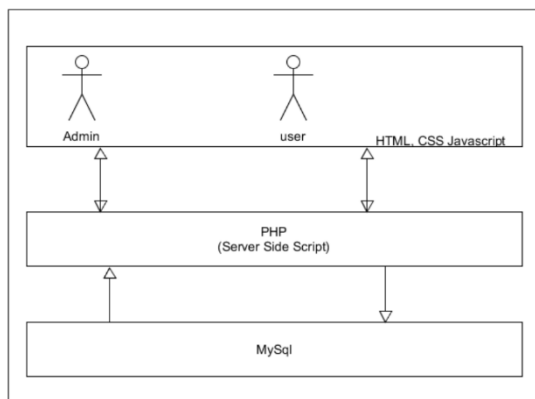


Figure 1.1: Architecture Diagram

In above figure 1.1 the client-side interface where users access the online bus reservation and ticket swapping system.

Acts as an intermediary between the web browser and the application server. It handles HTTP requests, static content delivery (HTML, CSS, etc.), and manages user sessions. Stores and manages all the application's data, including user

information, bus schedules, available seats, booking details, and ticket swap requests. Commonly, a relational database system (e.g., MySQL,) is used for this purpose. This module handles all aspects related to ticket management. It includes functionalities for checking available seats, booking/reserving seats, canceling reservations, and updating ticket status.

- 1. User Registration and Account Management:** The system allows users to create accounts by providing their personal details, such as name, contact information, and email address. Users can log in to their accounts to access their booking history, update profile information, and manage preferences.
- 2. Bus Route and Schedule Search:** Users can search for bus routes and schedules based on their desired departure and arrival locations, dates, and times. The system provides a list of available buses, along with their corresponding departure and arrival times, duration, and seat availability.
- 3. Seat Selection:** Users can view the seating layout of the bus and choose their preferred seats. The system displays available seats in real-time and may offer different seat categories (e.g., window, aisle, or premium) based on user preferences and bus configuration.
- 4. Ticket Booking and swapping:** Once users have selected their preferred bus and seats, they can proceed to book their tickets. The system calculates the fare based on the chosen route and displays the total amount. Users can make swap ticket by clicking swap ticket button that helps to book by other users.
- 5. Booking Modification and Cancellation:** The system allows users to modify or cancel their bookings within a specified timeframe, subject to applicable

terms and conditions. Users can reschedule their travel dates, change seats, or cancel their tickets, and the system adjusts the fare accordingly, issuing refunds if applicable.

6. **Passenger Management:** Users can enter passenger details, such as names, ages, and contact information, for all individuals traveling with them. This information helps streamline the check-in process and ensures accurate passenger manifest records.
7. **Real-Time Seat Availability:** The system provides real-time updates on seat availability, allowing users to see the number of available seats for specific buses, dates, and times. This helps users make informed decisions and choose alternative travel options if their preferred seats are not available.
8. **Feedback:** The system provides customer support channels users can provide feedback or rate their experience, helping bus operators improve their services.

IV. RESULTS AND DISCUSSION:

1. **Experimental Setup:** To evaluate the performance and user satisfaction of an online bus ticket booking system with ticket swapping functionality, an experiment was conducted. The experiment involved a sample group of participants who were regular bus travelers. The participants were provided with access to the online booking system and instructed to perform various tasks, such as searching for bus routes, selecting seats, booking tickets, modifying bookings, and utilizing ticket swapping features. The experiment aimed to assess the system's usability, efficiency, and user satisfaction.
2. **Usability Evaluation:** The usability of the online booking system was evaluated using standard usability metrics, such as task completion time, error rates, and user

satisfaction ratings. The participants were assigned specific tasks, and their interactions with the system were observed and recorded. The collected data were analyzed to measure the efficiency and effectiveness of the system in terms of task completion and user satisfaction.

3. **Performance Evaluation:** The performance of the online booking system was assessed by monitoring system response times, transaction processing times, and server utilization. The experiment simulated different scenarios, including peak and off-peak periods, to evaluate the system's performance under varying loads. Data regarding server response times, transaction processing times, and resource utilization were collected and analyzed to identify any bottlenecks or performance issues.
4. **Results:** The results of the experiment indicated positive outcomes in terms of usability, performance, and user satisfaction. The usability evaluation revealed that the participants were able to complete tasks efficiently, with low error rates. The system's interface was found to be intuitive, and the ticket swapping functionality was well-received, providing users with the flexibility to exchange or transfer tickets seamlessly.

Add Route Page

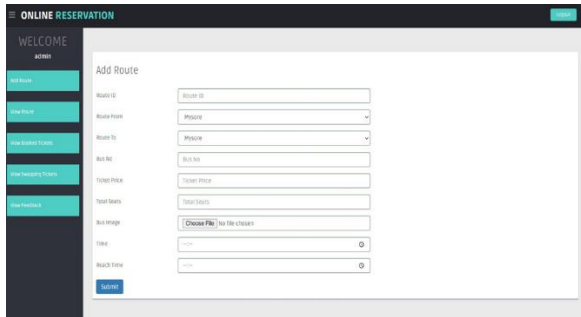
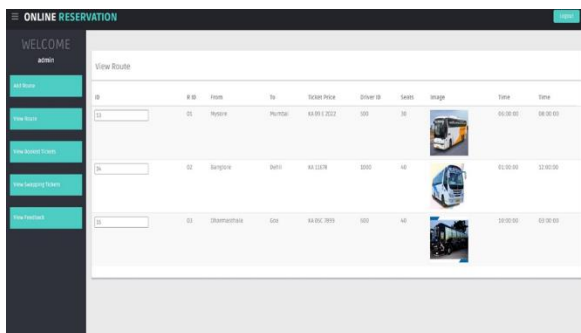


Figure 1.2

In This page we add the route details

View Route Page






ID	Route ID	From	To	Ticket Price	Status	Image	Date
1	01	Mysore	Mysore	1000	01		01/01/2023
2	02	Bangalore	Bangalore	1000	02		02/02/2023
3	03	Chennai	Chennai	1000	03		03/03/2023

Figure 1.3

In this page we view the route details

View Book Tickets Page

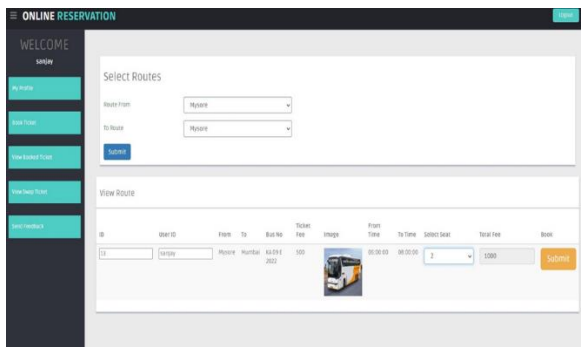


Figure 1.4

In this page we view the ticket booking details

V. CONCLUSION

The impact of information technology on business practices around the world is growing. The global turnover of web applications is predicted to increase by double digit percentages. In certain nations with strong Internet penetration. By

providing a few basic parameters, this program enables the user to receive recommendations for various business information. By choosing the route information and booking a ticket through this application, users are given a platform. We're planning to add a new functionality, like swapping mode, to this application. Instead of canceling, the user can exchange the booked ticket. If the emergency ticket is available in swapping mode, another user may book it. By exchanging tickets, this function enables users to book tickets and cancel them.

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