



TECHNOLOGY PARK MALAYSIA

CT026-3-1-Systems Analysis and Design (SAAD)

Group Documentation

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Vision

To establish the industry standard for customer service, dependability, and technological excellence and to become the leading global provider of seamless and innovative travel solutions.

Mission

At Travel Safe International (TSI), our goal is to provide passengers with a top-notch booking platform that not only makes traveling easier but also more enjoyable. With the use of innovative technologies and dedication to quality we are committed to providing outstanding services to our clients so they can travel freely and worry-free.

Enhance Travel Experiences	By providing a wide selection of travel alternatives, we hope to make every journey special by enabling customers to book flights in the most practical and pleasurable way.
Safety and Accessibility	All travelers' safety and accessibility are important to TSI. To guarantee that travelers of all ages and abilities can travel pleasantly, we offer services including wheelchair services and unaccompanied child assistance.
Transparent Pricing	Our pricing practices are intended to be honest and open. With our transparent ticket structures, which provide alternatives for infants, kids, teenagers, adults, and seniors, travelers can confidently plan their excursions.
Innovative Technology	High level technology used by TSI allow customer to streamline the booking process, enabling quick ticket modifications and cancellations, and give passengers real-time information.
Exceptional Customer Support	We pride ourselves on our exceptional customer service. Our dedicated team is available to assist travelers with any questions or concerns they may have.
Efficient Reporting	We aim to deliver detailed weekly and monthly sales reports to our business partners and stakeholders, providing them with important insights into our operations and performance.
Sustainability	TSI is dedicated to decreasing our environmental impact through the exploration and implementation of sustainable techniques within our operations.
Continuous Improvement	We are constantly looking for ways to improve and innovate in order to set new standards for excellence in the travel industry.

By staying true to our vision and mission, we aspire to be the go-to choose for travelers, airlines, and travel agencies worldwide, while contributing positively to the global travel ecosystem.

Motto

Love is in the air. By TSI company

Your Love is in the air. By TSI company

The Sky & I. By TSI company

2.0 Problems Identification and Proposed Solutions

2.1 Problem Identification

Problem 1: inefficient in collecting sales report

According to the management of Travel Safe International guidelines, each staff member is expected to provide monthly and weekly sales reports on how many tickets were sold and how much profit they made from sales. Cause of the absence of an effective system for TSI to provide sales reports. This has the effect for staff to spend too much time manually creating sales reports every day for a week or a month, which will also allow human error.

Problem 2: inefficient ticket booking process

The system restricts the number of bookings to a **maximum of four persons per booking**. Passengers cannot make numerous plane ticket bookings efficiently due to the current system. Customers will have to spend a lot of time buying tickets, especially if they go in groups of five. It is evident that workers will be extremely busy during peak season. Apart from that, the workforce of the TSI company will increase, which will require a larger budget.

Problem 3: insufficient proactive customer service in addressing customer needs

TSI's system is currently manual, which means that customer service will offer all information on the customer and their booking manually. This prevents customers from receiving real-time updates on flight changes, delays, or cancellations and from receiving support based on past interactions. Customers who are unsatisfied will be affected, which may result in poor reviews and lost revenue due to a lack of service. They prefer to fly with other carriers, it turns out with improved customer service.

Problem 4: Lack of Transparency

There is a lack of information offered by TSI, the system on the other hand, does not give any particular information, such as services, fare, information, or confusing policies. Because the information supplied concerning ticket adjustments and cancellations was confusing. As a

result, customers may have difficulty understanding the terms and conditions. Customers may be surprised by the prices and restrictions associated with changing their reservation.

Problem 5: Incomplete information on Unaccompanied minors and wheelchair services

Some airlines provide unaccompanied minor services and wheelchairs without offering specific instructions on how to access them. This may leave Customers confused and find it difficult to grasp the availability, cost, and how to access these services, thus leading to accessibility concerns.

2.2 Proposed Solution

By referring to all the issues raised in the Travel Safe International System. Some options are suggested to assist in enhancing TSI operations and customer satisfaction. First, create and deploy an **automated reporting system** for collecting real-time sales reports. Staff should be able to gather sales data and calculate profits using this financial system. By eliminating the manual weekly and monthly reporting the danger of human mistakes is reduced. Second, **improve the booking system** by removing the limit on the number of passengers per booking and allowing customers to quickly buy aircraft tickets for any size of passenger. Moreover, **automated customer assistance** and provide **real-time alerts** on flight changes, delays, and cancellations. By using chatbots or email alerts to keep travelers updated and informed.

Furthermore, create a **TSI website** with a communication and information gateway to give complete information on service, pricing, policies, ticket changes, and cancellations. Information is updated on a regular basis to reflect changes in services and rules. Finally, provides a thorough summary of **unaccompanied minors and wheelchair assistance**. Include information about how to obtain the services, as well as the related costs and availability. ITS has made it simple for clients to understand and access these services by offering this.

2.3 Aim and Objective

The aim of the proposed identification and solution is to create a new system that is more effective, efficient, customer-friendly, and customer-focused. Additionally, it enhances the competitive position for TSI in the airlines industry.

Objectives:

- To develop an automated reporting system
- To guarantee that passengers receive real-time information
- To increase trust and customer satisfaction by providing a user-friendly system.
- To offer a better customer support
- To give clear and thorough information of unaccompanied minors and wheelchair services

3.0 Project Planning

3.1 SDLC

The systems development life cycle (SDLC) is a project management conceptual model that defines the processes involved in an information system development project, from initial feasibility studies to application maintenance. SDLC is applicable to both technical and non-technical systems. In most cases, a system is an IT technology that includes both hardware and software. SDLC is often attended by project and program managers, as well as system and software engineers, development teams, and end users.

1. Planning phase

Task: Planning on what can be implement in the system and all the cost of the project.

Activities :

- The planning step entails developing a detailed project plan. The scope of the project, money allocation, resource allocation, timeframe, risk assessment, quality standards, communication plan, and training/documentation plan are all part of this.

2. Analysis Phase

Task: Combine and analyze project requirements

Activities:

- Collect and document TSI stakeholders' functional and non-functional requirements.
- Define the information system's specific features and functionalities, such as flight reservations, cancellations, rescheduling, and reporting.

3. Design Phase

Task: Create the information system's design specs.

Activities:

- Create a database schema to record pertinent information such as flights, passengers, reservations, and rates.
- Create a user-friendly interface (UI) for TSI personnel to utilize in managing flight reservations and reporting.
- Define the business logic and rules that control the system's many elements. Prepare for integration with external systems such as airline reservation systems.

4. Prototype Development

Task: Create a prototype or beta for the information system

Activities:

- Create a functioning prototype using relevant software development tools and technology.
- Check that the prototype can manage flight reservations, cancellations, and rescheduling, as well as create the necessary reports.

5. Testing

Task: Check the performance and quality of the system.

Activities:

- During this phase, extensive testing is performed to find and resolve any flaws or faults in the system. Usability testing guarantees that the system is easy to use, while performance testing verifies that it meets all specifications.

6. Implementation & Deployment

Task: Present the Idea and launch it so people can use it

Activities:

- The information system is put to work in a controlled setting. The system is gradually being expanded to deal with real-world data and user interactions.

7. UpKeep and maintenance

Task: To make sure the system run well and update time to time as to make sure the application runs smoothly and safe.

Activities: To handle any issues that may develop after deployment, an ongoing support and maintenance strategy is established. The system's performance is tracked, and user feedback is collected for future enhancements.

3.2 Gantt Chart

TSI System Gantt Chart

Project Start Date:	16/10/2023
Scrolling Increment:	0

Milestone Description	Category	Assigned To	Progress	Start	No. Days
Planning Phase					23
Develop Project Plan	Low Risk	Management	100%	16/10/2023	3
Develop Project Scope	Low Risk	Management	100%	19/10/2023	3
Allocate Funds	Low Risk	Project Manager	100%	22/10/2023	3
Allocate Resources	Low Risk	Project Manager	100%	25/10/2023	4
Allocate Task Timeframes	Low Risk	Project Manager	100%	29/10/2023	3
Risk Assessment	Low Risk	Management	100%	1/11/2023	2
Identify Quality Standards	Low Risk	Management	100%	3/11/2023	1
Develop Communication Plan	Low Risk	Management	100%	4/11/2023	2
Documentation Plan	Low Risk	Management	100%	6/11/2023	2
Analysis Phase					7
Document Stakeholders Funtional and Non Functional Requirements	On Track	System Analyst	100%	8/11/2023	5
Define Features and Functionality	On Track	System Analyst	100%	13/11/2023	2
Design Phase					15
Create Database Schema	Med Risk	Developer	100%	15/11/2023	4
Create User Interface	Med Risk	Developer	100%	19/11/2023	2
Design Business Logic and Rules	Med Risk	Developer	100%	21/11/2023	6
Prepare for integration with external systems	Med Risk	Developer	100%	27/11/2023	3
Prototype Development					9
Create Functioning Prototype	High Risk	Developer	100%	30/11/2023	4
Check Prototype for Functionality	High Risk	Developer	100%	4/12/2023	5

Testing9

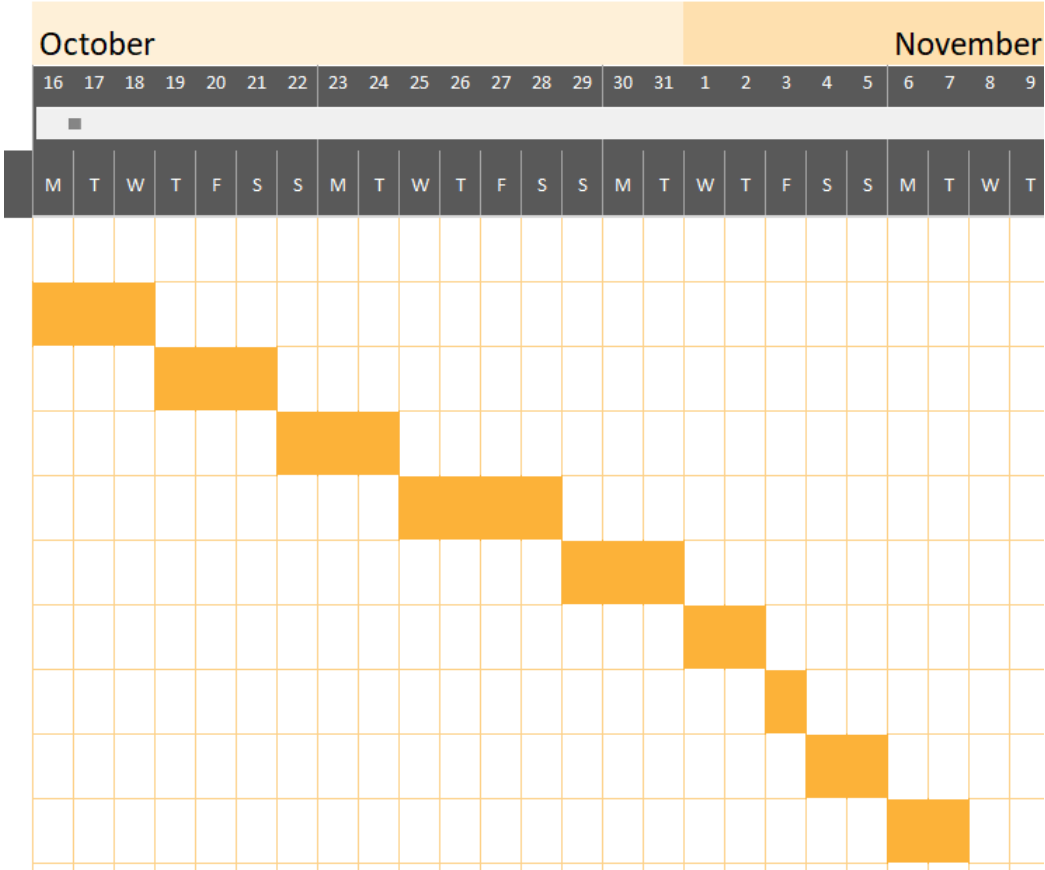
Perform Usablity Testing	Goal	Developer	100%	9/12/2023	3
Determine Ease of Use for the System		Developer, Project Manager	100%	12/12/2023	2
Perform Performance Testing		Developer	100%	14/12/2023	2
Ensure System meets required specifications		Project Manager	100%	16/12/2023	1
Identify Faults		Developer	100%	17/12/2023	1

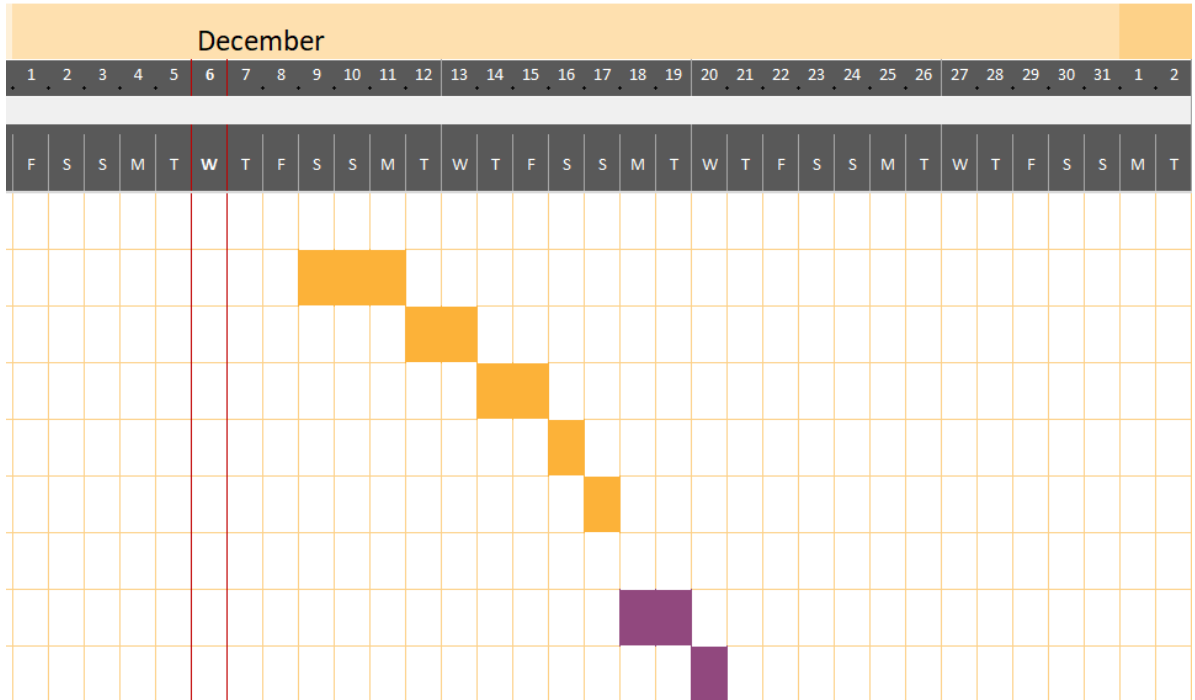
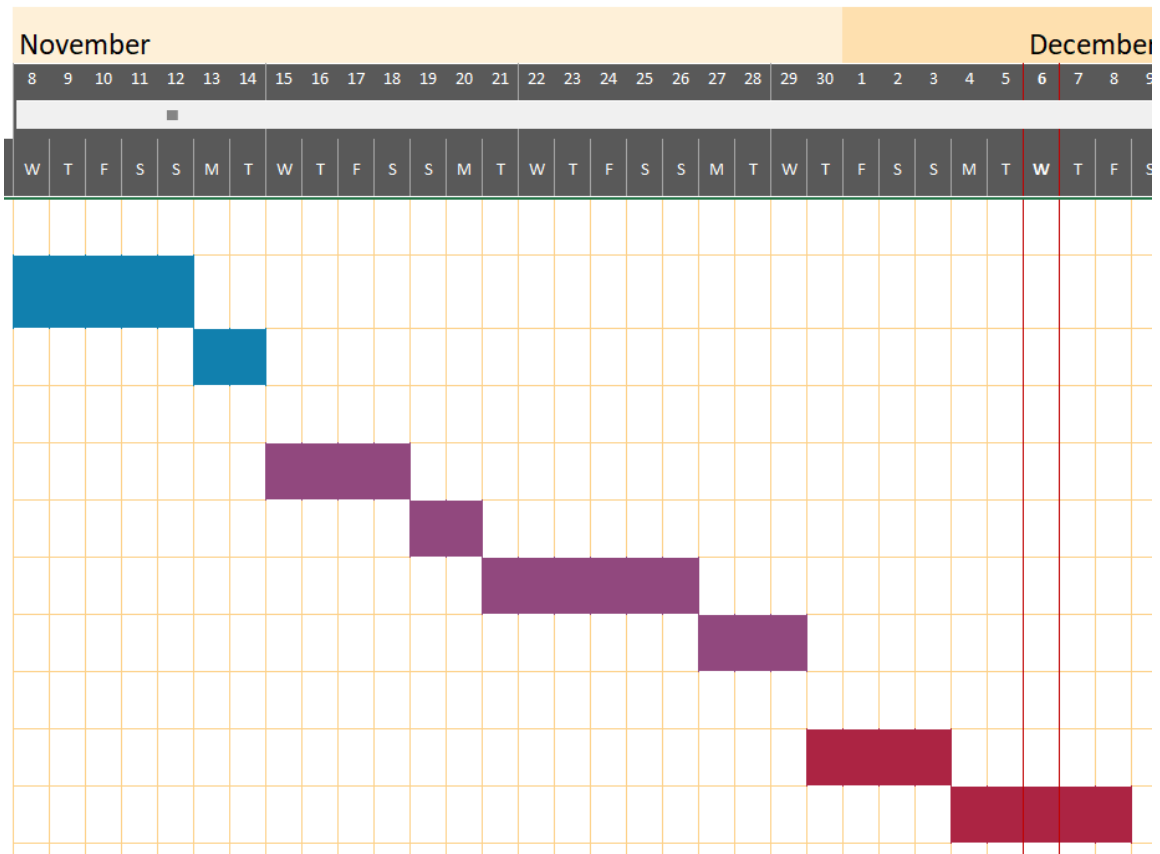
Implementation and Deployment3

Present System to Stakeholders		Project Manager	100%	18/12/2023	2
Launch system to the public		Project Manager	100%	20/12/2023	1

UpKeep and Maintainance10

Track User Activities		Project Manager	100%	21/12/2023	2
Track system's performance		Project Manager	100%	23/12/2023	2
Receive User Feedback		Management	100%	25/12/2023	1
Make Adjustments		Developer	100%	26/12/2023	2
Implement Adjustments		Developer	100%	28/12/2023	3





December

4.0 Feasibility Study

Technical feasibility

The new system is feasible technology wise due to the fact in the modern age there are a lot of companies that have already switched to automated sales report and there are growing amount of capable data analyst and developer who can built a reliable system. According to Krivec (2023), 72% of successful businesses employ sales automation, compared to only 18% of failing ones, according to research of more than 400 marketers, mostly in the B2B space. System developer can configure the existing book system to remove the booking limits of 4. Automated customer assistance and real-time alerts would require the company to hire a software developer to code an assistance bot and mailing bot. Some of the technical risk could be faced are inaccurate sales report produced by the system, excessive alerts mail sent to customers and new bug or loophole in the booking system

Economic feasibility

Most changes to the new system could be accomplished by software developer/software engineer. For young engineers, the median base salary was RM16,621, for senior engineers it was RM26,593, and for engineering managers it was RM45,705 (Boo, 2023). If the company decided to hire some software engineer, it would certainly take it hit on the company financially. However, with the redesign system, the growth of customer numbers is expected which will in turn make revenue for the company.

Schedule feasibility

The bare minimum for the new system to be working requires a website/apps redesign, numerous bot creation and employee training. According to Bora (2023), a mid-tier company (500–1,000 employees) can complete its digital transformation in 12–18 months (about 1 and a half years). If the organization relies heavily on human resources, the scope of the digital transformation will be constrained. Moreover, workers that are used to traditional sales systems might be used to manually making sales reports rather than using the

automation system, so more than average time will be spent on their training. The scope would be greater for hybrid operation firms, though. Since a ticket selling company usually does not have a large number of employees, it would be safe to say the development would cost around 13 to 14 months.

Operation feasibility

The implemented system will allow the whole user to book tickets without the initial limit of 4, this will allow passengers in larger families to book their flight easily. The updated customer assistance and real-time alerts will also allow customers to know their flight status instantly whether the flight is changed, delayed or even cancelled. The new system can be beneficial to both employees of Tsi and their customers. However due to the fact that manual labour is reduced, the company might be able to shrink the size of working employees, and some employees face the risk of being fired. Next, the switching of traditional sales report to digital and the newly created bots does not affect the client side which makes the system compatible to the airline Tsi does business with. The objective of this business project is to create a system that is friendly and user efficient platform for customer, with the redesign system user can now book tickets more than 4 people, which in turn allows large group of people to book their ticket in Tsi services. Customers do not need to worry about sudden flight changes since the system will send out update mail in case there are changes to their flight, this will make customers more willing to buy a ticket.

Feasibility - PIECES framework

The PIECES Framework approach is a framework that includes classification categories and problem-solving tasks. The sequence divides the classification into six categories: Economics, Control and Security, Efficiency, Performance, Information and Data, and Efficiency. (Fatoni, A., Adi, K., & Widodo, A. P. ,2020)

Performance

- TSI system able to manage the user interface or the software run smoothly, can handle flight ticket booking, cancellations, rescheduling and refunding operate efficiently.
- TSI is able to generate accurate weekly and monthly sales reports with good optimization of database and server.

Information

- TSI system will manage a wide range of information such as customer personal details with fully security and privately.
- Fare calculation based on the age, special discount, voucher or member level.
- Generate various reports to management for manage the documentation and easier to look for problem and make improvement on times.
- Latest schedules, news or promotion need to be updated in the first time.

Economics

- Stimulate the market with more promotions, vouchers or member benefits.
- Come out with the budget report, make sure that profit is more than expenses. Budget report also allows the financier to review all the expenses such as salary, purchase list,

employee claim and so on. So that the financier can act or changes to the next month to control the expenses overdraft.

Control

- Make sure the firewall or security of the TSI system is working efficiently, it is able to protect the information of the company and the customer.
- Controlling the TSI system is working under an aviation standard and make sure follow the term and condition between the airlines.
- Establish rules for flight ticket cancellations and refunds.

Efficiency

- Fully automation with flight ticket booking, flight reschedule notification, location and date searching, flight ticket cancellation, refund and receipt generate.
- Fully automation with collecting information, storing it in database, connect to server and create report.
- Make the system clear, easy, tidy and transparent, this will make it easy to operate.

Service

- A variety of functions should be included in the system's services, such as flight booking, cancellation management, special service provision, and report generation. These services must be dependable and easy to use.
- Transparency payment detail, services, fare, information, or policies are available.
- Provide wheelchair assistance, childcare age below 17, unaccompanied minor service, free Badget, provide food for the flight hour more than 4hours and toiletries provide for the flight more than 8 hours.

5.0 System Analysis

Functional Requirements

Customer:

1. Flight Search and Booking
2. User Authentication (such as sign in or log in function)
3. Payment Method

Administrator/ Staff Functional Requirements

1. User Management
2. Flight Management
3. Analytics and Reporting

IT Support team

1. Write a system for flight booking
2. Backup and Disaster Recovery
3. User Support and Helpdesk
4. System Update
5. Privacy and data protection

Marketing Team:

1. Customer Data Access

2. Campaign analysis and tracking
3. Innovation and product Development

Operation Team:

1. The availability of Flights
2. The timetablerati of the flights and flight schedule arrangement

Non-Functional Requirements

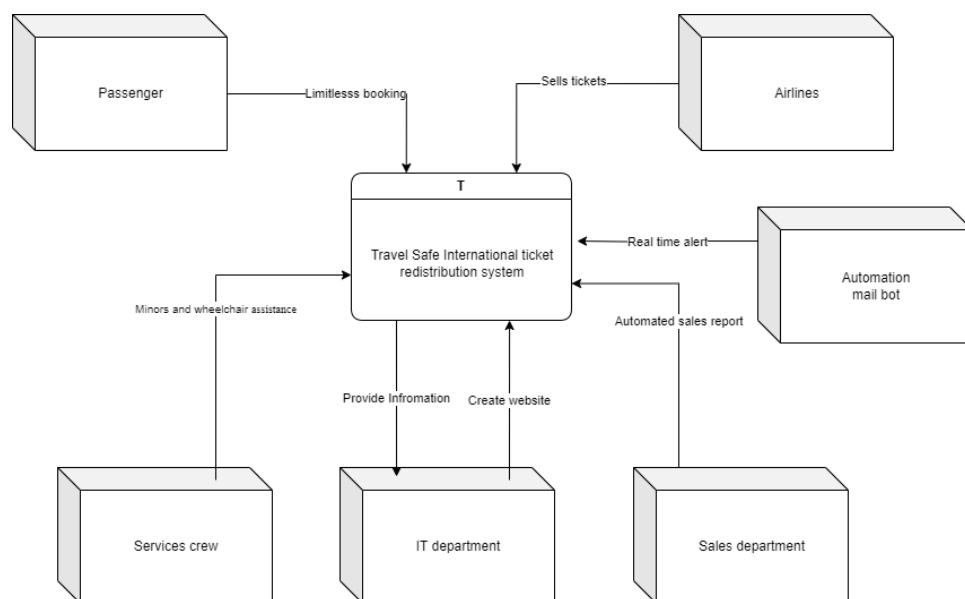
Scalability:

- **Handle rising user base:** There should be no performance decrease in the system as the number of users increases. At peak periods, it ought to be able to support at least a million concurrent users.
- **Handle a large number of transactions:** Bookings, cancellations, modifications, and flight searches should all be handled by the system with ease. During peak hours, it ought to be capable of managing a minimum of 10,000 transactions per second.
- **Support multiple data centers:** To guarantee geographical redundancy and high availability, the system should be able to be deployed and maintained across various data centers. In the event of an outage, it ought to be able to handle surges in local traffic and failover to alternative data centers.

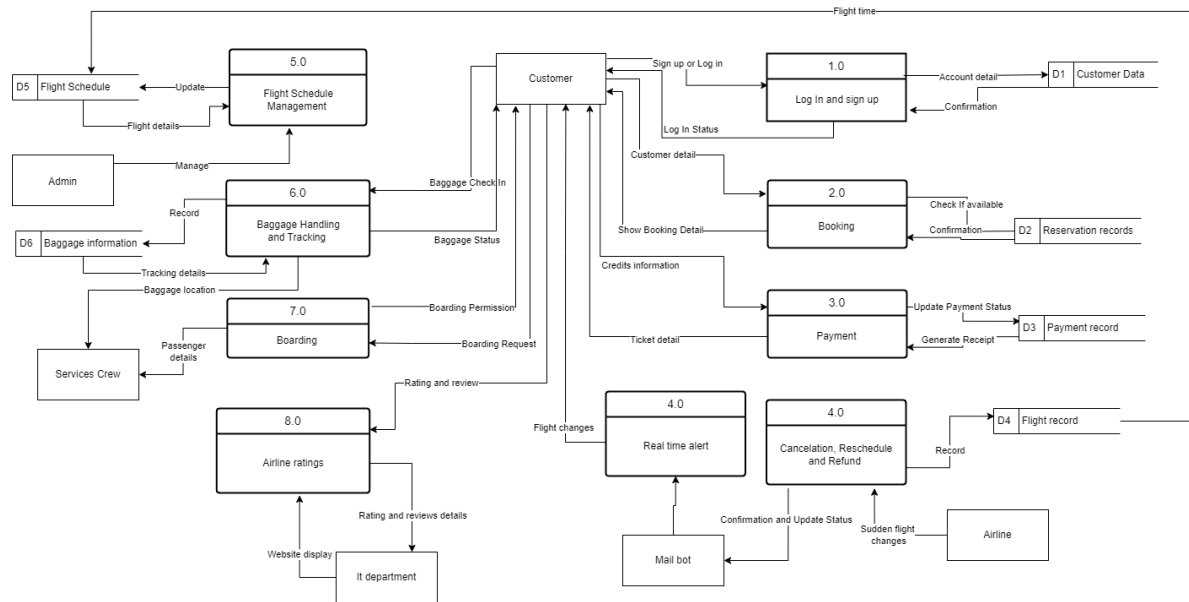
- **Minimizing down time:** Reducing downtime is important when it comes to system updates and maintenance. Rolling upgrades need to be possible for it without compromising user availability.
- **Enable horizontal scalability:** To expand capacity, more servers can be added if the system is built with this feature in mind. New servers should be able to be integrated into the system without causing any problems.
- **Utilize cloud infrastructure:** To benefit from elastic scalability and on-demand resource provisioning, the system ought to make use of cloud infrastructure. In response to demand in real time, it ought to be able to scale up or down dynamically.
- **Establish benchmarks and thresholds:** To gauge the system's scalability in relation to specified requirements, clearly specify performance benchmarks and thresholds. Review and modify these benchmarks frequently to account for shifting demand and usage trends.

6.0 Design Diagram

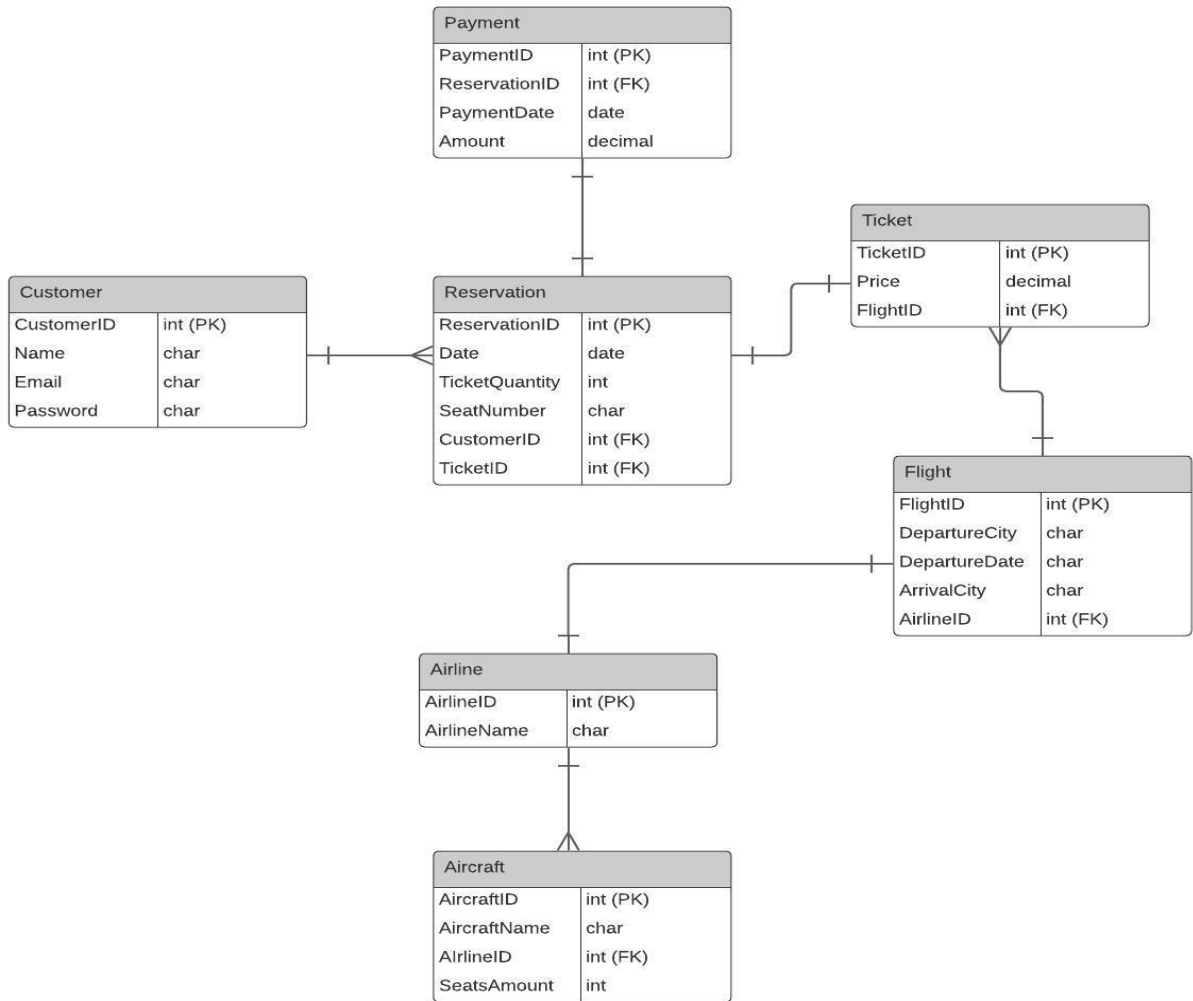
6.1 System Context Diagram (SCD)



6.2 Data Flow Diagram (DFD – Level 0) - Tay Jun Long (TP074666)



6.3 Entity-Relationship Diagram (ERD) Eraliev Suimonkul



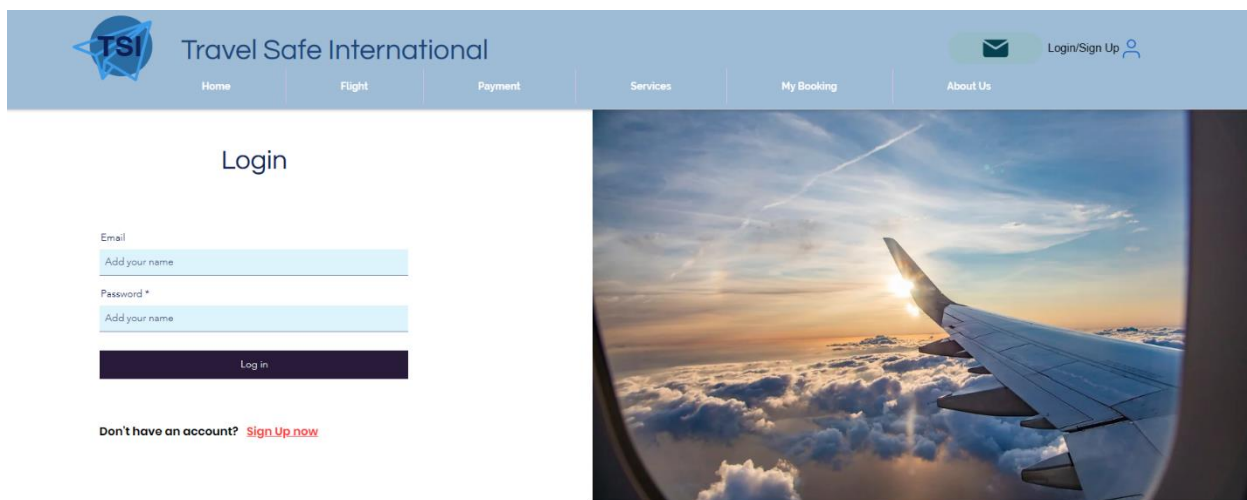
7.0 Interface Design

7.1 Welcome Page



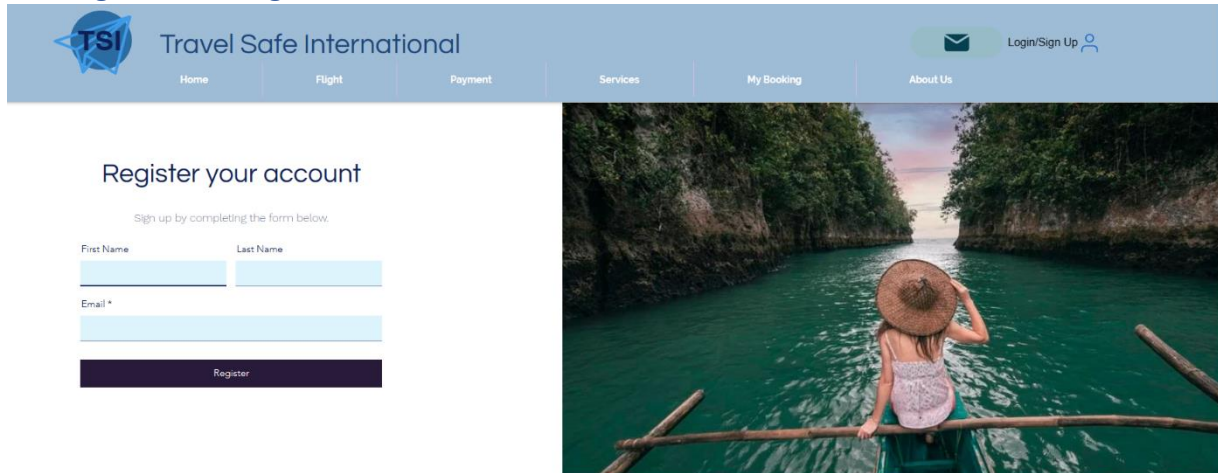
The homepage of the TSI booking system is seen in the image above. Customers may select the age and number of passengers, search for a flight and date of their choice, and select a one-way or round-trip ticket on this page. Customers may also use the upper-right function to sign up or log in; next to this, there is a message asking them to accept any information about an offer or flight.

7.2 Login Page



Users who already have an account can log in on the login page.

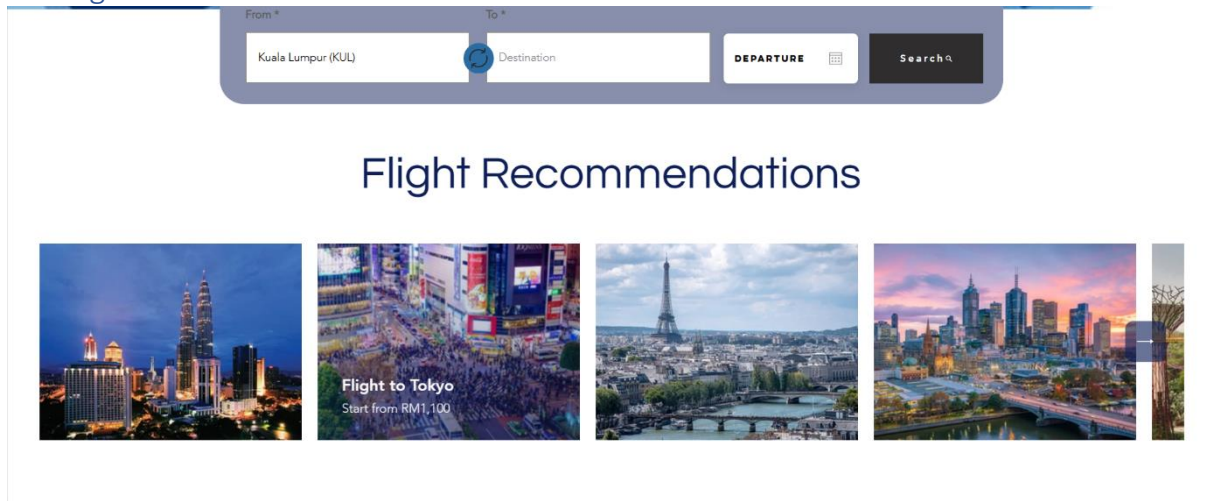
7.3 Registration Page



The screenshot shows the registration page of Travel Safe International. The header includes the TSI logo, the company name, and navigation links for Home, Flight, Payment, Services, My Booking, and About Us. A 'Login/Sign Up' button is also present. The main content area is titled 'Register your account' and includes a sub-header 'Sign up by completing the form below:'. The form consists of three input fields: 'First Name', 'Last Name', and 'Email *'. Below the form is a dark blue 'Register' button. To the right of the form is a large image of a person in a boat on a river.

Customers without an account can register on the registration page, after which they can log in to their account

7.4 Flight Recommendations

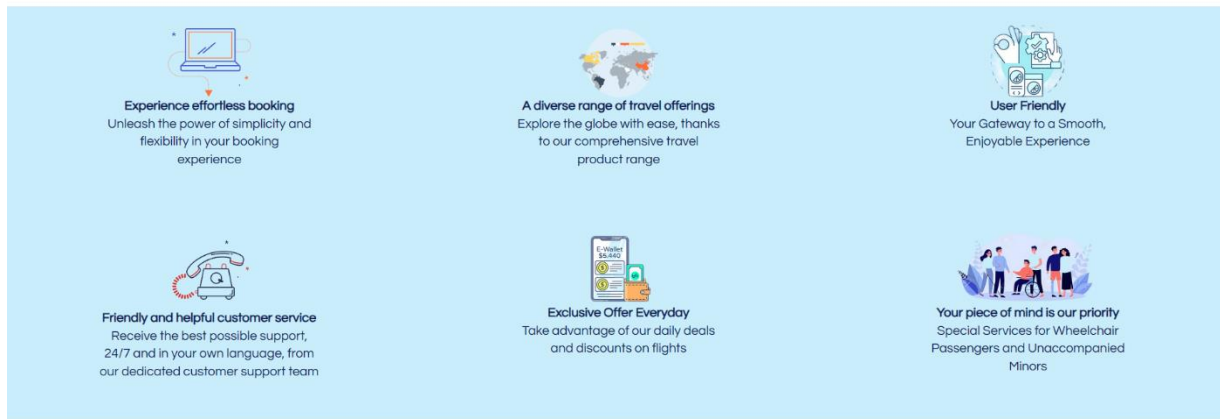


The screenshot shows the flight recommendations page. At the top is a search bar with 'From *' and 'To *' fields. The 'From *' field contains 'Kuala Lumpur (KUL)' and the 'To *' field contains 'Destination'. There is a 'DEPARTURE' button and a 'Search' button. Below the search bar is the title 'Flight Recommendations'. Underneath the title are five images of cityscapes. The second image from the left is labeled 'Flight to Tokyo' and 'Start from RM1,100'.

There are flight recommendations beneath the flight search. Moreover, an estimated flight cost to a single destination.

7.5 Our Services

Our Services



In this section, we provide a brief explanation of the different services that we offer. The key benefits of these services, such as the convenience and flexibility of the booking process, the diversity of offers, and friendly and helpful customer services.

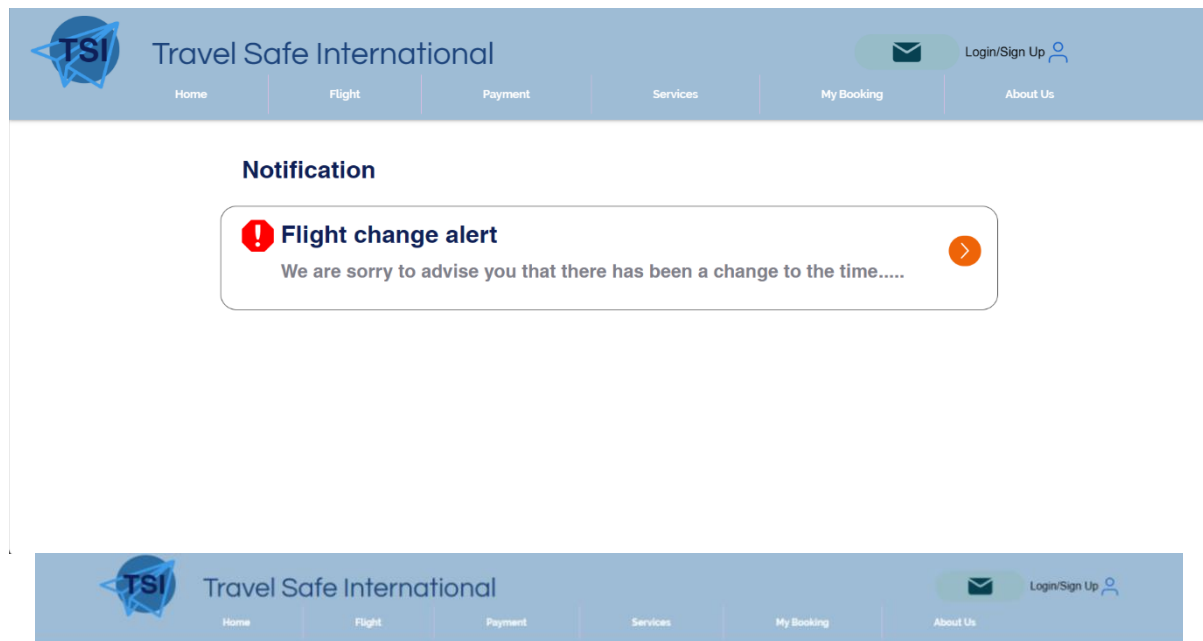
7.6 Payment Method


Accepted Payments Method



The list of payment methods we accept, which includes Visa, Mastercard, PayPal, Apple Pay, Google Pay, and Bitcoin, is shown above. This facilitates the customer's payment and flight due to the variety of payment options available.

7.7 Notifications




**Flight change alert**

We are sorry to advise you that there has been a change to the time of your flight IS 2303 on 8 December 2023

Your old flight detail

Kuala Lumpur (KUL) _____ Bali Denpasar (DPS)

1 Passenger (Direct)



15.20

8 Dec 2023

3h 5m

Kuala Lumpur (KUL)

Kuala Lumpur International Airport (Terminal 1)

18.25

8 Dec 2023


Bali Denpasar (DPS)

Ngurah Rai International Airport (Terminal International)

Your new flight detail

Kuala Lumpur (KUL) _____ Bali Denpasar (DPS)

1 Passenger (Direct)



16.20

8 Dec 2023

3h 5m

Kuala Lumpur (KUL)

Kuala Lumpur International Airport (Terminal 1)

19.25


8 Dec 2023

Bali Denpasar (DPS)

Ngurah Rai International Airport (Terminal International)

The above image shows that our website provides an alert notification message to inform the passenger of any flight changes, cancellations, and promotions.

7.8 Flight Choices

**Travel Safe International**


HomeFlightPaymentServicesMy BookingAbout Us

Kuala Lumpur (KUL)


→

Bali Denpasar (DPS)

12/06/2023


AirAsia

10.15 → 13.25 3h 10m Direct




RM 432.82 /Pax

Select


Malaysia Airlines

15.20 → 18.25 3h 5m Direct




RM 489 /Pax

Select

Malaysia Airlines
MH853
15.20 8 Dec 2023
Kuala Lumpur (KUL)
Kuala Lumpur International Airport
(Terminal 1)
Cabin Baggage 7kg
Baggage 10kg

The above picture shows how the flight search process works. Passengers can easily compare different flights based on price, departure time, arrival time, and airline.


7.9 Flight Details



Flight


Login/Sign Up

10.15 → 13.25 3h 10m Direct




RM 432.82 /Pax

Select


Malaysia Airlines


15.20 → 18.25 3h 5m Direct



RM 489 /Pax


Select

Malaysia Airlines
MH853
Boeing 737-800
(Winglets)
15.20 8 Dec 2023
Kuala Lumpur (KUL)
Kuala Lumpur International Airport
(Terminal 1)
3h 5m
18.25 8 Dec 2023
Bali Denpasar (DPS)
Ngurah Rai International Airport
(Terminal International)
Cabin Baggage 7kg
Baggage 10kg
Estimated ticket issued < 2h
Reschedule

Multi Airline

Aside from the flight search process, this passenger is also able to look through every detail of flight such as the weight of cabin baggage, baggage, and the name of the origin and destination airports, in addition to the flight search procedure.

7.10 Trip Summary



Travel Safe International

[Home](#)[Flight](#)[Payment](#)[Services](#)[My Booking](#)[About Us](#)


Login/Sign Up

Trip Summary

Selected Departure Flight

Kuala Lumpur (KUL) — **Bali Denpasar (DPS)**

1 Passenger | Direct


Malaysia Airlines
MH853
Boeing 737-800
(Winglets)

15.20

8 Dec 2023

3h 5m

Kuala Lumpur (KUL)

Kuala Lumpur International Airport
(Terminal 1)

18.25

8 Dec 2023

Bali Denpasar (DPS)

Ngurah Rai International Airport
(Terminal International)

Cabin Baggage 7kg

Baggage 10kg

Estimated ticket issued < 2h

Reschedule

Price Details

Depart (KUL -> DPS) **RM 489**

Below services each will charge 10% of booking fare

☐ Unaccompanied minor service

☐ Wheelchair services


Total Price **RM 489**

For 1 pax Include Tax

Checkout

After selecting the choice that the passenger wishes, a trip summary like the above will show. This provides the details of the flight, and options for the customer whether they need unaccompanied services or wheelchair services, which will cost 10% of the booking fare.

7.11 Payment




Travel Safe International


[Home](#)[Flight](#)[Payment](#)[Services](#)[My Booking](#)[About Us](#)


Login/Sign Up


Payment


choose a payment method that makes it easy














Price Details

Depart (KUL -> DPS) **RM 489**

Total Price **RM 489**

For 1 pax Include Tax

Checkout

After checkout, the chosen flight passenger needs to pay for the flight based on the price details that have been provided, with all of the choices shown in the above picture.

7.12 My booking

My Bookings

Booking ID 123456789


 **Depart (KUL -> DPS)**

Purchase Successful


E-Boarding Pass

Followed by the purchased flight ticket, the passenger will be guided to the "My Booking" option that shows the purchase is successful, this allows passenger to print the E-Boarding pass.

7.13 E-boarding Pass

**Travel Safe International**


HomeFlightPaymentServicesMy BookingAbout Us

**E-Boarding Pass**

Kairi Rayosdelsol
Kuala Lumpur
Kuala Lumpur International Airport
(Terminal 1)

Bali Denpasar
Ngurah Rai International Airport
(Terminal International)

KUL
Flight Number
IS 2303


Departure Date
8 Dec 2023


DPS
Boarding Time
**14:45
8 Dec 2023**

Gate
-

Zone
1

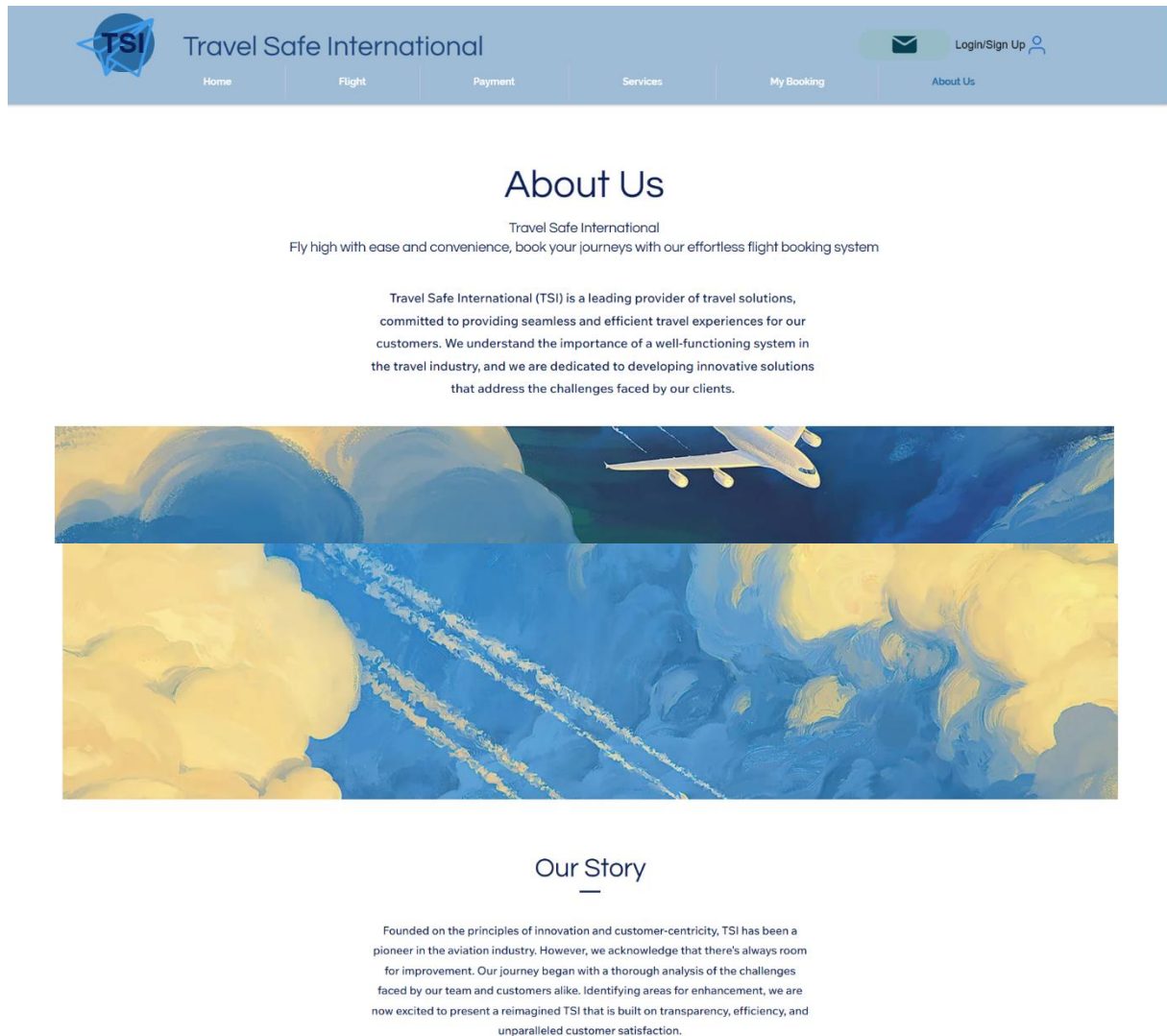
Seat
19F

144



The E-Boarding Pass, which includes the flight information, seat number, and barcode to print when they get to the airport, is seen above.

7.14 About Us



the above shows the part of the system to build trust and credibility with customers by explaining what TSI and the story of TSI is.

7.15 History

Booking History

December 2023

Booking ID 123456789


 Kuala Lumpur -> Bali

Purchase Successful

RM 489

September 2023

Booking ID 123456888

 Bali -> Singapore

Purchase Successful

RM 457

Additionally, our system offers a booking history that includes the price and destination from the previous flight. Customers can use this to follow up on a past order.

7.16 Auto sales report generation

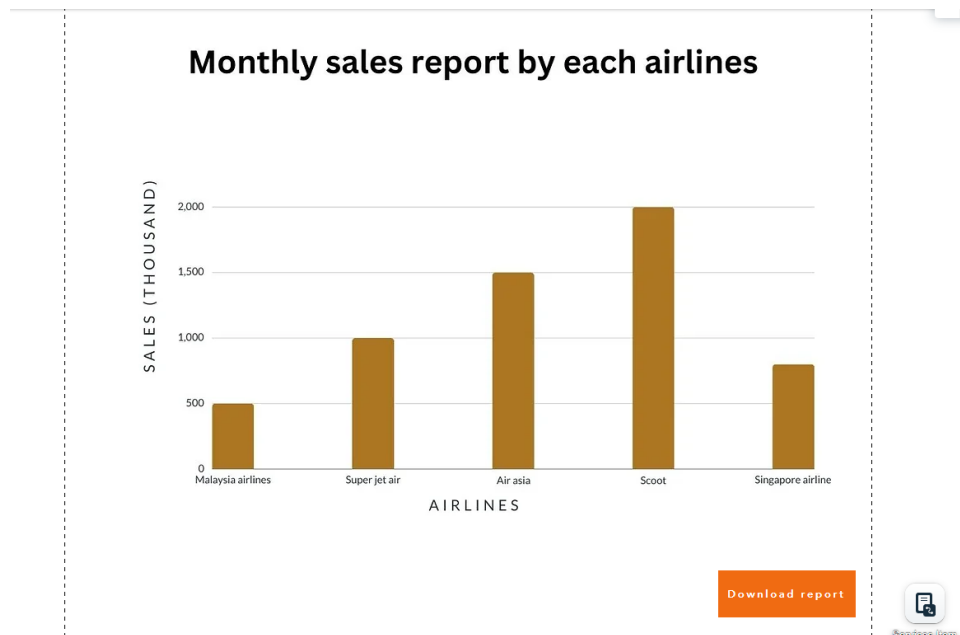
Welcome back Admin

Transaction log

Booking Number	Depart	Seat	Destination	Flight Number	Gate	Price	Airline	Air Registration Number
ID 123456789	Kuala Lumpur	12	Bali	123	1	RM 489	Malaysia Airline	123
ID 123456795	Bali	22	Tokyo	145	2	RM 8,000	Super Air Jet	145
ID 123456800	Tokyo	32	France	589	3	RM 1,100	Air Asia	589
ID 123456850	France	8	Singapore	233	8	RM 5,000	Scoot	233
ID 123456900	Singapore	28	Kuala Lumpur	765	5	RM 229	Singapore Airline	765

Auto Generate report

Only when an admin account logs into their account, they have the option to see the transaction log that records all the transactions of the customers. Staff can use this page to generate their monthly sales report.



After generating the sales report, a graph will show up with all of the responding airlines and their revenue. Admins have a button to download a soft copy incase their need to print a hard copy

8) Requirement Gathering

8.1 Method Of Information Gathering – Interview

Foo Yu Hen – TP069106

Interview is the primary technique of gathering further information about an application and the foundation for evaluating an applicant's job-related knowledge, skills, and abilities. (Muntasir, 2023) An interview is a qualitative research approach that collects data by asking questions. Interviews are conducted by two or more people, one of whom is the interviewer who asks the questions. (George, 2023)

Pros of Interview

- Get to gather more idea every different perspective.
- Face to face interviews get to create a personal connection between the interviewer and interviewee.
- Interviewers can get instant feedback and ask follow-up questions depending on the interviewee's responses, allowing for a more dynamic and interactive flow of information.
- Interviews can be tailored to each interviewee's specific needs and circumstances. This is useful when dealing with a variety of people or situations.

Cons of Interview

- Interviews can be time-consuming, especially if many interviews are conducted or if the interview process includes complex or extensive talks.
- Active listening, empathy, and the ability to ask the proper questions are all required for effective interviewing. Interviewers who lack these skills may struggle to elicit useful information.
- Interviewees may give socially acceptable answers rather than their genuine ideas or experiences, resulting in skewed or erroneous information.

Interview Questions

1.Do you often take airplanes? When was your last time travelling with airplane?

Ans – Yes, it was just 4 months ago.

2.Do you think it is crucial to have a very user friendly websites? Why?

Ans - Yes, having an easy-to-use website is critical for organizations, including airlines. A user-friendly website improves the whole consumer experience by making it easier to access information, book flights, check in, and maintain reservations. It can also result in higher client satisfaction, repeat business, and favorable word-of-mouth referrals.

3.Do you think a transparent policies is very important in the airlines website / system?

Ans- Transparent policies are critical in the aviation sector. Clear and open policies assist customers gain trust and credibility by assuring them understand their rights, duties, and what to expect when using the services. This transparency promotes a favorable client experience and can aid in mitigating risk.

4.What is the usual way that you get to know the airlines services website? (Friend recommendation / Social Media or Banner on the roadside)

Ans- I actually get to know the airlines services website through the Social media.

5.What is the problem that you faced when you are using the airlines website? Do you wish to have a feedback section which letting user to give feedback or advise on anything to improve in the website?

Ans- When utilizing airline websites, I frequently encounter navigation obstacles, confusing booking processes, unclear policies, and technological concerns. A feedback section on a

website can be useful since it allows us as users to voice our own ideas, suggestions, and complaints. This can assist the airline in identifying areas for development, improving the user experience, and building stronger customer relationships.

Brennan Aw En Ze – TP068355

An interview is a purposeful conversation between two or more people, usually involving one person asking questions and the other providing answers. Interviews are typically conducted to gather information, assess qualifications, or make decisions about employment or other opportunities (Webster's New Collegiate Dictionary, 2023).

Pros of Interviews

- **Unlike resumes or cover letters, interviews enable a deeper evaluation of prospects.**
- **Interviewers are able to assess a candidate's personality, communication abilities, and fit with the company's culture.**
- **Interviews may foster a good rapport between the candidate and the organization, as well as a favorable first impression.**
- **Early in the hiring process, interviews can assist in identifying individuals who are not a good fit for the role.**

Cons of Interviews

- **Interviewers may generate ideas about candidates based on their own personal preferences, which can lead to subjective and biased interviews.**
- **Candidates may experience anxiety during interviews, which could impair their performance.**

- Both interviewers and candidates may find that interviews take a lot of time.
- It might not be the greatest idea to evaluate applicants with specific abilities or backgrounds through interviews, such as technical skills

6. Are there any features or functionalities that you would want to see implemented into the system?

Ans – I would like to see real time flight status updates such as flight delays, gate changes and changes in arrival times so that me and other passengers are always aware and informed.

7. Do you typically reserve flights for one way, round-trip, or multiple cities? What factors affect your decision-making?

Ans – I normally reserve one-way flights and that is mainly because of these factors such as I often change my plans at the last minute and am often unsure when my return date would be.

8. What are your opinions on the way that passenger age groups are now classified? Would you suggest any additions or modifications?

Ans – I think that for most of the age groups it is classified correctly however I have a suggestion to make regarding the senior category, which is I think that there should be subcategories to distinguish people who are in their early 60's and those who are older. This may be important to consider when customizing services at various phases of senior adulthood.

9. Regarding the age-based fare structure, what are your thoughts? Any recommendations for how to make it better?

Ans – In my opinion I think that the fare structure is solid, however I do have suggestions to help make the fare structure more beneficial not only to passengers but also to TSI. I am suggesting to introduce tailored sales and promotions for various age groups at specified times or for specific locations. This can help me and other passengers to save more money and attract more passengers for TSI.

10. Can you share your experiences with ticket cancellations or changes? Any challenges you faced?

Ans – Personally, I have had a few experiences regarding ticket cancellations and changes. One of these experiences was a challenge I faced where I was not aware about the airline updates to their cancellation and alteration rules, which then caused a lot of unwanted complications for me.

8.2 Method of Information Gathering – Questionnaires

Angelina Leanore – TP072929

Questionnaires are a combination of closed-ended questions and open-ended questions. One of the main tools used by researchers to collect data from a target audience is a series of questions presented to each participant. This makes it possible for researchers to get either qualitative or quantitative data, depending on what they want. When compared to other fact-finding techniques like interviews, this maximizes the effectiveness of your study. (Cleave, 2023)

Pros of Questionnaires

- Expanding the audience for your online quiz is fast and easy, and it may reach people all over the world.
- A lot of options for rapidly getting feedback through a website, QR code, or link.
- Less expensive than submitting a questionnaire in person because there are no out-of-pocket costs such as labour and paper with the online version.
- The ability to grant anonymity, especially when trying to poll people about sensitive topics.

Cons of Questionnaires

- Unique recipient's views on the same inquiry, which will increase the possibility that your results may become highly personal.
- Some people may choose not to answer questions they don't feel like responding to.
- Answers from respondents are not truthful.
- Respondents are likely not to bother answering questions if they believe it is not compulsory.

1. What is your age range?

- a. 17 or under
- b. 18-64
- c. 65 or over

What is your age range?

18 responses

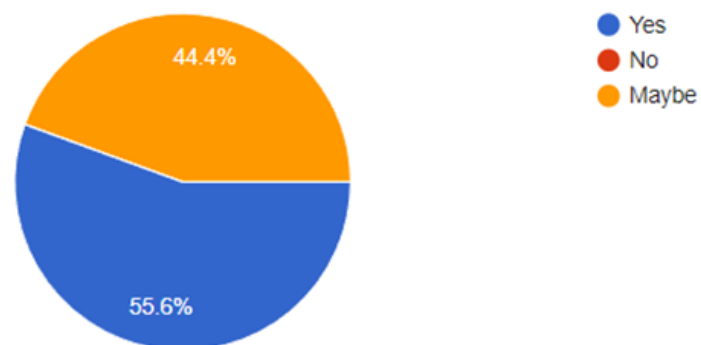


2. Is the current TSI system good enough?

- a. Yes
- b. No
- c. I have no idea

Is the current TSI system good enough?

18 responses



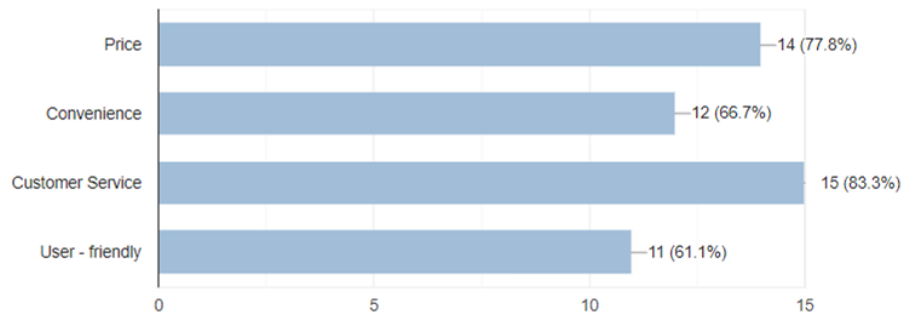
3. How important are the following factors to you when choosing a travel agency?

- ☐ Price
- ☐ Convenience
- ☐ Customer Service
- ☐ User-friendly

How important are the following factors to you when choosing a travel agency?

[Copy](#)

18 responses



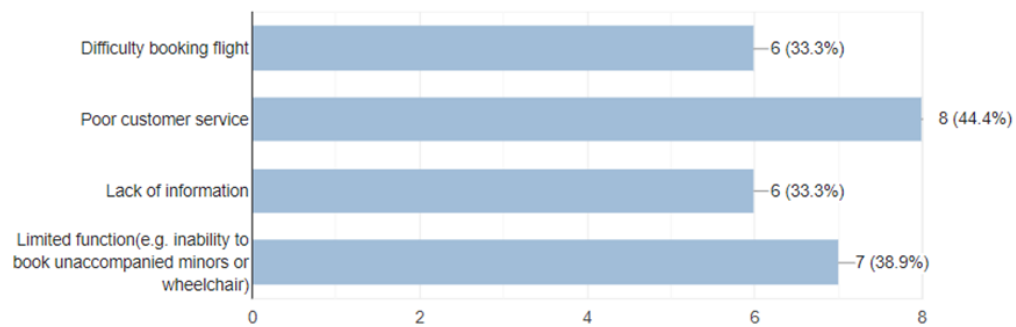
4. How often have you experienced any of the following when booking flights?

- ☐ Difficulty booking flights
- ☐ Poor customer service
- ☐ Lack of information
- ☐ Limited functionality (e.g., inability to book unaccompanied minors or wheelchairs)

How often have you experienced any of the following when booking flights?

[Copy](#)

18 responses



5. In your opinion, what is the best way to make a reservation or booking?

- Online booking
- In-person booking
- Travel agent booking
- Other.....

In your opinion, what s the best way to make a reservation or booking?

18 responses



Tay Jun Long – TP074666

In a commercial setting, questionnaire results can be essential since they provide actionable insights and inform decision-making processes. Businesses can acquire a thorough insight of their consumers' needs, preferences, and levels of satisfaction by analysing the data collected through surveys. This information can be used to guide product development, marketing initiatives, customer service enhancements, and general business operations. They can also assist in measuring consumer satisfaction and identifying areas for development in order to increase client loyalty. Furthermore, questionnaire data can help with market research, competitive analysis, and detecting trends and patterns that influence business performance. (Lindemann, N ,2023)

Probs of Questionnaire

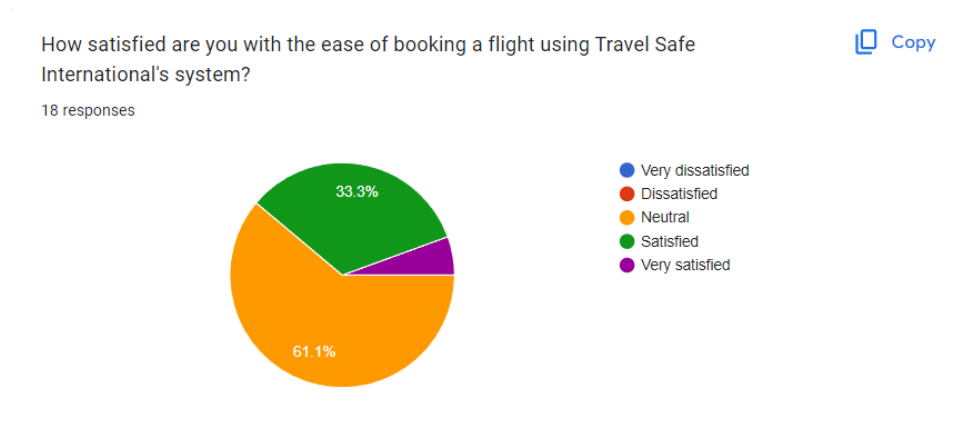
- **Economical** -Questionnaire are less expensive than face-to-face surveys performed on-site, over the phone, or by mail. This is due to the fact that there is no expenditure related to work, paper, printing, phone, or mailing. (Prasanna,2023)
- **Adaptability for respondents**- Internet-based surveys allow respondents to complete the questionnaire when and when they want, which can enhance response rates. (Prasanna,2023)
- **Respondent obscurity** - Internet-based questionnaires reduce the risk of human error and enable automated validation of data. (Prasanna,2023)

Cons of Questionnaire

- **Less and Poor Responses** - Questionnaire may not be suitable for less educated or excessively busy individuals who question the researcher's objectives, devotion, and responsibilities. (Prasanna,2023)
- **Unreliability** - Questionnaires may be unreliable due to insufficient or infinite responses, whereas interviews allow for question rephrasing. (Prasanna,2023)
- **Reaction from Improper Representative Section of People** - Surveys may not be representative of the entire population as some significant segments may not respond. (Prasanna,2023)

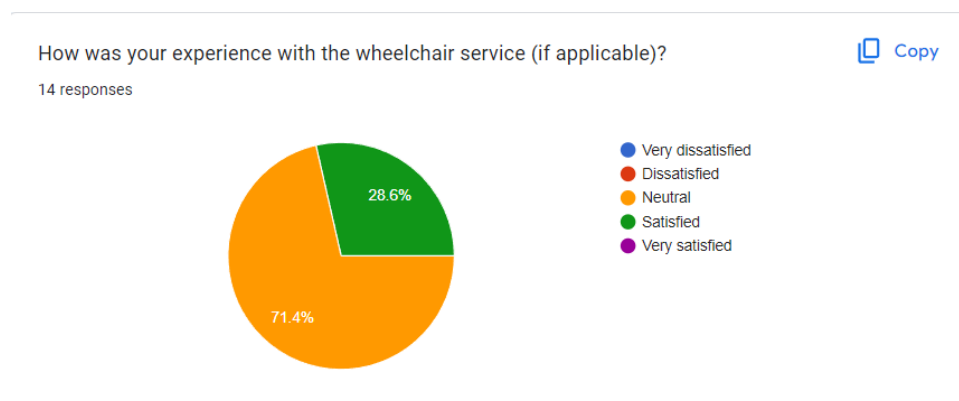
6. How satisfied are you with the ease of booking a flight using Travel Safe International's system?

- Very dissatisfied
- Dissatisfied
- Neutral
- Satisfied
- Very satisfied



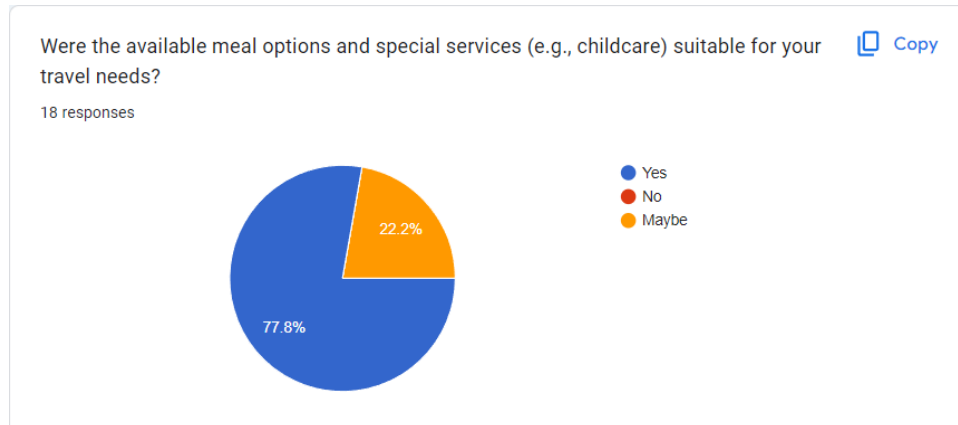
7. How was your experience with the wheelchair service (if applicable)?

- Very dissatisfied
- Dissatisfied
- Neutral
- Satisfied
- Very satisfied



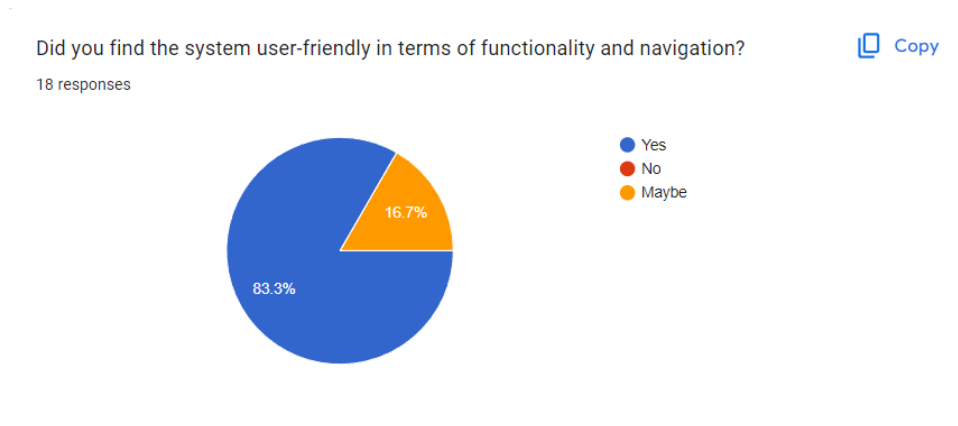
8. Were the available meal options and special services (e.g., childcare) suitable for your travel needs?

- Yes
- No
- Maybe



9. Did you find the system user-friendly in terms of functionality and navigation?

- Yes
- No
- Maybe



10. Do you have any additional feedback or suggestions for improving the Travel Safe International booking system? (Not Mandatory)

Do you have any additional feedback or suggestions for improving the Travel Safe International booking system?

10 responses

no

none

I wish TSI booking system can be better as in they can come out with more Evouchers

improve customer service

No

So far no i think.

Nope

None

Terence lim Dao Liang - TP073243

The observation method of information gathering involves keeping an eye on participants in a particular setting or scenario at a specific time of day. In essence, researchers watch how the subjects of their studies, or the surrounding environments behave. Studies of this kind can be participant, natural, or controlled (Mbachu, 2021).

When a researcher employs a standardized procedure to observe subjects or the surroundings, it is known as controlled observation. When people are observed in their natural environments, it's known as natural observation. Through participant observation, the researcher integrates themselves into the group under investigation.

Mbachu, C. (2021, March 6). *6 methods of data collection*. Medium.
<https://callygood.medium.com/6-methods-of-data-collection-e946e993b930>

Pros:

-By observing people in their natural environments, researchers can examine interactions, behaviors, and phenomena without resorting to artificial manipulation. For example, by observing kids in the classroom, we can see how they learn

- It gives researchers a deep, contextual understanding of the topic, enabling them to capture the subtleties and complexity of real-world scenarios. Observing customer behavior in a retail setting allows us to comprehend how their decisions are made.

- Since participants are not relying on memory or self-reporting, observation reduces the possibility of response bias. For instance, keeping an eye on workers' work habits without letting them know so they don't change.

Cons:

- The data gathered may be impacted by the biases and interpretations that observers bring to the table. A researcher might unintentionally concentrate more on actions that support preconceived notions.

- Viewers might inadvertently concentrate on particular elements, overlooking crucial details or failing to get the full picture.

For instance, observing a classroom and ignoring peer interactions in favor of student-teacher interactions alone.

- It can be unethical to watch someone without their permission, especially if it involves private or delicate behavior. For instance, spying on people in public places without their consent.

- Observational studies can be labor-intensive and resource-intensive, depending on the research environment. Observing a community over an extended period of time to comprehend cultural customs.

1) Does passenger commonly travel in a group exceeding the booking limit.

Ans: Yes, Passenger travelling in a friend group or family usually have more than 4 members in their group.

2) Is customer affected by sudden flight changes

Ans: Yes, most customer is not pleased with flight changes especially one that is sudden and without pre-notification

3) Would customer get confused about pricing and details of services

Ans: Yes, without a platform to provide complete information, customer often get confused about the pricing and services.

4) Is minor able to get on their plane and find their seats?

Ans: No, most minor needed a grownup to guide them through the boarding process or else there is a risk of them getting to the wrong plane or the wrong seats.

5) Can customer on wheelchair move around easily on the plane?

Ans: No, due to the restricted space on the plane, customer with wheelchairs have a hard time to move from place to place

Eraliev Suimonkul - TP068888

The techniques used to conduct research and collect data are known as research methodologies. The techniques used should match the kind of data required and the intended results. Choosing the appropriate instruments for gathering and evaluating data is essential to the research process. (Voxco, 2022)

Three sorts of research methodologies are distinguished, each with a distinct function. These groups are based on the methods used to get the data:

- Numerical or Textual Data:
Quantitative and Qualitative Method
- Experimentation or Observation:
Experimental and Descriptive Method
- Data Collection Source:
Primary and Secondary Method

Qualitative and Quantitative

Qualitative method

Textual material that offers explanations and insights in the respondents' own words is included in qualitative data. This sub-type includes unstructured inquiries that provide respondents complete freedom to express their ideas.

Pros

- In-depth: Respondents are free to delve deeply into explanations and follow-ups that help researchers pinpoint benefits and drawbacks.
- Real and flexible: Since there are no predetermined response options, the responder bears the entire burden of providing an answer. The quantity of respondents is irrelevant if the participants in the study reflect the opinions of the target group and sampling bias is prevented.

Cons

- Difficult to analyze: Analyzing qualitative information is a meticulous process that requires close attention to detail, listing important insights from individual responses.
- Highly subjective: Qualitative answers vary depending on the length and type of answer. Listing a standard synopsis that provides an overview of each answer is tedious, especially when dealing with large samples.

Quantitative Methods

This involves pre-planned questions that provide numerical answers to the questions. This method typically describes the "what" in research. Quantitative methods help discover trends and patterns in customer feedback. It will also help you lay the initial groundwork you need to conduct in-depth research.

Pros

- Easy to summarize: Numerical data can be easily analyzed using statistical analysis tools that provide an overall summary of respondents' answers.

-Purpose: Questions in this method have limited answer choices, making it easy to create standardized answers with little room for variation.

Cons

-Lacks insights: Quantitative methods cannot further explain why respondents selected their answers. Due to the limited nature of such studies, researchers should supplement their studies with open-ended comments that provide insight into respondents' thinking.

-Requires expertise: Although there are tools available to put quantitative data into perspective, the selection and application of these specific tools requires a certain level of skill to perform the analysis properly.

Descriptive and Experimental

Descriptive Method

Descriptive methods are based on collecting data without giving in or intervening.

This type of description is typically used to describe a characteristic or phenomenon based on the viewer's perspective.

Pros

-Big and Fast: Descriptive data can be collected from many respondents using the right mechanism that maximizes coverage and increases the speed of dissemination and collection.

-Coherent Mechanism: This research method collects both qualitative and quantitative data and can be used as a stand-alone data collection method.

Cons

-A cause-effect relationship cannot be established: cause-effect relationships are difficult to emphasize with correlational studies.

-Limitation: Case studies, which are a type of descriptive research, may limit participants to specific individuals who are appropriate for the case in question.

Experimental Method

This strategy is centered on utilizing factors to consider connections in a controlled environment. Autonomous factors are controlled to ponder their effect on the subordinate variable.

Pros

- Clarifies cause and impact relationship: It may be a fastidious ponder that clarifies the relationship between the subordinate and free factors in an exact manner.
- Specific comes about: The results of the ponder are measured precisely with respect to what the investigate organization is seeking out for and the factors can be impacted in like manner.

Cons

- Inquire about predisposition: The influence over the investigation can lead to window dressing and the analyst to skew the comes about in a certain direction.
- Time-consuming: Making an environment that encourages the exact consideration of factors is a prolonged preparation. Included in that numerous considerations cannot be carried out in a manufactured environment due to their unreasonable nature.

Primary and Secondary

Primary Method

This strategy collects first-hand information specifically from the respondents or the target bunch. Interviews center bunches and studies are fairly a few of the strategies appropriate for this instrument.

Pros

- Upgraded data: Information collected utilizing essential strategies is based on upgraded advertising data and makes a difference in handling energetic conditions.
- Way better control and customization: Essential information collection is tailor-made to suit the needs of the organization that's conducting it. Distinguishing torment focuses and picking up extra data gets to be simpler when the respondent is managed on a real-time premise.

Cons

- Expensive: Essential information collection requires the organization to contribute to each angle of the investigation and so, is generally expensive.
- Cannot be performed by everybody: The different sorts of essential strategies cannot be executed by untrained individuals. Experts who specialize in progressed information collection and analytics can as it were be depended upon to convey on the conclusion destinations.

Secondary Method

Secondary information employs existing data collected by other analysts to reply to inquiries about questions. The nature of the reports that the organization employs for gathering data depends on the inquiry about them.

Pros

- Saves time and money: Companies do not require to contribute to looking over information that has as of now been collected and reported by other platforms.

- Expanded source: Availability to information focuses from numerous areas and time periods makes comparison and drift investigation doable, which improves the quality of choices.

Cons

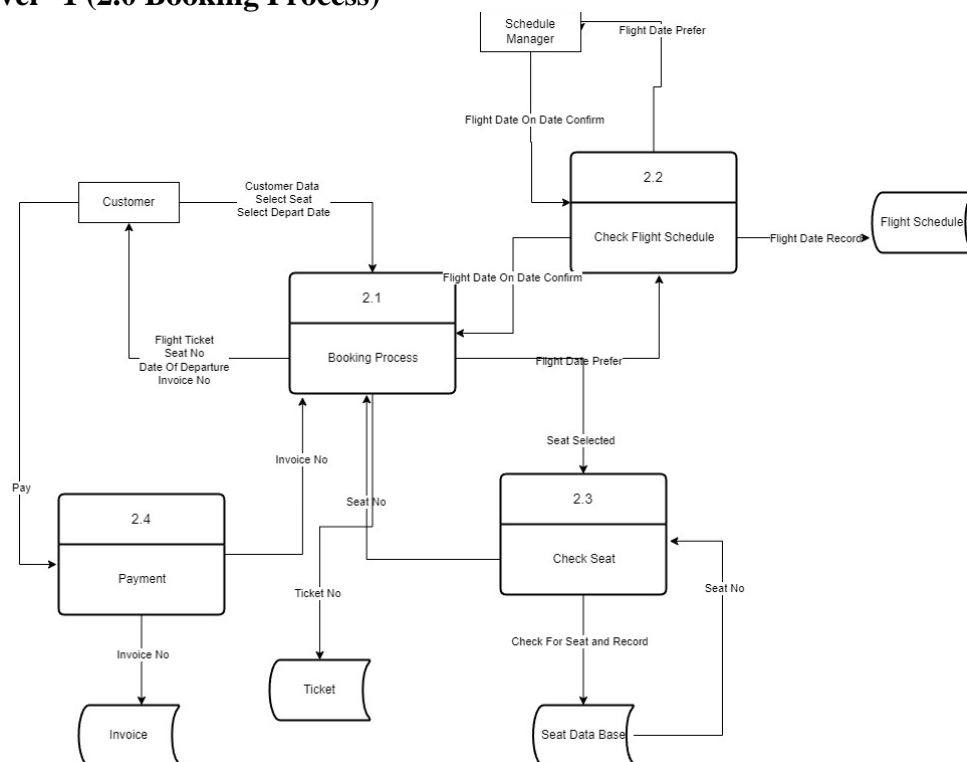
- Information doesn't cater to researchers' needs: After you utilize information collected by other analysts it is frequently not present within the way you wish for your investigate objective. For e.g., say you need to gather information on the versatile utilization of senior citizens. You will consider the age 70 and over for you inquire about, but the data accessible may be based on ages 50 and over.

- Not real-time: The information may be obsolete since it has been collected within the past. After you are conducting showcase inquiry about, auxiliary information can change your objective since showcase patterns alter as often as possible.

9) Design

Tay Jun Long (TP074666)

DFD Level –1 (2.0 Booking Process)



External Entity	
Name	Customer
Description	Customers enter their information, location, select seat and select date.
Input data flow	Flight Ticket Seat No Date of Departure Invoice No
Output data flow	Customer data Select Seat Select Departure Date

Process	
Name	Payment

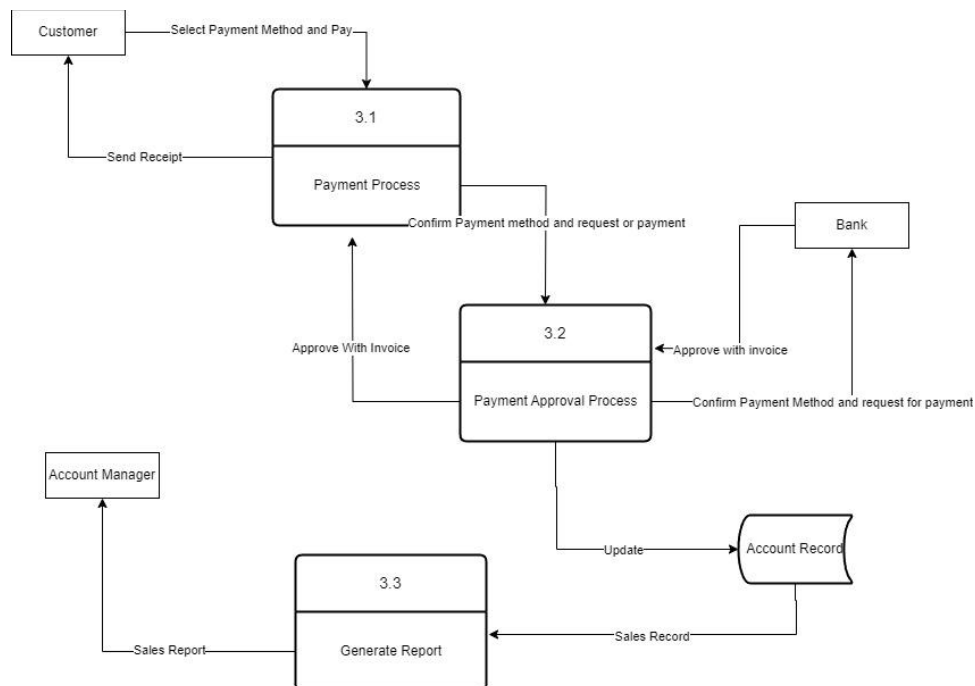
Description	A process of payment and issuing invoices.
Input data flow	Pay
Output data flow	Invoice No

Data Store	
Name	Seat Data Base
Description	Check seat for available, confirm seat number and record seat selected.
Input data flow	Check for seat and record
Output data flow	Seat No

Data flow	
Name	Seat Selected
Description	Customer selected seat
Source	Check seat available
Destination	2.3 Check Seat
Data structure	Seat No

Angelina Leanore (TP072929)

DFD Level –1 (3.0 Payment Process)



External Entity	
Name	Customer
Description	Customers select payment method and pay for the ticket
Input data flow	Send Receipt
Output data flow	Select payment method and pay.

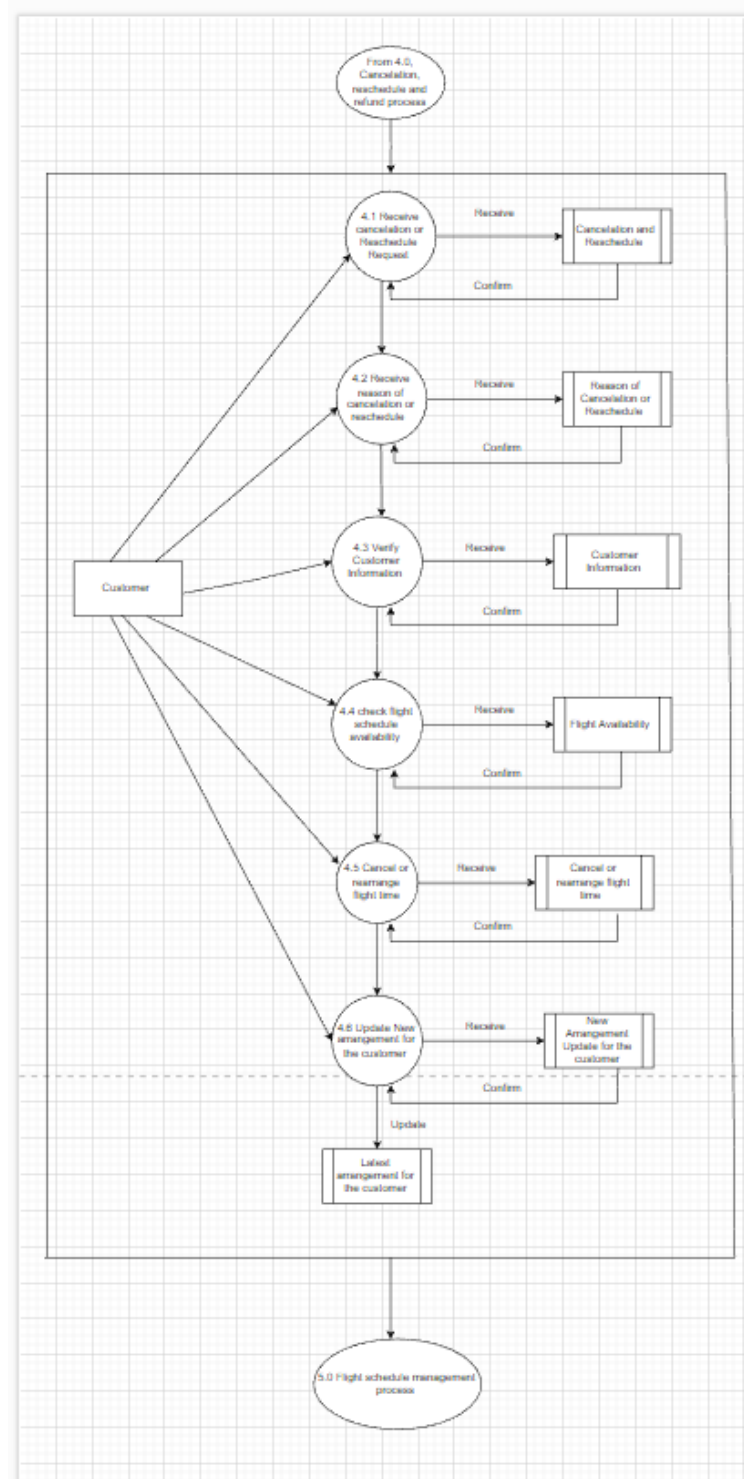
Process	
Name	Payment Approval Process
Description	A process that transaction approve by bank
Input data flow	Confirm payment method and request for payment approval
Output data flow	Approve with invoice

Data Store	
Name	Account Record
Description	Record every payment record from customer.
Input data flow	Update
Output data flow	Sales Record

Data flow	
Name	Sales Report
Description	Generate Sales Report to Account Manager
Source	Generate Sales Report
Destination	Account Manager
Data structure	Sales Report Payment Record

Foo Yu Hen (TP069106)

DFD Level- 1 (4.0 Cancelation, reschedule and refund process)



Data Dictionary

Entity

Object	Customer
Description	- Represents an individual who uses airlines services.
In-flow	<ul style="list-style-type: none"> - When making a reservation, the customer provides personal information. - Provides relevant booking data and request types for requesting cancellation, reschedule, or refund requests.
Out-flow	<ul style="list-style-type: none"> - Receives notifications confirming cancellation, rescheduling, or reimbursement status. - Receives notification on the status of processed refunds.

Process

Object	Cancellation, reschedule and refund process
Description	- Manages flight service cancellation, reschedule, and refund requests.
In-flow	- Customers' requests for cancellation, rescheduling, or reimbursement are received, together with pertinent booking data and request categories.
Out-flow	<ul style="list-style-type: none"> - Customers are sent confirmation messages after a successful cancellation or reschedule. - The updated flight details stored in to the file.

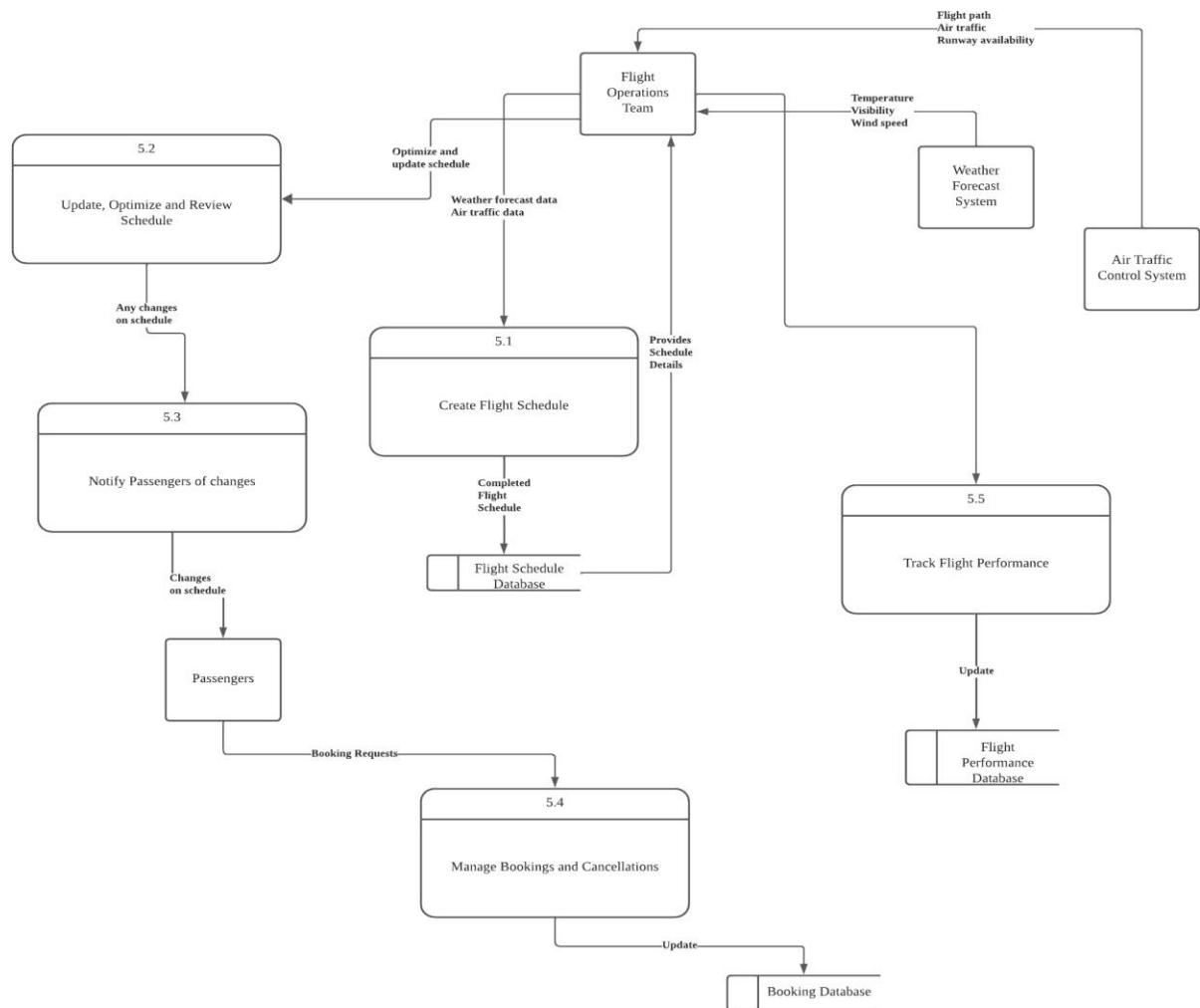
Data store

Object	Customer Information
Description	- Stores data and information on clients who use airline services.
In-flow	<ul style="list-style-type: none"> - Customer cancellation, rescheduling, or refund requests are updated. - Receives and saves consumer information supplied during the booking process, such as personal information, contact information, and booking history.
Out-flow	- Updates with changes in the status of the customer's booking or refund information.

Data Flow

Object	New Arrangement Update for the customer
Description	- Booking information, such as the booking ID, flight details, and customer information.
In-flow	<ul style="list-style-type: none"> - Update Flight Schedule - Update New Flight Booking number - Update Flight seat and location
Out-flow	-

DFD Level 1 – 5.0 Flight schedule management process



External Entity	
Name	Passengers
Description	Choose tickets and request booking
Input data flow	Changes on schedule
Output data flow	Booking requests

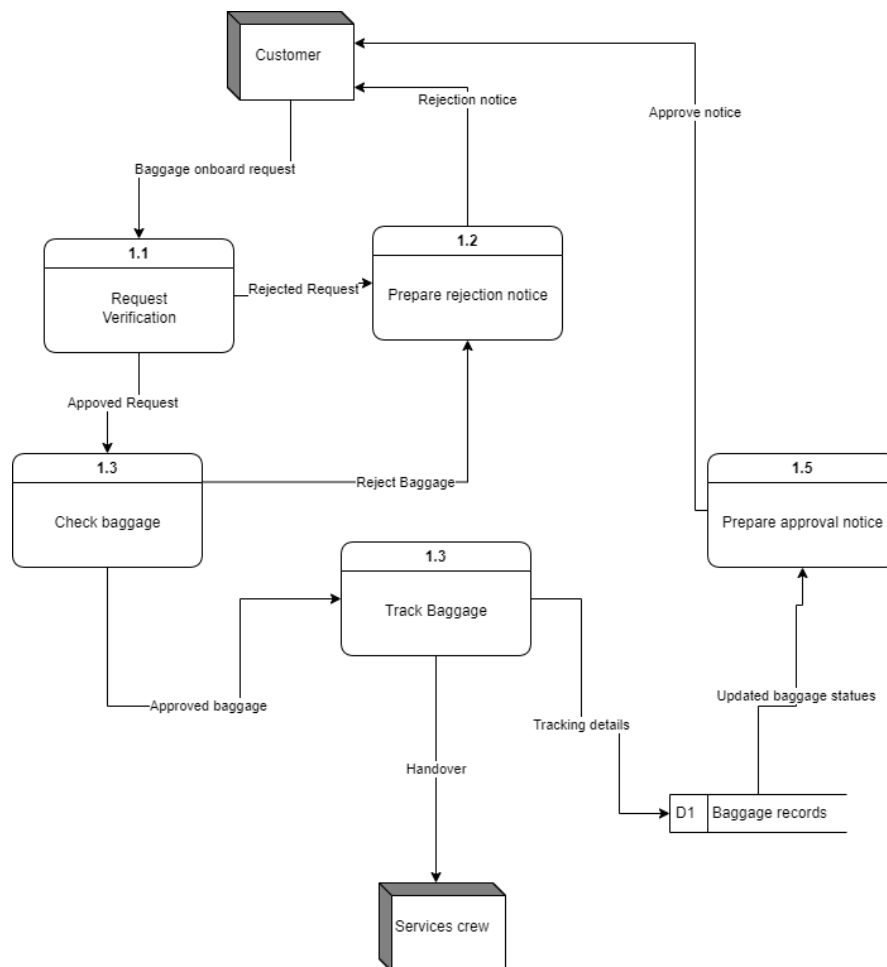
Process	
Name	Update, Optimize and Review Schedule
Description	A process that updates and optimizes flight schedule

Input data flow	Optimized and updated schedule
Output data flow	Any changes on schedule

Data Store	
Name	Flight Schedule Database
Description	Record every flight detail
Input data flow	Completed Flight schedule
Output data flow	Schedule details

Data flow	
Name	Schedule optimized
Description	Flight Operations Team optimize schedule
Source	Flight Operations Team
Destination	5.2 Update, Optimize and Review Schedule
Data structure	Date and time

Terence Lim (TP073243)
DFD level 1 – 6.0 Baggage Handling and tracking



Data dictionary

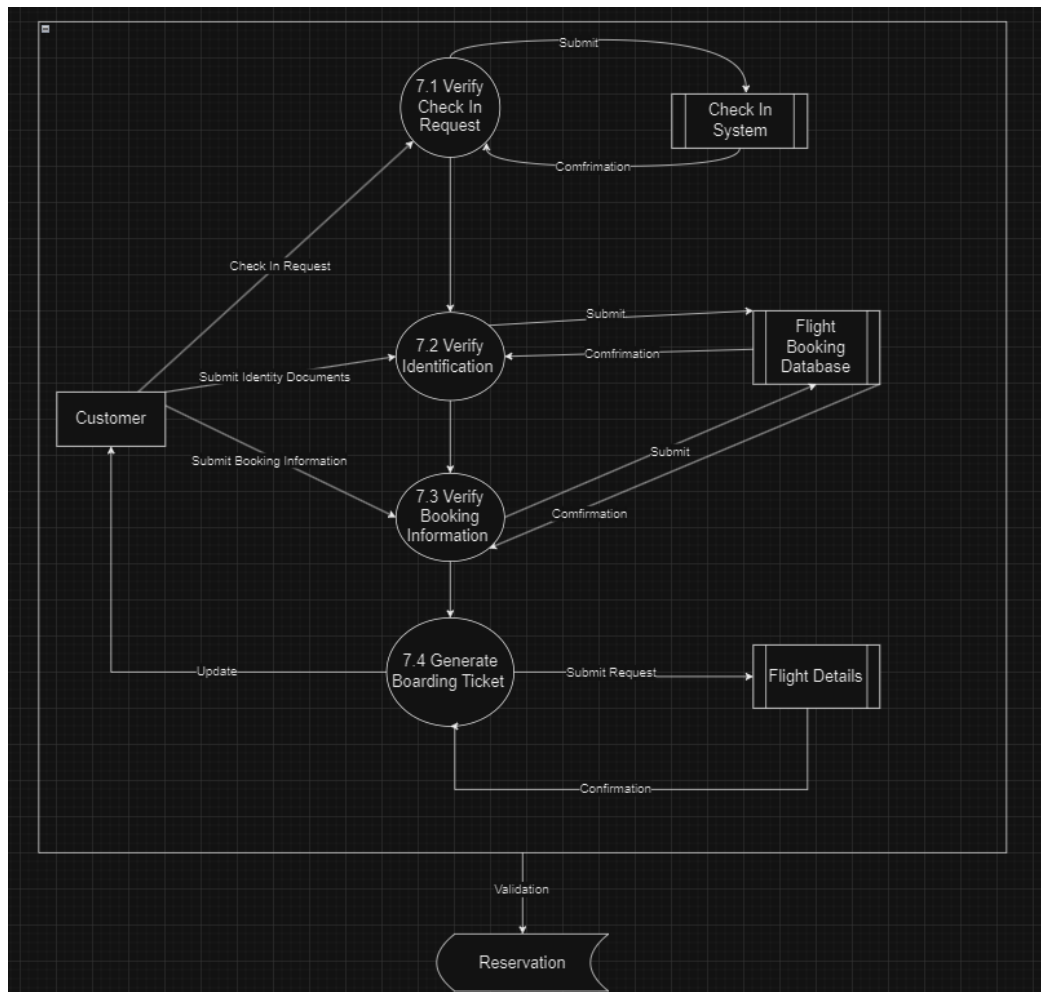
External Entity	
Name	Customer
Description	Customers submit request to get their baggage onboard the plane
Input data flow	Rejection/ Approval notice
Output data flow	Baggage onboard request

Process	
Name	Request verification
Description	Verified customer request to bring baggage onboard.
Input data flow	Baggage onboard request
Output data flow	Rejected/ Approved request
Process description	Read customer Baggage onboard request and check if customer is valid to bring luggage onboard, reject or approve the request

Data flow	
Name	Tracking details
Description	To allows the baggage to be tracked

Source	Track baggage
Destination	D1 Baggage records
Data structure	Tracking ID + Tracking statues

Data stores	
Name	D1 Baggage records
Description	Store tracking details and provides baggage statues for approval notice
Input data flow	Tracking details
Output data flow	Updated baggage statues
Data structure	Baggage records = Baggage IDs + location + Statues



Data Dictionary

External Entity	
Name	Customer
Description	Customer submits a check in request for their flight
Input Data Flow	Receives boarding ticket that contains flight details
Output Data Flow	<ul style="list-style-type: none"> - Submits Check in Request for their flight - Submits Identification Documents - Submits Booking Information

Process	
Name	7.4 Generate Boarding Ticket
Description	After going through process 4.1 to verify the passengers check in request, the system then goes through process 4.2 and 4.3 to verify identification and booking information, the system then generates a boarding ticket for the passenger

Input Data Flow	Receives verification of flight booking information
Output Data Flow	<ul style="list-style-type: none"> - Submits request to generate a boarding ticket to flight details data store - After generating it updates the customer entity

Data Flows	
Name	Update
Description	Updates customer entity with generated boarding tickets
Source	7.4 Generate Boarding Ticket
Destination	Customer Entity
Data Structure	Boarding Time + Terminal Gate Number + Flight Number

Data stores	
Name	Flight Booking Database
Description	Stores data regarding bookings made by passengers
Input data flow	Receives submitted passenger identification and booking details
Output data flow	Confirmation regarding matching passenger identification and booking details
Data structure	Passenger Identification and Passenger Booking Information

10.0 Workload Matrix

Group Component:	Angelina Leanore	Eraliev Suimonkul	Foo Yu Hen	Brennan Aw En ze	Terence Lim Dao Liang	Tay Jun Long
Introduction	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%
Problems and proposed solution	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%
Project Planning	16.67%	16.67%	16.67%	16.67%	16.67%	16.67%
Feasibility Study						
System Analysis						
Design Diagram						
Interface Design						

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