



Online Booking Application for Long-Distance Train Ticket Adapted to the Covid-19 Protocol

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Abstract

Train is favorite transportation in Indonesia. The increase in the number of passengers from year to year is proof that rail transportation supports community mobility. Therefore, services are needed to accommodate the needs of the community in ordering train tickets. Currently, the train ticket booking system can be done offline or online. Especially for the online train ticket booking system, there are still some obstacles i.e., during the Covid-19 pandemic, a train ticket booking information system is also needed which must be adjusted to health protocols to minimize the spread of Covid-19 during travel by train, starting from the ticket booking process. The system development methodology used is Scrum, this methodology is a framework that applies the stages of planning, analysis, design and implementation to build or develop software where work is divided into time frames called sprints. The long-distance train ticket booking application has been able to minimize the accumulation of passengers in exchanging tickets at the train station platform.

Keywords: booking tickets, covid-19, trains, scrum methodology

1. Introduction

Nowadays, where advances in information technology are growing very rapidly, innovation and creativity are needed that can accommodate various needs in society. The field of transportation industry is one that is needed by the community, both land, sea and air transportation (Junaidi et al., 2020).

Indonesia's geographical location with the high mobility of the Indonesian people certainly requires an effective and efficient transportation system. In this case, services that support the transportation system are needed. One of these services is booking tickets, especially booking train transportation tickets (Khairunnisa et al., 2019).

The rail transportation services is needed by the community (Nasikhah, 2019). Indonesia is also supported by the number of tourist attractions that are not small in number. The government also continues to encourage the tourism sector in Indonesia to continue to be improved, so that the number of tourists can increase (El Ahmady et al., 2021). One of the supporting sectors is adequate transportation and can reach these tourist attractions such as train services. But at the beginning of 2020, various parts of the world, including Indonesia, were experiencing the spread of a virus outbreak, namely the Covid-19 virus. This epidemic has more or less changed people's habits in everyday life. In addition to threatening the health sector, the epidemic also seriously threatens the economic, tourism and transportation sectors (Affinito et al., 2020). As time goes by, the Covid-19 virus outbreak in Indonesia has not subsided so far, people certainly want the need for Rail transportation services that can accommodate mobility during this Covid-19 pandemic outbreak (Gkiotsalitis & Cats, 2021).

The main problem used as the basis for making the TiketKu application is the process of ordering train tickets by passengers (Abbas, 2020)(Abhishek Nair et al., 2019). Passengers must comply with the Covid-19 health protocol and efforts to maintain passenger safety and comfort while using the train during the Covid-19 pandemic (Zhao et al., 2019).

2. Research Method

The research method used is the scrum methodology. The Scrum methodology focuses on the systematic structure of research. Figure 1 is a flowchart of the research flow chart. There are 3 stages in the Research Flowchart as follows.

2.1. Stages of Research

At the initial stage of this research is divided into several stages, namely: survey, determining the topic, determining the problem formulation, research objectives and scope, research objectives and scope, study of literature and data collection.

a. Survey

At this stage the researcher conducts a survey to collect some of the initial data needed in the study. The survey carried out is in the form of a questionnaire, where the questionnaire given is to emphasize the interest of the community in the research that will be made.

b. Determining the Topic

The next step is to determine the research topic. Based on data collection at an early stage, it was determined that the topic to be studied was a long-distance train ticket booking information system service that was adapted to health protocols during the Covid-19 pandemic.

c. Determining the Problem Formulation

Based on the topic that has been determined, the next step is to determine the formulation of the problem related to the object of research, namely the long-distance train ticket booking information system service that is adapted to health protocols during the Covid-19 pandemic.

d. Research Objectives and Scope

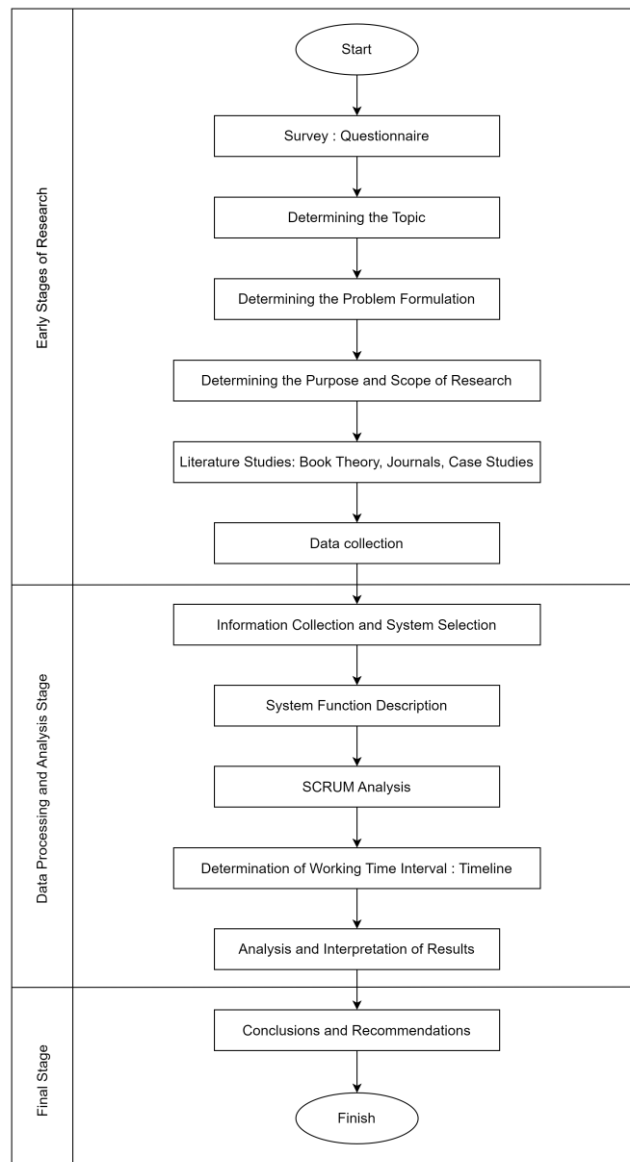
After formulating the problem, the next step is to determine the research objectives to determine the steps that the researcher will take next in order to achieve the research objectives. While the scope of research is determined to provide clear boundaries in the implementation and preparation of research.

e. Study of literature

The literature study used through theories taken from several books, previous journals and case studies related to the topics and problem formulations that have been determined in the research. In addition, to see the updates, several journals from the years above the 2020s were taken.

f. Data collection

Data collection in a study serves to obtain information needed in research. The data collection stage can come from interviews, questionnaires, observations, and document studies (Fauzi & Pradipta, 2018; Patel & Patel, 2019).



Source: Research Result

Figure 1. Research Flowchart

2.2. Data Processing and Analysis Stage

This second stage is also divided into several parts as follows:

a. Collection and System Selection

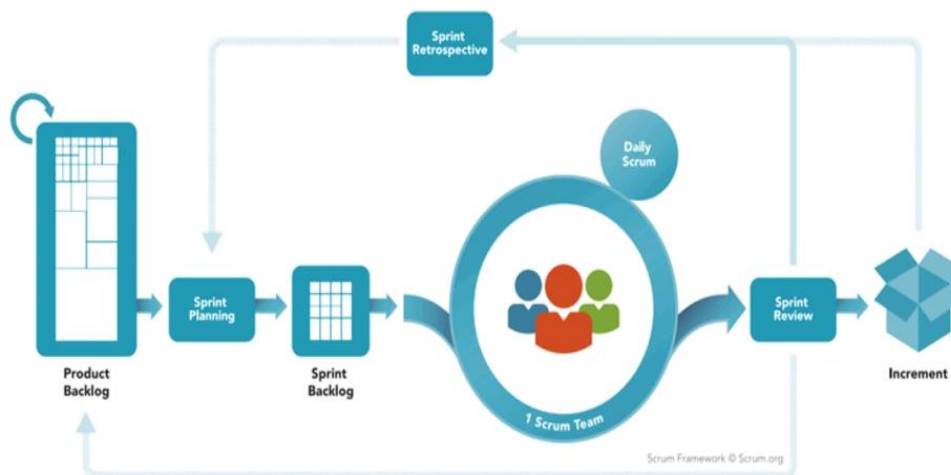
This process is used to decide what technology to use. Is this application designed specifically for mobile, desktop only, or both? Database technology must also be ensured according to needs and budget, do you want to use Oracle or SQL Server? The operating system can be Windows or Linux, and data storage can be on-premises or using cloud services.

b. Function Description

This stage focuses on explaining the system functions in the application in detail and thoroughly.

c. SCRUM Analysis

The Scrum methodology is a framework that applies the stages of planning, analysis, design and implementation to build or develop software (Mutawali et al., 2022).



Source: Mutawali et al (2022)

Figure 2. Scrum Framework

The Product Backlog is what features are needed to meet the needs of the owner. Sprints Planning is a collection of work activities needed in determining application development plans and application development (Setiawan & Handriani, 2019). The Sprint Backlog is a process carried out to discuss with the Owner to find out the needs of the system to be built or developed. This process is usually a core process in application development because in this process the Owner provides information on problems that exist in his organization to be resolved. Daily Scrum is an activity that is carried out routinely every day such as meetings to convey problems or progress reports related to the development of application development and application development, and usually these meetings are held for more or less 15 minutes. Sprint Review, this is done to check the product being built to find out the problems faced by the team in the field. In addition, this sprint review also pays attention to the features requested by

the Owner whether they are in accordance with their needs or still not in accordance with the needs of the Owner (Septian et al., 2020).

d. of Working Time Interval

The determination of the time interval for this research is in the form of a timeline. The timeline itself is a form of the time span for each activity in the research.

e. Analysis and Interpretation of Results

Analysis is the process of simplifying data or information into a form that is easier to read and interpret which is further classified based on the difference. Interpretation must draw understanding from the classified data.

2.3. Final Stage

This stage is the final stage in the form of conclusions and suggestions from the research object that has been carried out, serves as a reference to measure the results and objectives achieved through research.

3. Results and Analysis

The following is the application of the scrum methodology to the online long-distance train ticket booking information system service that is adapted to the Covid-19 protocol.

3.1. Menentukan Product Backlog

Determining the Product Backlog as shown in Table 1.

Table 1. Product Backlog

No.	Backlog Item	Description	Priority	Estimated Time (Hours)
1.	Users	This module is used to manage TiketKu application users.	High	30
2.	Ticket	This module is used to search for ticket types according to user needs.	Very High	35
3.	Seat Selection	This module is used to select seats.	High	25
4.	Station	This module is used to view the destination station and the	High	30

No.	Backlog Item	Description	Priority	Estimated Time (Hours)
		departure station also serves to perform CRUD data for the admin.		
5.	PT Train	This module is used to view the train class and train name.	High	30
6.	Departure	This module is used to manage departures.	High	30
7.	Payment method	The module used for the user to select the desired order payment method.	High	25
8.	Carriage	The module used to select the carriage that the user wants.	High	25
9.	Seat	The module used to manage the seats in each carriage.	High	30
10.	Health Proof	Module used to verify health evidence that has been filled in by the user.	Very High	35
11.	Verification	This module is used for admins to verify payments and proof of health.	High	20
12.	Email Notification	This module is used to send booking codes and e-tickets via email.	High	20

Source: Research Result

3.2. Daily SCRUM Creation

Daily scrum is a review between team members where each member reports what work has been done and plans to be carried out in the future. Daily scrums must be carried out regularly and there is a maximum time limit of 15 minutes per daily scrum.

3.3. Doing Sprint Review

Sprint review is an inspection of completed tasks in the sprint between the team and stakeholders. The team and stakeholders collaborate to determine further work to increase business value by reviewing the product's potential use, timeframe, potential capabilities, and market conditions for the product.

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Keberangkatan Kereta

Nama Kereta	Kelas	Stasiun Asal	Stasiun Tujuan	Waktu Berangkat	Waktu Tiba	Harga	Aksi
Kutojaya	Ekonomi	Senen	Kutoarjo	2020-11-21 08:15:00	2020-11-21 14:55:00	Rp.100.000	<input type="button" value="Pesan"/>
Argo Parahyangan	Eksekutif	Senen	Kutoarjo	2020-11-21 13:55:00	2020-11-21 21:45:00	Rp.210.000	<input type="button" value="Pesan"/>
Brantas	Ekonomi	Senen	Kutoarjo	2020-11-21 12:15:00	2020-11-21 20:30:00	Rp.100.000	<input type="button" value="Pesan"/>

Source: Research Result

Figure 4. TiketKu Admin Dashboard

Daftar Pemberangkatan

ID	Nama Kereta	Waktu Berangkat	Waktu Tiba	Stasiun Asal	Stasiun Tujuan	Aksi
PB001	Kutojaya	2020-11-21 07:00:00	2020-11-21 13:55:00	Gambir	Kutoarjo	<input type="button" value="Gerbang"/>  
PB002	Argo	2020-11-21 21:00:00	2020-11-22 06:30:00	Senen	Tugu	<input type="button" value="Gerbang"/>  

Source: Research Result

Figure 5. TiketKu User Dashboard

3.4. Doing a Sprint Retrospective

A sprint retrospective is a self-inspection by the scrum team and a plan for improvement that will be carried out in the next scrum. The sprint retrospective is conducted with a short duration in order to identify potential improvements to be made and create an implementation plan for improving the way the Scrum team works.

4. Conclusion

Based on the results of the discussion through the Scrum method. The long-distance train ticket booking application has adapted to health protocols. Hence, it can minimize the spread of Covid-19 on the train. In addition, to adjusting the distance between passenger seats, the long-distance train ticket booking application is built to avoid the accumulation of passengers in exchanging train tickets. Passengers are required to bring proof of health that informs negative conditions for the PCR or Antigen test. In the next study, the

app will be able to adjust the distance of the passenger seat by making the seat status filled automatically after the admin adds the carriage data.

Author Contributions

Andi Nugroho and Achmad Kodar proposed the topic; Diah Asih Relawanti, Yopi Mahangga Ujung, and Rossy Yanuar Pradania conceived models and designed the experiments; Andi Nugroho and Achmad Koda analysed the result.

Conflicts of Interest

The author declare no conflict of interest.

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