

Developing a Baggage Tracking Arrival Using Mobile Application at International Airports

Bambang Wijaya Putra¹, Nurul Gupita Wardhani², Hendro Widiarto³, Nugroho Budi⁴

^{1,2,3,4} Politeknik Penerbangan Indonesia



Abstract –This study developed an android based application to track baggage arrival at international airport in Indonesia. This research was research and development. The validation of application is carried out by Information Technology experts and airport management experts, using a questionnaire. The practicality of the application was carried out at the international airport and the results of the data were analyzed. The mobile application which was declared valid by the validator with very good criteria after tested to baggage handling. Thus the baggage tracking arrival mobile application is declared applicable.

Keywords – Mobile Application, Baggage Handling, Airport Management.

I. INTRODUCTION

Decree of The Minister of Transportation Republic of Indonesia number 185 of 2015 states that every airport must have a service standard for air transport passenger (Ministry of Transportation, 2015). Airport managements must carry out airport services, one of which is providing the best service to passengers. This is expected to produce high-quality products and services that are highly competitive, so as to increase company value and public satisfaction.

Along with the rapid development of information technology and computers, the application of technology with digital systems in various fields is very useful. Airport is one of the right places for information technology applications.

Currently in Soekarno-Hatta Airport's domestic and international terminals 3 have been installed 2 monitor screens on each conveyor belt to collect baggage that are useful for showing live video closed circuit television (CCTV). This CCTV shows baggage handling live by the groundhandling crew to conveyor baggage handling system. Currently the information on baggage claim number is only in the form of displays installed in each area of the baggage claim terminal 3 arrival of the Soekarno-Hatta airport, in

fact there are passengers who find it difficult to know on the conveyor where the luggage can be find out as shown in figure 1.

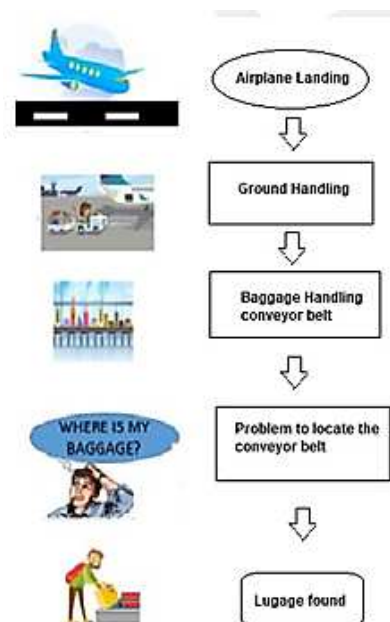


Figure 1. Currently Baggage Claims Process



Figure 2. Upcoming Baggage Claims Process

Based on preliminary research on a number of airplane passengers at terminal 3 of the Soekarno-Hatta airport using the interview method, it was still found passengers who had difficulty finding out where the passenger luggage conveyor was at Terminal 3 of the Soekarno-Hatta International Airport. With current information technology capabilities, information retrieval where luggage can be retrieved is faster through smartphone-based digital applications as shown in figure 2. But until now no one has made a smartphone application that can be used to access information on the location of luggage conveyors according to flight numbers in terminal 3 of Soekarno-Hatta international airport. Based on the above problems, to provide better service for air transport passengers in international ordomestic arrival terminal, the researcher develop a baggage tracking arrival application. This application is an android-based mobile application, which can be used by passengers with their smartphones.

II. METHODS

This research was Research and Development. R & D is a research method to produce certain products and will be tested for applicability. (Sugiyono, 2017). In this study, the implementation of the research was limited only to produce mobile application that can be used for tracking baggage arrival in terminal 3 Soekarno-Hatta International Airport.

In the process of developing this product, it will be validated by experts and will be tried out in terminal 3 Soekarno-Hatta International Airport. Validation by experts to determine the feasibility of the product that has been developed. Then the product will be tried out in terminal 3 Soekarno-Hatta International Airport. While the development steps consist of Potential and Problems, Gathering Information, Product Design, Design Validation, Design Improvement, Product Trial, Product Revision, Usage Trial, Product Revision and Mass Production (Sugiyono, 2017).

Data collection methods in this study used interviews, observations and questionnaires that were developed in the implementation of collecting and or measuring data from respondents. Data collection techniques with observation are used to observe passenger activities on the arival at terminal 3 Soekarno-Hatta International Airport. Research regarding human behavior, work processes, natural phenomena and if the respondent observed is not too large, that in observation two of the most important are the process of observation and memory (Kristiawan, 2014). Observation is a method of collecting data through observing and recording the behavior of research subjects conducted systematically (Soleh, et al, 2019).

Observations made by researchers of the passengers at the time of arrival at terminal 3 Soekarno-Hatta International Airport from the beginning out of boarding bridge until the passenger left out of the arrival terminal 3 Soekarno-Hatta International Airport. Interviews are used as data collection techniques if you want to do a preliminary study to find problems that must be examined, and also if researchers want to know things from respondents in more depth and the number of respondents is small (Sugiyono, 2017). Meanwhile according to Nazir (Nazir, 2014) interview is the process of obtaining information for research purposes by way of question and answer while face to face between the questioner or interviewer with the answerer or respondent by using a tool called an interview guide.

In conducting this study, researchers interviewed 100 passengers, from the interview results obtained 69 people need the application, 13 did not need the application and 18 very need the application. The questionnaire is one of the instruments used for gathering information that is operated in the form of questions. According to (Nazir, 2014) the questionnaire or list of questions is a set of questions that logically relates to the research problem, and each question is the answers that have meaning in testing the hypothesis,

the list of questions is made quite detailed and complete. According to Sugiyono (Sugiyono, 2017) the questionnaire is a data collection technique that is done by giving a set of questions or written statements to the respondent to be answered. Questionnaires are efficient data collection techniques if the researcher knows for sure the variables to be measured and knows what can be expected from respondents.

In this research, researchers used a questionnaire to obtain validation assessments from experts in the media, materials and instructors. Then the assessment in the form of a score will be used as an instrument to validate the baggage tracking arrival mobile application. According to (Soleh, Tobari, & Kesumawati, 2019) one of the instruments to measure a person's opinion with a score is the Likert scale. To measure quantitative analysis the answers are scored as follows:

1. Agree/always/very positively given a score of 5
2. Agree/often/positively score 4
3. Hesitation/sometimes/neutral is given a score of 3
4. Disagree/almost never/negatively given a score of 2
5. Strongly disagree/never given a score of 1

Evaluation of the results of the questionnaire conducted by researchers is as follows: 5 = Very Good, 4 = Good, 3 = Enough, 2 = Poor, and 1 = Very Poor. Next the results of the score assessment will be calculated the average value. The average results that have been calculated will be given the following criteria: a score of 4 is very good, a score of ≥ 3 and < 4 is good, a score of ≥ 2 and < 3 Good enough, a score of ≥ 1 and < 2 Not good. The instruments or devices that will be used for data collection and measurement are adjusted to the types and characteristics of the data and the respondents involved in the research.

III. PRODUCT DEVELOPMENT

When the airplane landing at Terminal 3 of Soekarno-Hatta International Airport, passengers will alight from the plane to the arrival terminal room. At the same time baggage that was on the plane was unloaded by ground handling crew and then put in a container and taken to the makeup carousel conveyor area to immediately distribute passenger luggage according to the baggage claim arrival number found on each monitor display.

Baggage tracking Arrival design application contains information about where the baggage is located and is explained through the results of the Passenger Boarding Pass scan. It's just that for now the baggage claim service

information system can only be found on the Flight Information Display System (FIDS) Screens Monitor. The existing system is integrated into a digital system in the form of an application where the results of baggage tracking arrival information contain flight number, destination, baggage Claim number and landing time.

The design by the author takes place at Terminal 3 of Soekarno-Hatta International Airport. The time used in this design during April 2019 starts at the time of the first data collection on the history and general description of Soekarno-Hatta Airport Terminal 3 until it completes the baggage tracking arrival application because it is deemed necessary to provide information to facilitate passengers in carrying out baggage.

Software is the most core part of a software system. Because hardware such as Laptops and Smartphones on Mobile will function if the software in the form of instructions has been given to him. For making a program, it is necessary to know the procedure of the program procedures so that hardware such as laptops and mobile phones can be used and functioning. As for the steps needed first before installing Android Studio on a Laptop, we must first install the Java Development Kit. Java Development Kit must be installed on a laptop that will make the process of making JAVA-based applications, but it is not required to be installed on a laptop that will run applications built with JAVA (Yuniar, 2019).

Manifest (app/manifest/Android Manifest.xml) The first manifest folder contains the AndroidManifest.xml file. This file contains components from applications such as activity, service, user permission, Content Provider, and others. Java (APP/Package name/Main Activity.java). The second folder is java, which contains command files with java extension. In the following Java to run programs that have been designed on "res". In it there is also a file class activity that is in the application. This folder contains draw able, layout, map and values. Draw able contains a collection of images that we will use in the application. Layout is a place where the application's layout design file is located. Map contains icons that we will use in the application, and values are places to store files such as colors (color declarations), strings (text data declarations that we will use for application components), and styles (contain resources about themes such as toolbar names) (Yudhanto & Wijayanto, 2017).

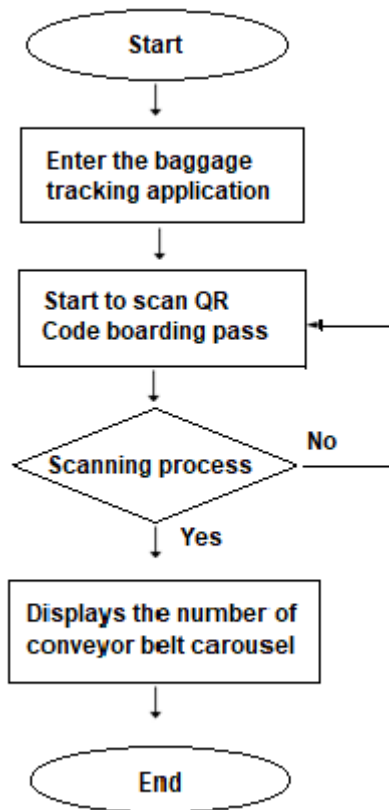


Figure 3. Flowchart Design Baggage Tracking

Arrival Flight Data Simulation with PHP (Suntoro, 2019). The Flight Information System data flow in table 1 and table 2 is the flow that is used and run in the Soekarno-Hatta International Airport branch area, the researcher can connect the flight information system data that has been received to the Baggage Tracking Application Design in Android Studio. The following flight data is a simulation as if the computer is used as a server, the data is accurate the author discusses the valid data to the Flight Information System unit (Enterprise Jubile, 2017). The following data is the data contained in the arrival terminal 3 Soekarno-Hatta International Airport Jakarta. The data presents the flight number, origin, destination, arrival time and conveyor belt number used. The used on arrival is local time.

Table 1. International Arrival Data

No	Flight Number	From	To	Time Arrival	Baggage Claim Number
1	SV820	MED	CGK	15:40 WIB	1
2	EY 474	AUH	CGK	15:23 WIB	2
3	BR 237	TPE	CGK	14:57 WIB	3
4	SQ 960	SIN	CGK	16:05 WIB	4
5	NH 855	HND	CGK	15:31 WIB	5
6	GA 821	KUL	CGK	14:56 WIB	6

In terminal 3 Soekarno-Hatta Airport, there are also domestic arrivals, but do not become one with the international terminal, domestic arrival data are as in table 2 below:

Table 2. Domestic Arrival Data

No	Flight Number	From	To	Time Arrival	Baggage Claim Number
1	GA187	KNO	CGK	15:18 WIB	7
2	GA 239	SRG	CGK	15:10 WIB	8
3	GA 111	PLM	CGK	15:59 WIB	9
4	GA 287	TNJ	CGK	15:12 WIB	10
5	GA 293	MLG	CGK	15:13 WIB	11
6	GA 177	PKU	CGK	14:49 WIB	12

Validation by Experts, Baggage tracking applications are declared valid if they meet the minimum classification of mobile application assessments. To validate the mobile baggage tracking application, it is validated by validators who are experienced and experts in their respective fields. The following describes the results of the validator's assessment of the baggage tracking mobile applications as shown in the table 3 below.

Table 3. Display of baggage tracking mobile applications

No	Statement	Value
1	Layout and display content	4,50
2	Structure and algorithm of The programming language.	4,20
3	User friendly handling	4,40
4	The language used in the display corresponds to the level of user ability	4,50
5	Language used in simple and communicative	4,50
6	Appropriateness of image captions and displayed images	4,60
Average		4,45

Based on the results of the data in the table 3, it can be concluded that the display of baggage tracking mobile applications is declared valid with an average assessment score of 4.45 (Four point forty five) and is included in very good criteria.

IV. PRODUCT TRIAL

Applications on the Laptop consist of XAMPP, Android Studio will work when the application is run. When XAMPP is in the Start position and Android Studio is

activated/running. Make sure Android on the smartphone is on mobile data on.



Figure 4. Display Baggage Tracking On Smartphone

The data that enters the Android smartphone is in the form of arrival flight data which has been translated in accordance with the order list that has been loaded into the PHP My Admin database server and will be sent via Barcode and displayed through the Baggage Tracking Arrival application.

Along with the appearance of the baggage tracking arrival data, it means that the application part of the design hardware has been connected with the software part of the Android Smartphone. That way passengers can easily get information on the location of the baggage number to be addressed.



Figure 5. Data Displays Baggage Tracking

V. CONCLUSION

Based on the results of research in the development of baggage tracking arrival mobile application are validated by experts and after implemented in terminal 3 arrival Soekarno-Hatta airport have been declared practical, thus the baggage tracking mobile application can be used as assistant to track luggage in terminal arrival both international and domestic as well.

REFERENCES

- [1] Enterprise Jubile. (2017). *PHP KOMPLET All Basic knowledge to master PHP is in this book*. Jakarta: PT. Elex Media Komputindo.
- [2] Kristiawan, M. (2014). A Model for Upgrading Teachers' Competence on Operating Computer as Assistant of Instruction. *Global Journal of Human-Social Science, Volume 14 Issue 5 Version 1.0*, 43-55.
- [3] Nazir, M. (2014). *Metode Penelitian (Research Methode)*. Bogor: Ghalia Indonesia.
- [4] Soleh, A. M., Tobari, & Kesumawati, N. (2019). Development of Practical Manual As A Learning Media for Simulator Aircraft Rescue and Fire Fighting. *International Journal of Scientific & Technology Research*, 8(10), 523-526.
- [5] Sugiyono. (2017). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, kualitatif dan R&D (Educational Research Methods Quantitative, qualitative and R&D approaches)*. Bandung: Alfabeta.

- [6] Suntoro, J. (2019). *Data Mining Algorithms and Implementation with PHP Programming*. Jakarta: PT. Elex Media Komputindo.
- [7] Yudhanto, Y., & Wijayanto, A. (2017). *Easily Create and Do Business with Android Applications*. Jakarta: PT. Elex Media Komputindo.
- [8] Yuniar, S. (2019). *Collection of Java Web Programs*. Jakarta: PT. Elex Media Komputindo.