Monitoring Information System of Covid-19 Cases in Dago, Bandung, Indonesia

E S Soegoto*, M R P Setiawan**, Q A Baihaqi***, T D Pahlawan**** and T V L Gaol*****

*Departemen Manajemen, Universitas Komputer Indonesia, Indonesia

,*Departemen Manajemen Informatika, Universitas Komputer Indonesia, Indonesia

****Departemen Ilmu Komunikasi, Universitas Komputer Indonesia, Indonesia

*****Departemen Perancanaan Wilayah dan Kota, Universitas Komputer Indonesia, Indonesia

*****Corresponding Author : theresia@email.unikom.ac.id

ABSTRACT

The *Orang Dalam Pengawasan* (ODP) and *Pasien Dalam Pegawasan* (PDP) Covid-19 monitoring system in the Health Service task force in Dago area is a system that monitors and records people who are indicated to be affected by the Covid-19 disease. *Orang dalam Pengawasan* means "people under monitoring" in Bahasa Indonesia while *Pasien dalam Pegawasan* means "patients under surveillance". To support the ODP and PDP Covid-19 monitoring system, an application is needed that can assist in the monitoring process in the Health Office task force in the Dago area through the utilization of Android-based technology. This research aims to help the task force not be late in reporting the number of ODP and PDP to the Government of West Java Province. Moreover, it also aims to avoid differences for data between the public health center and the Health Service task force in the Dago area so that the results of this study are in the form of information about the total findings and monitoring of ODP and PDP Covid-19 every day through the Android application. This research used a descriptive qualitative method. The results show that the application could help the task force in reporting the number of ODP and PDP to West Java Province. In the ongoing system, when carrying out the monitoring process, the task force always contacts the health centers in Dago

via telephone or WhatsApp for the data collection and reporting process to not be well computerized. It causes delays in reporting data to West Java Province. Problems also occurred with the amount of data due to the absence of a data closing system, which resulted in reports on the number of daily ODP and PDP Covid-19 data that were always differences between the public health center and the Health Office. In conclusion, this information system could help the reporting process.

INTRODUCTION

Covid-19 is caused by the SARS-Cov-2 virus is a world health problem because it is spreading rapidly (World Health Organization (WHO), 2020). The local government carried out efforts to reduce the number of cases by reducing crowds in their daily activities. It was based on recommendations and suggestions from the expert team to reduce the number of cases added to minimize contact between the communities. Moreover, if there are patients who are positive for Covid-19, special isolation is needed to reduce the possibility of transmission (Niud & Fu, 2020; Hellewell et al., 2020) In recording positive data on the Covid-19 case, the government certainly needs technology to store this data to be used as information. Therefore, the role of information systems is needed in this case (Berlilana et al., 2018; Jacob et al., 2019). To assist the role of the government in determining optimal policies and information systems, various media is needed that make the Covid-19 information center accessible to the wider community (Shiferaw et al., 2017).

Previous research has studied the design of an information portal based on the Geographic Information System (GIS) to monitor positive cases of Covid-19 and play a role in global decision-making. This study was tested on South Korea as the research object (Rezaei et al., 2020). Another study examines the possible application of Internet of Things (IoT) in fighting the Covid-19 pandemic. The design carried out and the concept that needs to be mapped in fighting a pandemic (Sharma et al., 2020). There are also studies examining how information technology can help patients' recovery process after being infected with the Covid-19 virus. Hence, it cannot be implemented directly because of the limited certainty of the characteristics

of the Covid-19 virus (Lin & Wu, 2020; Vafea et al., 2020). However, from various studies that previous researchers have conducted, there has been no research that discussed the design of data center information system for regional-scale Covid-19 case and can make information portals and valid sources from the government.

This study aims to provide a design for an information system of data collection for Covid-19 cases in a city. The research method used in this research was descriptive analysis with a qualitative approach. Meanwhile, developing information systems using an object-oriented approach with the System Development Life Cycle Prototyping. The results show that the development of information systems can provide actual information for local government and society.

METHOD

The method used in this research was descriptive analysis and used a qualitative approach and prioritizes the measurement of a problem for developing an information system. In system development, object-oriented development methods are used with the prototyping development method. Therefore, the design produced in this study is a grand design for further development by adjusting the needs and demands of users, in this case, the government. The following is an overview of the prototyping method used in this analysis.

First, User Requirement Identification. This process is used to collect data regarding information system users' needs, usually through direct observation to the intended place. Second, create a Prototype. After the needs analysis is carried out, a prototype is made directly based on the previous data collection results from these results. At this stage, it is still an initial prototype of the information system to be used as material for discussion again with the user. Third, Testing the Prototype. After the prototype is finished, the developer will discuss with the user and test the results of the early stages of manufacture whether they are appropriate or still need improvement. Next, fix the Prototype. When there is an evaluation or input from the user side, the developer needs to improve according to user requests. Last, Improving the Prototype. If the prototype is ready and according to user needs, then the next step is only to develop from

the information system that is already running. Development can be done by adding features, display interfaces, and others (see Figure 1).
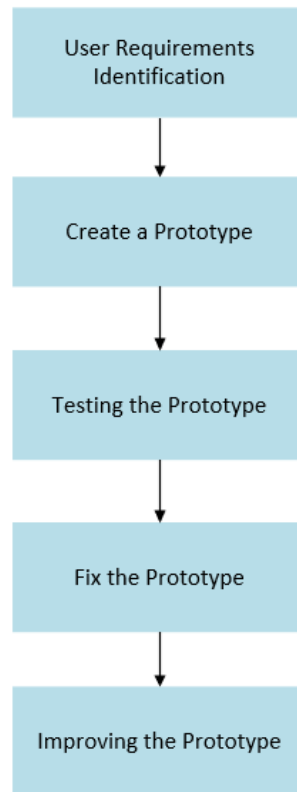

Figure 1 The research was located in Sukajadi Street

RESULTS AND DISCUSSION

The COVID-19 SIG was designed using a prototype method consisting of Requirements Analysis, System Design, Coding, Testing, and Implementation (Seng & Jamil, 2020).

System Requirements Analysis Stage

Based on the System requirements analysis, it requires a laptop with Windows 10 operating system specifications to run this system. The system requires a hard drive to install the applications needed, such as MySQL, sublime text 3, and chrome in order to run optimally. The purpose of these applications is to analyze and identify problems to produce an idea and initial ideas and system design concepts (see Figure 2) (Seng & Jamil, 2020).
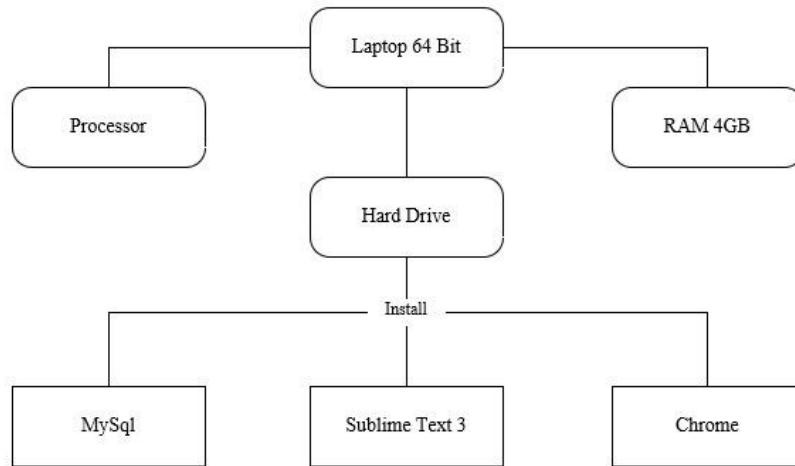
Figure 2 System requirements analysis

System Design Stage

System design simplifies production system design, which observes significant changes in the object of research. Then, the initial evaluation phase presents significant challenges to the use of simulated applications (Flores-garcia et al., 2018). This stage aims to meet user needs for system development geographic information to detect the spread of COVID-19 in Dago. Then, the admin made a system design in the form of intended use to access it. The case diagram is shown in Figure 3.
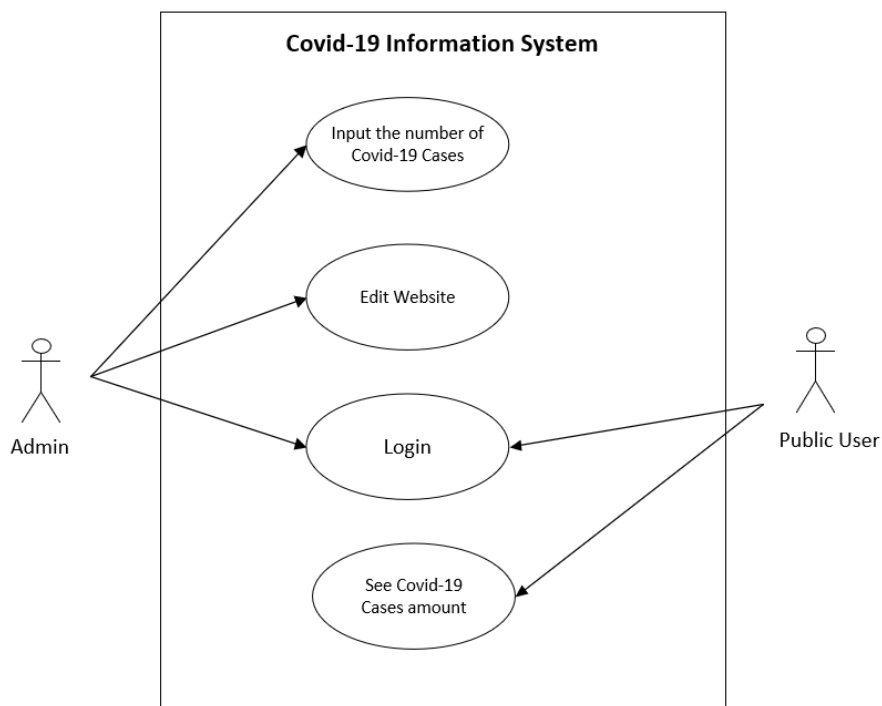
Figure 3 Information System

From the Use Case Diagram in Figure 3, we can see the duties of each actor. Government Admins are responsible for setting up accounts because this information system is limited in its management. Its task begins with data entry on the number of COVID-19 cases by sub-district officials ranging from positive cases, *Orang Dalam Pengawasan* (ODP), *Pasien Dalam Pegawasan* (PDP), deaths, to recovery. After the data is entered into the system, the next task will be validated. To ensure that the data entered is valid. If the data is invalid, it will be rejected by the editing admin. Validated data will be entered into the main data on the Admin page. Therefore, it would also be integrated into the website's main page for general users to access.

User Interface Design Stage

Currently, the Covid-19 pandemic shows an increase in the number of infections, this is due to the emergency conditions such as acute myocardial infarction. Several parties have started to use technology in disseminating information related to Covid-19 (Solomon et al., 2020). Figure 4 displays the main page of the Covid-19 Information System website. This main page can be accessed by anyone and presents the latest data on Covid-19 cases in that regional coverage. On this main page, the overall data available in the district is presented. Meanwhile, daily data will be presented in graphical form. This graph serves as fluctuating information regarding the development of the Covid-19 cases in the Regency. Therefore, all positive case input made by sub-district officers will be added and grouped based on the dependencies to be presented in this graph.

Figure 4 Analysis of Determination Criteria

Form Login is a required form that must be filled in. This form could help in data storage that is related to the password and username (Cantika, 2018). Figure 5 shows the login page for Admin. Therefore, to carry out its duties, an account registered with the Covid-19 Information System is required. Due to the fact that access to this system is closed to the public, only certain people can access the system.

Figure 5 Login Page admin

The Covid-19 Information System workflow starts from the admin who inputs the Covid-19 case data in their respective regions (Cantika, 2018). District officials entered the data based on data obtained from the respective public health center. This information system aims to maximize the smallest government unit's role, namely the sub-district and its cooperation with the health office, in this case, the public health center. Figure 6 shows the data input page for the Covid-19 case conducted by the admin.

Figure 6 Data input for Covid-19

The data that the admin has entered will be grouped into the main data on the Admin page. After first having an account and entering the user and password on the login page (Solomon et al., 2020). Figure 7 presents the features on the admin page. Admins are also responsible for system configuration, monitoring, troubleshooting, and maintenance. For this reason, the interface that is presented in the information system is made as best as possible to facilitate access and its tasks.
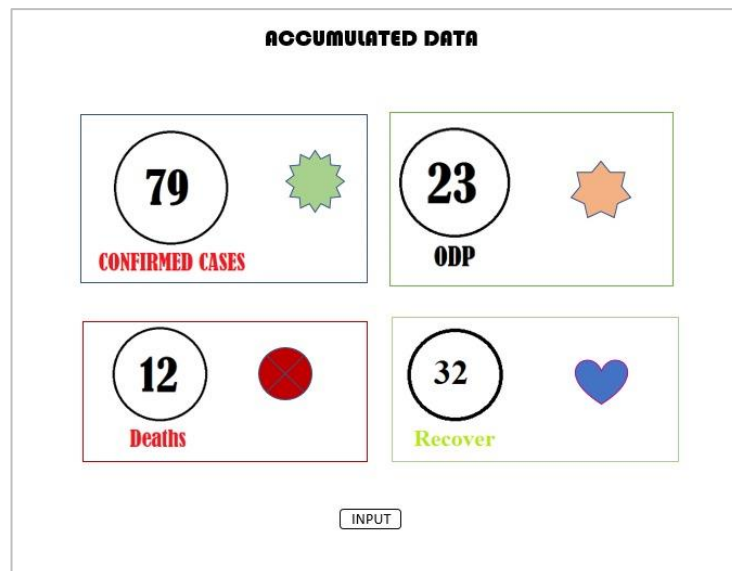

Figure 7 Admin page

CONCLUSION

In the digital era, the use of technology in the world of government is needed to convey actual information to the public. The design of the Covid-19 Information System is an initial model to be applied directly to district governments. The features presented in this information system can meet the initial need to present Covid-19 case data. Presentation of actual information is very useful within the scope of government to take decision-making steps to determine the next policy. The design of the Covid-19 information system is specifically for areas with the largest population to obtain actual information from the smallest unit of government agencies. It is because this information system maximized in collecting data directly from the public. Therefore, the data obtained can be clear and following the authentic evidence available at the health center. Moreover, this information system can be developed according to local government needs.

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