WEB-BASED DATA VISUALIZATION TO IDENTIFY THE SPREAD OF COVID-19 IN INDONESIA

Ahmad Ridoh*, Yogi Irdes Putra, Radinal Fadli

STKIP Muhammadiyah Muara Bungo

*e-mail: ridohadriati@gmail.com

Abstract

This study aims to produce a data visualization or picture based on Covid-19 website deployment in Indonesia. The model in this study uses Rapid Application Development (RAD). The results and discussion of the research show that, the RAD model with three phases, namely requirements planning, design, and implementation can produce a website application system for urgent needs. The website that was designed has made it easy for users, especially to find out the data distribution of Covid-19 in Indonesia.

Keywords: *Covid-19, RAD Model, Website, Data*

INTRODUCTION

Currently, the whole world is experiencing a pandemic Coronavirus Disease (Covid-19). Covid-19 first appeared in Wuhan, China in December 2019. This virus has a very rapid spread rate and has spread to various countries. One effort was made to isolate and quarantine infected people. Isolation is an effort to separate sick people who have infectious diseases from people who are not sick (Smith & Freedman, 2020). Quarantine is the limitation of movement of people who are suspected of being infected with infectious diseases but not sick, either because they are not infected or because they are still in an incubation period (Smith & Freedman, 2020). Limitation of social distancing is also applied by all countries facing the Covid-19 pandemic.

Indonesia is one of the countries affected by the Covid-19 pandemic. The rapid spread of Covid-19 has caused several provinces in Indonesia to have been affected by the Covid-19 virus. Data on increasing numbers of Covid-19 spreads throughout Indonesia.

Tabel 1. Covid-19 Case Data in Indonesia by Province

No.	Province	Confirmed Case	Recovery	Dead
1	DKI Jakarta	2.670	202	244
2	Jawa Barat	570	28	53
3	Banten	297	7	32
4	Jawa Tengah	300	19	27
5	Jawa Timur	514	86	46
6	Sulawesi Selatan	271	42	23
7	DI Yogyakarta	62	22	7
8	Bali	113	32	2
9	Sumatra Utara	79	12	9

No.	Province	Confirmed Case	Recovery	Dead
10	Kalimantan Selatan	59	6	6
11	Sumatra Barat	55	8	4
12	Papua	80	15	6
13	Riau	24	5	3
14	Lampung	25	8	5
15	Jambi	7	0	0
16	Sulawesi Tenggara	26	4	1
17	Maluku	14	1	0
18	Bengkulu	4	0	1
19	Gorontalo	4	0	0
20	Aceh	5	4	1
21	Maluku Utara	4	2	0
22	Papua Barat	5	0	1

Source: BNPB (*online*, 12 April 2020)

Based on the data in Table 1, it is known the number of Covid-19 distributions in several provinces. Information on the addition and reduction of the number of Covid-19 distributions should be known by all Indonesian people. Information on the spread of Covid-19 to various regions in Indonesia is inseparable from the role of information technology. As an intermediary media that is online, one of the media that can be used to obtain information is a website. Website is a collection of pages that consist of several pages that contain information in the form of digital data in the form of images, videos, audio, text and other animations provided through internet connection lines. Website can also be interpreted as a collection of pages consisting of several pages that contain information in the form of digital data in the form of text, images, video, audio, and other animations provided through internet connection lines (Abdullah, 2015).

Indonesian people in general get information about Covid-19 only through TV media that appear within a certain time. Limited public access to websites that contain information about the spread of Covid-19 due to the insufficient number of websites in Indonesia. The vulnerability of hoax news circulating through social media about the number of Covid-19 spreads in Indonesia. The use of the website is very useful for the public to get the latest information, especially regarding the development of the number of Covid-19 deployments in Indonesia. With a website, people can access and obtain information without time and place restrictions.

A web page is inseparable from data and information. In the current era the need for information is very large and numerous. With so many different types of websites and data, it is possible to share the data between website pages. One of the website technology facilities that can be used is the Web service and API (Application Programming Interface). API is a software that allows developers to integrate and allow two different applications simultaneously to connect with each other. In contrast to the web service facilitates to interact between two devices or applications over the network.

The purpose of this study is to create a web-based data visualization to find out information about the spread of Covid-19 in Indonesia, as well as provide opportunities and convenience to the public to find out the latest information on the number of Covid-19 deployments in Indonesia.

METHOD
Research Design
        This research uses the RAD model. RAD is an incremental software model process that emphasizes a short development cycle. The RAD model is suitable for producing software systems with urgent needs and short time to complete. The RAD model is an object-oriented approach to produce a system with the main goal of shortening the time to work on applications and processes so as soon as possible to empower the software system precisely and quickly (Kosasi, 2015).

Figure 1. Rapid Application Development Cycle

        According to Kendall (2010), there are three phases in RAD. The three phases are requirements planning, design, and implementation (Figure 1). In accordance with the RAD methodology according to Kendall (2010), the following are the stages of application development from each phase of application development.

Stages of RAD:
Planning
        In this phase, identify the goals of the application or system as well as for identify information requirements arising from these objectives (Kendall, 2010).
Design
        The phase for designing that can be described. Analyzers and programmers can work to build and show visual representations of designs and work patterns to the user. This design can be done for several days depending on the size of the application which will be developed. During design, users respond to existing prototypes and the analyzer fixes modules that are designed based on user response (Kendall, 2010).
Implementation
        In this implementation phase, the programmer works intensely with the users while designing the system. As soon as these aspects are agreed upon and systems are built and screened, new systems or parts of the system are tested and then introduced to the public (Kendall, 2010).

RESULT AND DISCUSSION

Result

Planning Phase

Some plans need to produce a website, namely:

a. Hardware requirements
    1) Laptop or PC
b. Software Requirement
    1) Operating System.
    2) PHP and Jquery programming languages
    3) Codeigniter Framework.
    4) Database management system application.
    5) Graphic design application.
    6) API (Application Programming Interface).
c. Information Needs
    1) Data on the spread of Covid-19 in Indonesia (http://www.covid19.co.id).
    2) Data on the spread of Covid-19 in various regions.

Design Stage

The design phase covers the architecture of application usage. Starting with the user through the stage without logging in to the application and immediately see the amount of data distribution of Covid-19 in Indonesia. The application produced in this study has 1 access right. Users or users directly access website pages and view information.

The following is a flowchart picture of the website usage process design that will be developed (Figure 2).
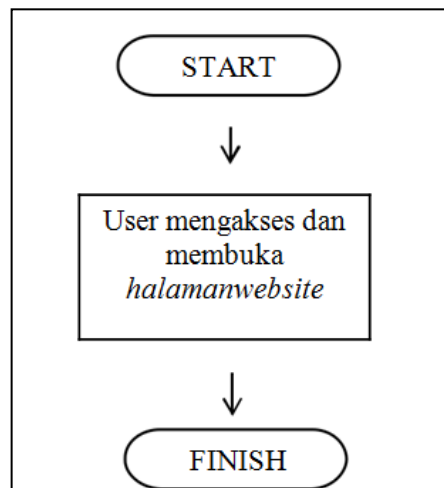

Figure 2. Flowchart of the Website Usage Process

Implementation

In this stage can be seen by testing the information system created. System testing can be shown by drawing the results of the system as below (Figure 3 and Figure 4) and through the link https://www.pantaucovid19.ukcagur.com/.
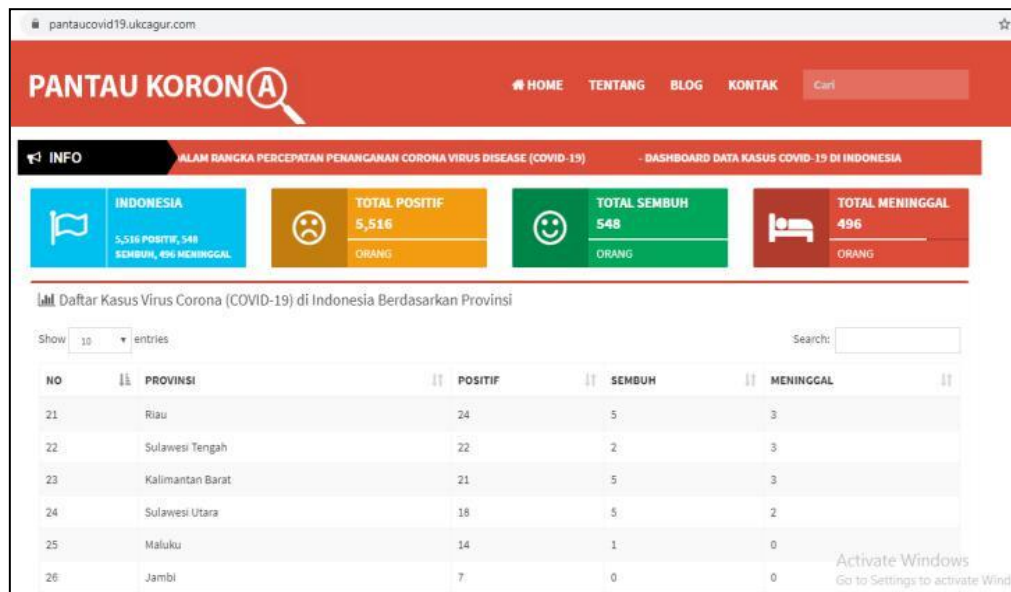
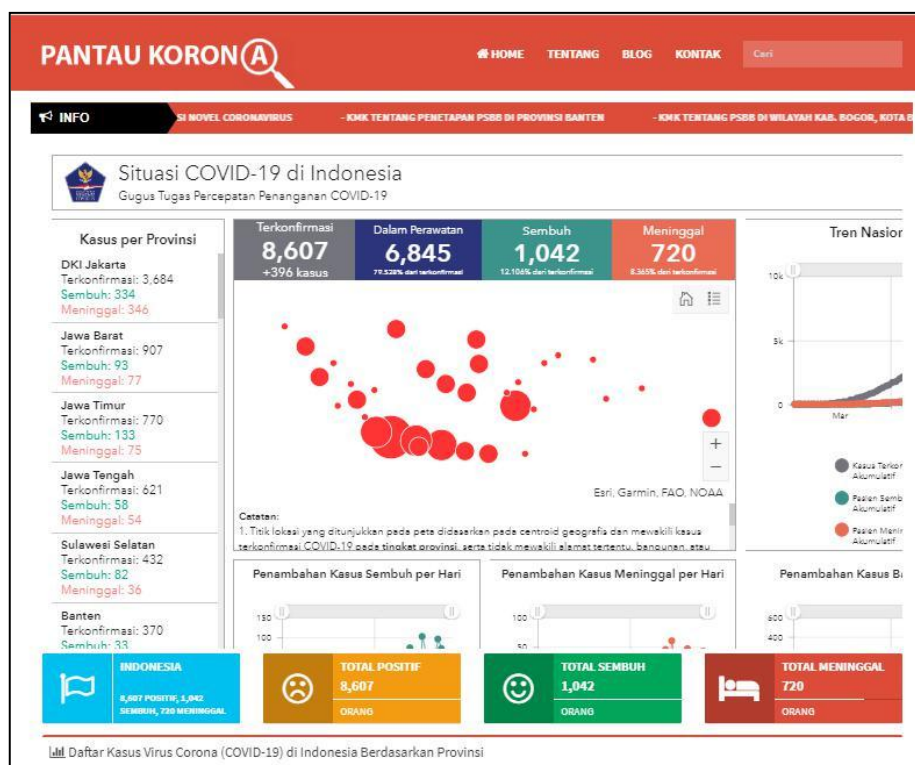**Figure 3.** Display Website Data Pages

Figure 4. Display of the Covid-19 Deployment Visualization Page

CONCLUSION

Website-based data visualization has been built to provide data visualization for users to find out the number of Covid-19 deployments in Indonesia. The public can access the website directly without a long process. This study recommends the importance of arousing the idea of information technology activists to create an innovation related to the spread of the Covid-19 pandemic.

REFERENCES

Abdullah, R. (2015). *Web Programing is Easy*. Jakarta: Elek Media Komputindo.

Kendall, J.E. & Kendall, K.E. (2010). Analisis dan Perancangan Sistem. Jakarta: Indeks.

Kosasi, S. (2015). Penerapan Rapid Application Development Dalam Sistem Perniagaan Elektronik Furniture. *Creative Information Technology Journal*, *2*(4), 265-276.

Smith, A. W., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak . Journal of Travel Medicine.

WHO. (2020). *Pneumonia of unknown cause – China*. Available at: http://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/. [Accessed 31 March 2020].