Bringing Artificial Intelligent to Jakarta Monitoring Covid-19 Outbreak

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Abstract. SARS-CoV-2 has been named as the cause of coronavirus disease (COVID-19). The Government of Jakarta reported 47,796 cases, 35,431 of those who got infected already recovered while 1,318 died. The Jakarta government has provided a particular website as a media for delivering Covid-19 information in a fast and updated dynamically. The government provides various information with features that make it easier for the public to read and understand the extent to which the Covid-19 pandemic. This study adopted an exploratory data analysis (EDA) approach to qualitative research. Data was analyzed by classifying topics that are relevant to the information layout. Data reduction is defined as the collection process, focusing on what is appropriate to the research objectives. The finding was analyzed Covid-19 pandemic in Jakarta has infected 43,709 people and killed 1,219 in Jakarta. Data on patients who were cured and those who were infected are displayed on the Jakarta government's website. The cure rate for Jakarta's patients and national mortality data continues to increase. Jakarta has contributed 34% of the cure for national data. Optimization seeks to promote public access to the Jakarta Government. Data displayed can detect the number of positive active patient cases.

1. Introduction
On February 11, 2020, the World Health Organization (WHO) announced that the International Committee on Virus Taxonomy has named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) to be the cause of coronavirus disease (COVID-19) [1]. The said virus originated in Wuhan, China in December 2019 and spread quickly in China and several countries. To date, 1,696,588 persons have been battling COVID-19 and have become a significant public health issue in 221 countries as of April 12, 2020 [2]. COVID-19 became epidemic in Indonesia after reporting its first case on March 2, 2020 [3]. On March 31, 2020, another two individuals battled COVID-19. As of this writing, The WHO reported 196,989 COVID-19 cases in Indonesia from its 32 provinces, 140,552 of those who got infected already recovered while 8,130 died [4].

According to current conditions, the coronavirus is not an epidemic that can be ignored [5]. When viewed from the symptoms, ordinary people will think only limited to ordinary influenza, but for medical analysis, this virus is quite dangerous and turn off [6]. Currently, in 2020, the development of this virus transmission is quite significant because its spread is worldwide, and all countries feel the impact, including Indonesia [7]. They were anticipating and reducing the number of coronavirus sufferers in Indonesia already done all over the area. Among them by providing policies limiting [8] activities outside the home, home school activities, working from home (WFH), even religious activities were sent home. It has become a government policy based on analyzed considerations with the maximum stage. In the efforts to deal with the current pandemic, the government always tries to provide information quickly and transparently [9], [10].

The internet is a very vital medium to support progress/development and become a medium to convey information to the broader community and become a tool the fastest, precise, effective and efficient communication [11]. However, with these conditions, the government uses many platforms for sharing their activities to deal with the pandemic. Utilization of the internet in government called the Electronic Government [12]. Utilization of information and communication technology between government and society and other interested groups (stakeholders) which involves the use of information technology (internet) intending to improve
quality of public services in an effective, efficient and open manner, this is how the artificial intelligent works for community [13]. For the government, the internet is used through government websites [14], [15]. Artificial intelligent provides many products, one of them is website [16]. Website is a page on the internet that contains information text, images, animation, sound, video or a combination thereof [17], [18]. By utilizing technological developments through the website, is one means that must be used by the agency providing information, because, through the website, the government efficiently disseminates all the information needed by public urgently [19], [20].

The Jakarta government has provided a particular website as a media for delivering Covid-19 information in a fast and updated dynamically [21], [22]. This research was urgently to write because of the phenomenon in the change dynamics of the websites uses by the government, which is the government website only used as a medium for delivering information on government activities. However, in this situation, the government website is one of the primary references for the community as a media for monitoring the flow cases of the Covid-19 pandemic updating in Indonesia, especially in DKI Jakarta. The Government of Jakarta reported to have 47,796 cases, 35,431 of those who got infected already recovered while 1,318 died [21]. The Jakarta government provides various information with features that make it easier for the public to read and understand the extent to which the Covid-19 pandemic has spread in the Jakarta area. Moreover, this paper will discuss the website is part of artificial intelligence to deliver information that is provided by the government as the primary media for Jakarta community.

2. Method
Considering the COVID-19 disaster is still happening in Jakarta, the data analyzed from the official Jakarta government website in providing information on the spread of the covid-19 outbreak. The data analyzed by classifying topics that are relevant to the information layout, then being explored by explaining the features and information are displayed. This study adopted an exploratory data analysis (EDA) approach to qualitative research that defines and explains the characteristics of the distribution of the data. The EDA consists of a description with the features of the criteria or metrics to be included [23]. For the proper processing of the data, author carried out with purposive sampling data on the website, which random sampling technique was then used to determine specific layout and display of the website that fit the purpose of the study [24].

3. Literature Review
3.1 Is Sematic Web as part of Artificial Intelligent
The growth of the website is the result of a complex convergence of the ecosystem from the viewpoint of the broader, and can be separated into the policy climate, the financial world, the technology environment [10]. Information system which based website is a service provision activity to make it easier for all people to access information anytime and anywhere [25]. This website-based information system was built with the aim of not only making it easier for the people to access information and receive services from the government, but also as a means for people who are not domiciled to be able to find out information related to the region [26].

Government has been clear objectives through the application of a website-based information system, which is to make it easier for people to access information and receive services [27], [28]. Therefore, the Government Website-Based Information System continues to run a website-based information system and continues to make improvements to the website so that people from all walks of life more easily access it [29]. Website-based information systems that are easily accessible are expected to make it easy for all levels of society to find out and use information and services quickly, precisely and accurately and without being complicated. With a clear objective since the inception of the Government website-based information system, the Government website has remained consistent [30], [31].

3.2 Monitoring of Outbreak Information
Monitoring and decision-makers recognize new challenges, future achievements or the need to re-examine those SUMP domains on the resulting data promptly [32]. Several crises around the world have exemplified the actions during crises [33], [34]. Specific theoretical structures can offer valuable tools for emergency prevention and limitations for real-time problem-solving [35]. Stressing recent crises, such as the oil spill in the Caribbean, the earthquakes and nuclear plant
spills in Japan, the worldwide pandemic as measles, cholera and Mers-virus, and the earthquake in Haiti have highlighted the difficulty of reacting to incidents that transcend jurisdictional, operational and other lines of border regulation. Central concepts in complexity theory, such as evolution, self-organization, non-linearity, adaptiveness, and integration, offer essential insights into crisis management [36], [37]. Taking complexity theory as a conceptual tool for disaster management (DM) is valuable because it offers insights into the relationships between system elements and processes and their broader contexts, especially in the event of a catastrophe, when the constituent phases have specific goals and unique difficulty [35].

The disaster reduction cycle consists of a series of interlinked practices, including impact-related procedures, intervention, recovery, development, prevention, mitigation, and preparedness [38]. Disasters can also differ by the extent of hazard and estimate of the possible potential damage [39]. Crisis management reconceptualization risk reduction to recovery [35]. It is inextricably related to evolving and increasing situations, needing a change from command and control DM models to cooperation, because solution strategies need to arise from the dynamics of a particular scenario, "tailored to the collective environment at every point in time." During this time, it is not unlikely for us to step into a moment where democratic society is becoming extremely relevant, provided that the digital transition has rendered us more interconnected across information technology [40]. The transition from command and control to cooperation and stakeholder involvement is likely to reflect the advent of social networking and transparent platforms for intelligence and information gathering, or crowd-sourcing, as well as a modern era for group and public interaction in data collection and review [41]–[43].

4. Finding and Discussion

4.1 Website Media Monitoring Outbreak by Government of Jakarta

The website is an information display that uses the Hyperlink principle, which helps computer users to access content on the Internet [44], [45]. In the meantime, the website is the entire web page of a domain containing information [17]. The information provided by the Jakarta government on the website has many features, one of which is the data bar and data map feature. Moreover, the monitoring of Covid-19 case display was placed in the bar section at the very top, where all data related to the Covid-19 pandemic displayed on the main page when the page accessed. This concept supported by the semantic web concept presented by AI in the development of web 2.0 the growing of a website to facilitate the public in monitoring information needed urgently and vital to be accessed easily and quickly.

While monitoring system during a pandemic, the Government provides several data access services on its official website. Some of the data features that can be accessed by the public are as follows.

| Covid-19 Data Information                        | Status       |
|------------------------------------------------|--------------|
| National cases confirmed                        | Available    |
| Jakarta cases confirmed                         | Available    |
| Mobility suspect data                           | Available    |
| Mobility probable data                          | Available    |
| Mobility of traveler                            | Available    |
| Human mobility close contact                     | Available    |
| Discarded                                       | Available    |
| Result of Rapid Diagnostic Test                 | Available    |
| Result of PCR Test                               | Available    |

Source: [46]

The data above shows some of the features that have been presented by the Jakarta government to the public. This data can be accessed by the public through pages [22] quickly and updated every day so that the information submitted by the government can become a reference and precise information about the development of the Covid-19 pandemic case in Jakarta. There is local data for Jakarta and national confirmed cases which explain that there are three data clusters, namely data on patients who are being treated, patients who are declared cured and
patients who have died. From the presentation of the data, the public can see that the Jakarta government has confirmed the number of cases.

Other data include data on the development of confirmed public mobility figures that have been tested positive based on the source of the distribution and mobility of the patient concerned. From this data, the public can monitor the data presented by the government on the number of infected patients based on the source where they were infected. Another data that is presented on the website [22] is the number of tests for the community recorded by the DKI Jakarta Provincial Health Office. The test is a rapid and PCR test. The official website of the Jakarta government in monitoring the Covid-19 pandemic also presents data on people exposed to Covid-19 with various sources of exposure. The author summarizes the following data.

Figure 1. Accumulated gender data based on the source of patient exposure

The data above shows that the highest source of exposure to Covid-19 patients is the occurrence of close contact of the victim with a positive patient with Covid-19. From the data presented by the government on the official website, the expected achievement of the government is the vigilance of the public to maintaining themselves and always keep their distance, also maintain the hygiene in accordance to the Health protocol set by the government. The policies have been issued by the government to limit the Jakarta society to always keep their distance while socializing, it has been stipulated in Governor Regulation No. 4 of 2020 [47].

National case developments have closely monitored the development of pandemic cases faced by Jakarta. The development of national data can be a reference that there are other areas including DKI Jakarta which is the capital of the country which is recorded as a contributor to case data so that it is accumulated into national data. The following is the history of data on the National and Jakarta trends in the development of the pandemic case since the first day it was announced on March 03, 2020, as follows.

Figure 2. Data Trend of National and Jakarta

The development of the Covid-19 case in Jakarta can be seen in the figure above that the cure rate for Jakarta's patients and national mortality data continues to increase. The total number of case data nationally was 153,535 cases, Jakarta with Covid-19 cases recorded as many as 43,709. It can be said that Jakarta is a contributor to covid-19 cases by 28% for national data accumulation. Besides, the data on patients who were declared cured in the national data were 77,557 patients and 26,750 people of Jakarta who were infected were declared cured, so in curing Covid-19 patients, Jakarta has
contributed 34% of the cure for national data. Meanwhile, the national mortality data shows that there are 155,412 deaths, while Jakarta, with 1,219 deaths, means that 1% of Jakarta Capital City is a contributor to death cases in Indonesia. From the presentation of this trend data, the government's hope for the community is that there are awareness and curiosity of the public about the form of the Covid-19 pandemic in Indonesia, especially Jakarta, by numbers have been determined in the category of accumulated cases, accumulated deaths and accumulated data on the recovery of Covid-19 patients. From this data, there will be a sense of alertness and awareness that Covid-19 is real so that the Jakarta government can display the figures in the data above.

The presentation of website-based information data is in line with the concept of website development which in concept is emphasized by the existence of a website-based information system within the Jakarta Government as an information medium. This concept can be seen from the content and design of the Jakarta Government website. Information ranging from home features, data, maps, access collaboration, and other information that is already available on the Jakarta Government website. Besides, there is an interactive feature on the complaint number and actual numbers to be contacted quickly and can be accessed 24 hours. The display design of the Jakarta Government website appears to be concerned with making it easier for people of all walks of life to find information, especially on Covid-19 information in Jakarta [48].

4.2 Optimizing the Usage of Government Websites to Deal Pandemic Outbreak

The optimization while using the website by the Government of Jakarta is mirrored in the current of the website layout [49]. It seeks to promote public access to the Jakarta Government in view of the need for public information services. The public's need for information is the main factor in the layout displayed by the Government of Jakarta. Optimization carried out by the Government of Jakarta on the website is that it can display data and information needed by the public so that it can be accessed easily and quickly. Access to the information provided by the government can not only be understood by the local community but also can be accessed by foreign and foreign people. Access to the information provided by the government is connected to the maps application so that the public can access the distribution location in real-time, can be seen in the following figure.

**Figure 3. Exposure of Covid-19 Cases Maps**

The map figure above shows that there is an optimization of data display on government websites based on distribution locations. The data displayed can detect the number of positive active patient cases scattered in several urban villages in Jakarta, so that 6,069 Covid-19 cases were recorded as active in Jakarta. In the data display above, it is not only possible to access the Jakarta area, but areas outside Jakarta can also know the number of active patients, in this case, there are 1,137 cases displayed, 4,490 data still in the input process stage. So the total number of cases recorded by the Jakarta Government in a map-based distribution was 11,696. The data source used by this map-based monitoring is to detect locations that have been activated by patients on smartphones that have been connected to applications provided by the government, one of which is an application built by the Indonesian government, which PeduliLindungi [51].

5. Conclusion

Covid-19 pandemic in Jakarta has infected 43,709 people and killed 1,219 in Jakarta. Data on patients who were cured and those who were infected are displayed on the Jakarta government's website. The cure rate for Jakarta's patients and national mortality data continues to increase. Jakarta has contributed 34% of the cure for national data. The total number of case data
nationwide was 153,535 cases, and Jakarta has cured 26,750 people. The national mortality data shows that there are 155,412 deaths. Design of Jakarta Government website appears to be concerned with making it easier for people of all walks of life to find information, especially on Covid-19 information. Optimization seeks to promote public access to the Jakarta Government in view of the need for public information services. Data displayed can detect the number of positive active patient cases scattered in several urban villages in Jakarta. Access to the information provided by the government is connected to the maps application so that the public can access the distribution location in real-time.

6. Reference

[1] A. E. Gorbalenya et al., “The species and its viruses – a statement of the Coronavirus Study Group,” Biorxiv(Cold Spring Harb. Lab., pp. 1–15, 2020.
[2] W. H. O. WHO, “Coronavirus disease 2019 (COVID-19) Situation Report – 83,” World Heal. Organ., 2020.
[3] Ministry of Health, “Situasi Terkini Perkembangan Coronavirus Disease (COVID-19) 2 Maret 2020,” 2020.
[4] (Gugus Tugas Percepatan Penanganan Covid-19) GTFPCovid-19, “Data Persebaran Covid-19 di Indonesia,” 2020 .
[5] R. M. Anderson, H. Heesterbeek, D. Klinkenberg, and T. D. Hollingsworth, “How will country-based mitigation measures influence the course of the COVID-19 epidemic?,” The Lancet, vol. 395, no. 10228. Lancet Publishing Group, pp. 931–934, 21-Mar-2020.
[6] E. Baekkeskov and O. Rubin, “Why pandemic response is unique: Powerful experts and hands-off political leaders,” Disaster Prev. Manag. An Int. J., vol. 23, no. 1, pp. 81–93, 2014.
[7] N. F. Yunus and A. Rezki, “Kebijakan Pemberlakuan Lock Down Sebagai Antisipasi Penyebaran Corona Virus Covid-19,” SALAM J. Sos. dan Budaya Syar-i, vol. 7, no. 3, 2020.
[8] G. Arnold, L. A. Nguyen Long, and M. Gottlieb, “Social Networks and Policy Entrepreneurship: How Relationships Shape Municipal Decision Making about High-Volume Hydraulic Fracturing,” Policy Stud. J., vol. 45, no. 3, pp. 414–441, 2017.
[9] Y. Zhao et al., “Analysis of changes in characteristics of flood and sediment yield in typical basins of the Yellow River under extreme rainfall events,” Catena, vol. 177, no. January, pp. 31–40, 2019.
[10] S. Jain and P. Kumar, “Semantic Web, Ontologies and E- Government: A Review,” Mody Univ. Int. J. Comput. Eng. Res., vol. 2, no. 1, pp. 40–44, 2018.
[11] M. Ali, S. U. Khan, and A. V. Vasilakos, “Security in cloud computing: Opportunities and challenges,” Inf. Sci. (Ny), vol. 305, pp. 357–383, 2015.
[12] T. A. Smith, “Tools, Oracles, Genies and Sovereigns: Artificial Intelligence and the Future of Government,” SSRN Electron. J., Aug. 2015.
[13] M. Jamalil, A. Nejat, S. Ghosh, F. Jin, and G. Cao, “Social media data and post-disaster recovery,” Int. J. Inf. Manage., vol. 44, no. September 2018, pp. 25–37, 2019.
[14] S. N. Aecsin, H. Cangara, and A. A. Unde, “Profil Desa dan Kelurahan Sebagai Sumber Informasi Studi Kasus Provinsi Sulawesi Selatan,” vol. 4, no. 4, pp. 449–467, 2015.
[15] A. D. Malaváni, A. Nurmandi, E. P. Parnomo, and T. Rahman, “Social media in aid of post disaster management,” Transform. Gov. People, Process PolicyPeople, Process Policy, vol. 14, no. 1, 2020.
[16] R. F. Helmi, “An Exploratory Analysis of Data Breaches from 2005–2012,” J. Inf. Priv. Secur., vol. 8, no. 2, pp. 33–56, 2012.
[17] Á. Rocha, A. M. Correia, S. Costanzo, and L. P. Reis, “New contributions in information systems and technologies,” Adv. Intell. Syst. Comput., vol. 354, pp. 375–384, 2015.
[18] T. Li, “Research on Big Data and Artificial Intelligence Aided Decision-Making Mechanism with the Applications on Video Website Homemade Program Innovation,” no. Icste, pp. 380–385, 2016.
[19] I. Santosa, “Strategic Management of Rural Community Empowerment: Based Local Resources,” no. Iepm, 2014.
[20] J. M. Jordan, “Challenges to large-scale digital organization: the case of Uber,” J. Organ. Des., vol. 6, no. 1, 2017.
[21] J. Government, “Jakarta Tanggap Covid-19,” 2020 .
[22] J. Government, “Data Pemantauan,” 2020 .
[23] R. Ayyagari, “An Exploratory Analysis of Data Breaches from 2005-2011: Trends and Insights,” J. Inf. Priv. Secur., vol. 8, no. 2, pp. 33–56, 2012.
[24] M. Bloor and F. Wood, “Purposive Sampling.” Keywords Qual. Methods, vol. 1, no. 01, pp. 24–41, 2016.
[25] S.-C. NECULA, “A Semantic Web Solution for E-Government Educational Services,” Inform. Econ., vol. 19, no. 4/2015, pp. 43–54, 2015.
[26] P. Krafft, M. Young, M. A. Katell, K. Huang, and G. Bugingo, “Defining Artificial Intelligence in Policy versus Practice,” J. Semant. Sch., 2019.
[27] A. D. Malawani, A. Nurmandi, E. P. Parnomo, and T. Rahman, “Social media in aid of post disaster management,” Transform. Gov. People, Process PolicyPeople, Process Policy, vol. 14, no. 1, 2020.
[28] O. S. Al-Mushayt, “Automating E-Government Services with Artificial Intelligence,” IEEE Access,
[29] I. C. Chen and I. C. Hsu, “Open Taiwan Government data recommendation platform using DBpedia and Semantic Web based on cloud computing,” Int. J. Web Inf. Syst., vol. 15, no. 2, pp. 236–254, 2019.

[30] R. Tinati et al., “Big Data: Methodological Challenges and Approaches for Sociological Analysis,” Big Data: Methodological Challenges and Approaches for Sociological Analysis,” vol. 48, no. 4, pp. 663–681, 2019.

[31] D. Benson and A. Jordan, “The scaling of water governance tasks: A comparative federal analysis of the European Union and Australia,” Environ. Manage., vol. 46, no. 1, pp. 7–16, 2010.

[32] M. G. Chon and H. Park, “Predicting Public Support for Government Actions in a Public Health Crisis: Testing Fear, Organization-Public Relationship, and Behavioral Intention in the Framework of the Situational Theory of Problem Solving,” Health Commun., vol. 00, no. 00, pp. 1–11, 2019.

[33] R. Shaw, “Role of Non-Government Organizations in Earthquake Disaster Management: An Asian Perspective Regional Development Dialogue 24.1 (Apr 2003): 117-129. Role of Non-Government Organizations in Earthquake Disaster Management: An Asian Perspect,” no. March 2003, 2017.

[34] J. P. D. Guidry, S. L. Meganck, P. B. Perrin, M. Messner, A. Lovari, and K. E. Carlyle, “Ebola: Tweeting and Pinning an Epidemic,” Atl. J. Commun., vol. 00, no. 00, pp. 1–14, 2020.

[35] T. L. O’Sullivan, C. E. Kuziemsky, D. Toal-Sullivan, and W. Cornel, “Unraveling the complexities of disaster management: A framework for critical social infrastructure to promote population health and resilience,” Soc. Sci. Med., vol. 93, pp. 238–246, 2013.

[36] C. W. Callaghan, “Disaster management, crowdsourced R&D and probabilistic innovation theory: Toward real time disaster response capability,” Int. J. Disaster Risk Reduct., vol. 17, pp. 238–250, 2016.

[37] J. Nerby, “Disaster Management in Nepal: in Theory and in Practice,” p. 61, 2017.

[38] N. Sakalasooriya, “Disaster Management Cycle,” no. December, 2015.

[39] J. Browning and N. Thomas, “An assessment of the tsunami risk in Muscat and Salalah, Oman, based on estimations of probable maximum loss,” Int. J. Disaster Risk Reduct., vol. 16, pp. 75–87, 2016.

[40] T. Octastefani and M. Rum, “Millennials’ Contribution in Disaster Risk Reduction: Case Study of Tidal Flooding in Semarang,” J. Ilmu Sos. dan Ilmu Polit., vol. 23, no. 1, p. 14, 2019.

[41] S. O. Funtowicz and J. R. Ravetz, “UNCERTAINTY, COMPLEXITY AND POST-NORMAL SCIENCE,” Environ. Toxicol. Chem., vol. 13, no. 12, 1994.

[42] R. Bonney et al., “Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy,” Bioscience, vol. 59, no. 11, pp. 977–984, 2009.

[43] E. Vayena and J. Tasioulas, “The ethics of participant-led biomedical research,” Nat. Biotechnol., vol. 31, no. 9, pp. 786–787, 2013.

[44] P. Brooker, J. Barnett, and T. Cribbin, “Doing social media analytics,” no. December, pp. 1–12, 2016.

[45] J. Lin, W. Yu, N. Zhang, X. Yang, H. Zhang, and W. Zhao, “A Survey on Internet of Things: Architecture, Enabling Technologies, Security and Privacy, and Applications,” IEEE Internet Things J., vol. 4, no. 5, pp. 1125–1142, 2017.

[46] Corona.Jakarta.go.id, “Data Pemantauan,” 2020.

[47] G. D. Jakarta, MENJAGA JARAK AMAN ANTAR WARGA DALAM BERMASYARAKAT (SOCIAL DISTANCING MEASURE) DALAM RANGKA ANTISIPASI DAN PENCEGAHAN PENULARAN CORONAVIRUS DISEASE (COVID-19) DI PROVINSI DAERAH KHUSUS IBIKOTA JAKARTA. 2020.

[48] A. Albarghothi, “An Ontology-based Semantic Web for Arabic Question Answering: The Case of E-Government Services,” MSc INFORMATICS Knowl. DATA Manag. Br. Univ. Dubai, no. August, 2018.

[49] A. Aries Tanno, Anne Putri, Isteti Murni, Annual Conference on Economics , Business , Accounting and Social Sciences (ACEBASS) 2017 “ Sustainability Development in Achieving Economic Independence .” 2017.

[50] J. Government, “Data Maps Persebaran Kasus,” 2020.

[51] I. Government, “Aplikasi PeduliLindungi,” 2020.