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Unlocking the Power of Big Data: Digital Transformation of Public Policy in DPRD DKI Jakarta

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A B S T R A C T

This research delves into the prospects and obstacles associated with utilizing large-scale data in developing public policies within the Indonesian context. Integrating big data technology holds promise as a tool for government agencies aiming to refine the public policy formulation process, ultimately providing enhanced services to the populace. Despite its inherent complexity and costliness, incorporating big data offers the government a means to furnish the most up-to-date, precise, and granular information pertinent to developmental issues. For instance, in the agricultural sector, big data can offer an intricate understanding of the diverse requirements of farmers in distinct regions, such as the differentiation between rice varieties sought by farmers in Kalimantan compared to those in Java. Furthermore, the expansive reservoirs of geophysical and meteorological big data hold the capacity to significantly bolster the government's initiatives concerning natural disaster mitigation policies. Nonetheless, the practical integration of big data still needs to be improved by a dearth of comprehensive regulations governing its application. Additionally, the perils of recurrent data breaches in the Indonesian context pose a formidable challenge. This comprehensive analysis concludes that using big data in policy formulation within Indonesia encounters substantial hurdles that threaten to overshadow the potential advantages this technology could offer in enhancing public policy crafting.

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INTRODUCTION

Public policy has a vital role in public administration because it not only helps fulfill the goals and ideals of the nation but also solves various problems and fulfills the interests of the general public within the allotted time. The government is required to produce responsive public policies and be able to answer the problems faced by the community, pay attention to community input and suggestions, or increase public participation in policy formulation. In addition, the government is also required to be able to answer global challenges in the formulation of public policies that are currently being transformed through digital public services that are easier, cheaper, faster, and more precise (Nainggolan, 2017; Putry, 2022; Sirait, 2016).

However, formulating and publishing public policies in Indonesia has not been able to meet society's expectations in the last few decades. It even tends to continue to experience problems in its implementation. This is evidenced by the number of public lawsuits against public policies that are counterproductive to general preferences and must be annulled by the Constitutional Court. Various research findings show that formulating and publishing public policies in Indonesia is not based on proper and comprehensive academic studies. Academic studies used as the basis for issuing a policy are often biased and ambiguous, so their validity cannot be accounted for. Therefore, the resulting public policies cannot solve general problems; on the contrary, they raise new issues (Pambudi, 2021; Syafrina & Irwansyah, 2018).

The process of formulating public policies in Indonesia is still based on the opinions of certain groups and the short-term practical political interests of politicians who have positions in the executive and legislative branches.

The formulation of public policies in Indonesia heavily depends on the viewpoints of particular interest groups and the pursuit of short-term political advantages by elected officials in both the executive and legislative branches. Empirical evidence from a comprehensive study by the Center for Indonesian Policy Studies (CIPS) in 2021 substantiates this assertion. The CIPS research findings revealed that a significant proportion of policy decisions, particularly at the provincial and local levels, are influenced by powerful interest groups, such as business associations and regional elites, who wield considerable influence over policymakers (Riyadi, 2021).

Furthermore, a report published by Transparency International Indonesia (TII) in 2022 sheds light on political patronage and clientelism in policy-making. The report highlights instances where politicians have prioritized short-term electoral considerations over long-term public welfare when formulating policies. This practice is particularly evident during election seasons when politicians seek to secure voter support (Martini, 2022).

Additionally, a (2020). World Bank study revealed that the absence of transparent and evidence-driven policy procedures in Indonesia leads to policy choices influenced by political factors rather than rigorous analysis. This, in turn, can lead to less effective policies that fail to address the long-term needs of the population adequately. (World Bank, 2020).

The reliance on interest groups and the pursuit of short-term political advantages in the policy formulation process in Indonesia is not merely a subjective opinion but is substantiated by empirical research from

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reputable organizations such as CIPS, TII, and the World Bank. These findings underscore the need for reforms to promote evidence-based and transparent policy-making practices in the country.

Since entering the reformation era in 1998, the formulation of public policies in Indonesia has tended to run in place and has not progressed significantly. Some policies should never be issued because they are detrimental to the interests of the nation and state. Every ministry and institution has a research and development bureau that has conducted much research in each development sector since a decade ago. The research results from these bureaus have even been widely published and known by the public. However, it turns out that the research results are not used as a basis by the government, even to issue a new public policy; the government and the DPR make academic studies that are very different from the results of the research and development bureaus in each ministry. This is a waste, considering that the state budget used to conduct research and development studies is very large. Under these conditions, it is unsurprising that the resulting public policies tend to be untargeted, biased, discriminatory and only support certain political interests. By considering this phenomenon, it is time for the government to overcome various problems in preparing public policies and favor the public interest (Maryam, 2016; Permana et al., 2021).

Presidential Regulation Number 39 of 2019 concerning One Indonesian Data is an important moment and commitment where its existence is not only to fill the regulatory vacuum related to big data in particular but also as a response to the progress and demands of the current digital era. In its development, President Joko Widodo continues to echo this commitment in the President's directive on June 2, 2020, regarding the importance of one piece of data. Moreover, they do not overlap. With the correct data, public actors can adapt to each other and focus on finding real solutions. Public actors can control conflicts of interest and tend to create collaborative governments. This commitment is certainly expected to make the state and its bureaucracy able to improve the practice of collaboration both with the triple-helix or penta-helix concept at present and in the future. Thus, there will be no more overlapping conflicts between public actors due to data differences and targets (Hakim et al., 2021).

From this simple explanation, it can be concluded that there has been awareness and further efforts within the government to strengthen evidence-based public policies through the One Data Indonesia escalation. With the commitment to discipline in rearranging data by stakeholders, we are not only to collect and archive the latest data but also to provide hope for the progress of collaborative practices between stakeholders to improve the quality of public policies and management. However, the interesting question is whether the escalation of one Indonesian data can rearrange public policies in the present and future? and whether the escalation of one Indonesian data can be a moment of reconciliation between political power and the power of knowledge to be able to present a collaborative government. In the series, it is necessary to carry out further analysis and study efforts to answer challenges and see other outlines (Syafrina & Irwansyah, 2018).

Digitalization that develops in all aspects of life gives rise to vast and limitless possibilities in the use of data. Big data, or complex and large-volume dynamic online data sets resulting from digital processes, is the foundation for various technology and

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information-based advances that enable governments to produce more targeted public policies. By using big data that is more relevant to the current condition of society, the policy formulation process can be carried out in a better and more comprehensive manner (Hakim et al., 2021; Putry, 2022).

On the one hand, using big data provides a great opportunity to improve the quality of public policies more appropriate to the community's needs. However, on the other hand, the use of big data also faces considerable challenges that can thwart the government's efforts to achieve the goals of using big data in public policy formulation (Khurshid et al., 2019). Currently, the government has implemented at least three types of big data that are used as the basis for the preparation of public policies, namely population data through the e-KTP program, which is under the authority of the Ministry of Home Affairs, national population health data through the National Health Insurance (JKN) program which is the responsibility of the National Health Agency. Social Security Providers (BPJS) and the Ministry of Health, as well as data on national taxpayers under the authority of the Ministry of Finance through the Directorate General of Taxes (Ali & Titah, 2021; Firdau, 2018; Heryana et al., 2020; Sirait, 2016).

Producing big data technology requires a large state budget and is very vulnerable to corruption. The case of the e-KTP megaproject, which has not been completed since 2013, has cost the state Rp. 2, 314, 904, 234, 275.39 of the total project value of Rp. 4, 917, 780, 473, 606 or 47 percent of the total project value. Such massive corruption can only be carried out with the cooperation between bureaucrats and members of parliament (Atriana & Hidayat, 2017).

Aspects of personal data protection and the culture of corruption ingrained in bureaucratic institutions and parliaments have finally become the biggest challenges in using big data in formulating public policies. This challenge has a greater impact than procuring infrastructure and human resources for big data management. Therefore, it is necessary to have the goodwill of the government and the DPR if they want to utilize big data in the process of formulating public policies (Hadi, 2020; Hergiansa et al., 2020; Heryana et al., 2020; Mubaroq & Insyiroh, 2020).

The introduction of the term "big data" in 1997 by Michael Cox and David Ellsworth marked a pivotal moment in the technological landscape. It laid the foundation for a profound shift in how we perceive and harness data. This terminology became emblematic of the exponential data generation and storage growth, fundamentally altering the landscape of data-driven decision-making. It highlighted the necessity for novel approaches and technologies to manage, analyze, and derive meaningful insights from these vast datasets. (Mostafa et al., 2022).

The concept of "Volume" within the context of big data pertains to the sheer magnitude or capacity of data, which often extends to vast scales, sometimes reaching into the realm of petabytes (equivalent to approximately one million gigabytes) or even zettabytes (which equals one trillion gigabytes). This influx of data is sourced from a multitude of origins, encompassing business transactions, the myriad of data generated by smart devices connected to the Internet of Things (IoT), data generated by industrial equipment, the massive volumes of video content, and the deluge of information emanating from social media platforms. The "Volume" component emphasizes the

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extraordinary scale and proliferation of data in our contemporary digital landscape.

The proliferation of data is largely driven by the ubiquity of digital technologies and the interconnectedness of various aspects of our lives with the digital sphere. As a result, it has become essential for organizations and analysts to deploy advanced tools and techniques to manage and extract valuable insights from this unprecedented influx of data. This underscores the critical role of "Volume" in comprehending the intricacies of big data and harnessing its potential to drive informed decision-making and innovation across a wide array of domains (Wanckel, 2022; Xing et al., 2022).

In the bygone era, storing vast datasets posed a formidable challenge. However, the contemporary landscape offers more cost-effective storage solutions on digital platforms and through cloud computing, significantly alleviating the financial strain on big data acquisition budgets. "Velocity," on the other hand, underscores the pace at which data streams. With the proliferation of the Internet of Things (IoT), data inundates businesses at an unprecedented rate and necessitates rapid handling. Technologies like RFID, sensors, and smart meters are instrumental in generating this continuous data flow, demanding real-time processing capabilities for immediate insights. Meanwhile, "Variety" reflects the remarkable diversity of data forms. Data now exists in many formats, from structured and numeric data stored in traditional databases to unstructured content such as text documents, emails, video and audio files, real-time ticker data, and financial transactions. This myriad of data types underscores the need for adaptable analytical tools to comprehend and interpret this heterogeneity. These three dimensions, Volume, Velocity, and Variety, are fundamental facets of the big data landscape and are pivotal for understanding the complexities and potentials of this data-rich environment. The confluence of advanced storage options, rapid data streams, and diverse data formats has propelled the era of big data, transforming how organizations and researchers approach data analysis and decision-making. (Chen et al., 2022; Proskuryakova, 2022).

After two decades of introducing the concept of 3V, O'Reilly 2005 added two more aspects to become 5V through Veracity and Value. Veracity means the quality or validity of the data. Data comes from so many different sources that it can be difficult to link, match, clean, and modify data across systems. Data scientists must connect and correlate data relationships, hierarchies, and relationships. Otherwise, their data can quickly spiral out of control. At the same time, Value means the value or usefulness of data. Not all of the data obtained has benefits, so it must be re-sorted and separate data that is valuable and not useful. Meanwhile, Wayne Thompson added the Variability aspect or data variability, which refers to the trend or specification of the data type that is much needed or discussed by social media users. Examples of data like this are, for example, trending topic data on Twitter (Kitchin & McArdle, 2016; Patgiri & Ahmed, 2016; Rully et al., 2021).

This study examines the opportunities and challenges of using big data in formulating public policies in Indonesia.

METHODOLOGY

From a case study viewpoint, this work employs a qualitative technique and an exploratory paradigm. Flexible and open

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qualitative research that emphasizes inductive analysis (Creswell, 2017). Descriptive research is used in this kind of study because it allows for examining the current status of a group, an individual, an object, a set of circumstances, a way of thinking, or a series of events (Bungin, 2017; Moleong, 2018).

This research will examine the opportunities and challenges of using big data in the formulation of public policies in Indonesia, the factors that support and hinder the use of big data, and the efforts made to maximize opportunities and overcome challenges in the use of big data in policy formulation—Public in Indonesia. The method used in writing this article is a literature study. The literature study is carried out by collecting the required secondary data from existing laws and regulations, books, research journals, the results of government study reports, and valid information released by the Government of Indonesia, which is submitted and can be accessed through the official government page—Itself as well as the news released by the mass media.

In obtaining more in-depth information, the author also uses search and webinar searches related to the development of Indonesian public policy, big data, and Indonesian data to discover the latest developments in each topic. The existing data is processed and explored further as material for descriptions and analytical tools to produce studies that explain the existing phenomena.

RESULTS AND DISCUSSIONS

Presidential Regulation Number 39 of 2019, which addresses "One Indonesian Data," signifies a crucial and dedicated endeavor. Its significance transcends the mere rectification of the regulatory void associated with big data and mirrors a response to the dynamic evolution and requisites of the contemporary digital age. As this initiative has evolved, President Joko Widodo has consistently reaffirmed this commitment. His directive on June 2, 2020, underscores the paramount importance of "one data." It reflects an unwavering dedication to the cause, acknowledging the pivotal role that data plays in the governance and development of the nation in an era increasingly defined by the digital milieu.

This commitment is symbolic and likely to have far-reaching implications regarding data management, policy formulation, and decision-making processes within Indonesia. Moreover, they do not overlap. With the correct data, public actors can adapt to each other and focus on finding real solutions. Public actors can control conflicts of interest and tend to create collaborative governments. This commitment is certainly expected to make the state and its bureaucracy able to improve the practice of collaboration both with the triple-helix or penta-helix concept at present and in the future. Thus, there will be no more overlapping conflicts between public actors due to differences in data and targets (Hakim et al., 2021).

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escalation of one Indonesian data can be a moment of reconciliation between political power and the power of knowledge to be able to present a collaborative government. In the series, it is necessary to carry out further analysis and study efforts to answer challenges and see other outlines (Syafrina & Irwansyah, 2018).

Government activities are public administration activities that aim to regulate and fulfill public affairs and interests. What is done in the world of public administration is what the Government does in very large and varied numbers and types, both concerning the provision of services in various fields of life (public services), as well as those relating to catching up with the community through development programs. In its position, the government's steps to implement something for the community will be answered and resolved through legitimate public policies (Arbex & Cunha, 2020; Broeders et al., 2017; Kandt & Batty, 2021).

Spontaneous decisions do not characterize public policy but follow a structured policy cycle that provides direction and systematicity, ensuring that policies are transparent and accountable to the public. In simple terms, this cycle begins with the formulation of the problem and culminates with policy evaluation. Problem formulation is paramount among these stages as it is the foundation for policy development. If the problem definition at this initial stage is flawed or inaccurate, it significantly jeopardizes the efficacy of the subsequent solutions. If the problem is misconstrued at the outset, any successful policy outcome would be more a matter of chance than a deliberate and informed decision. This underscores the criticality of precision and thoroughness in the problem formulation process within the larger context of the policy cycle, ensuring that policies align with the public's needs and expectations. (Cremin et al., 2022; Kinra et al., 2020).

The process of shaping public policy is an extensive journey, and it is imperative to recognize that the government can no longer operate as the exclusive player due to resource limitations. In addition to being fundamentally flawed, such a belief is becoming increasingly unrealistic. This is particularly evident as future expectations for the quality of public services grow in complexity and evolve swiftly. The government must embrace a collaborative framework to adapt to this changing landscape. In such a framework, partnerships and collaboration with various stakeholders, including non-governmental organizations, private sectors, and academia, become crucial. This approach allows for the pooling of resources and expertise and promotes a more agile response to the dynamic demands of the public. It is a strategic shift towards more inclusive and effective governance, acknowledging that the government cannot navigate the multifaceted challenges of modern society in isolation. (Vydra & Klievink, 2019).

In the current landscape, the evolution of big data is no longer a matter of choice but a compelling necessity. It transcends the transformation of traditional practices into more digitally driven and up-to-date ones, a natural outcome of scientific and technological advancements. Big data as a term emerged after its introduction by O'Reilly Media in 2005. However, it is crucial to recognize that data, in various forms, has existed and been utilized since ancient times. In essence, big data represents a vast repository of information akin to an ocean of data. The significance of big data lies in its potential for analysis, leading to invaluable insights and informed decision-

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making. By harnessing the power of big data, institutions can adapt to the digital age's demands and take strategic steps to optimize their operations and outcomes. This signifies a fundamental shift in how organizations gather, process, and leverage information, marking a pivotal transformation in our data-driven society. (Guenduez et al., 2020).

When it comes to navigating the realm of big data, a fundamental starting point is to grasp the intricacies of the big data protocol. In this context, the data scientist is a key figure who possesses this understanding. It is important to distinguish data science from data management or engineering. Data scientists are at the forefront of big data expertise, equipped with the knowledge and skills to manage vast datasets and extract valuable insights from them. Their role goes beyond simple data management and engineering as they delve into statistical analysis, machine learning, and data modeling. They are instrumental in uncovering patterns and trends within the colossal sea of data, ultimately contributing to informed decision-making and innovative solutions in various domains. (Desarkar & Das, 2017; Vydra & Klievink, 2019).

A data scientist's skill set extends beyond data analysis; it encompasses the art of data visualization. This proficiency pertains to how they present reports and the outcomes of their data analysis in a manner that instantly conveys the intended message to data consumers. Effective visualization is a pivotal communication tool that ensures the clarity and comprehensibility of complex data insights. It transforms abstract figures and statistics into visually digestible formats, facilitating data-driven decision-making. Once the data scientist determines the optimal manner for data presentation, the next step involves harnessing machine learning. Utilizing machine learning algorithms is a strategic choice, as it mitigates the potential for human errors and the introduction of subjective sentiment into data analysis. Machine learning algorithms facilitate data-driven decisions by objectively processing vast datasets, recognizing patterns, and predicting future trends. Moreover, these decisions should be laser-focused on their intended target or the anticipated impact they are expected to yield. This precision ensures that data-driven actions align with organizational goals and objectives, ultimately leading to positive outcomes and informed strategies. (Gregory & Halff, 2020; Lam et al., 2019; Lyu et al., 2022; van der Voort, Klievink, Arnaboldi, & Meijer, 2019).

Up to this point, the utilization of big data in Indonesia has been primarily concentrated within three key business sectors: telecommunications, banking, and consumer goods manufacturing. Nevertheless, it is essential to recognize the broader advantages big data can offer a nation and its government, particularly in shaping public policy. Data plays an indispensable role in the policymaking process, serving as the bedrock of informed decisions. By consistently managing and harnessing big data, the government can tap into a wealth of new, digitally-driven information that can effectively address longstanding challenges, particularly those associated with data scarcity and limitations. These challenges extend to data availability, freshness, and credibility. The strategic application of big data bolsters decision-making within these industries and equips the government with the tools needed to navigate multifaceted issues effectively. This enhances the quality of public policy and paves the way for more innovative and efficient governance. By leveraging the insights derived from big data, the government is better poised to address a

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spectrum of societal challenges, adapting to dynamic circumstances and ensuring that the policies implemented are timely, well-informed, and adaptable to the ever-changing needs of the populace. (Hakim et al., 2021; Nur 2020; Syafrina & Irwansyah, 2018).

The two have a close relationship, where big data is very important in public policy formulation or analysis. With good management and big data, a country will obtain maximum data that can control the country's political flow and focus significantly on the public interest. Managing big data will give birth to several advantages that also help policy analysts, which include (1) Big and diverse data, (2) Ease of classifying data, and (3) Quick access and response to by the political system. However, although Big Data can provide tremendous benefits, there are also various risks, especially in policy analysis, including difficulties in verifying data, identifying public problems and influencing public opinion.

In response to these conditions, the Indonesian Government has established Presidential Regulation Number 39 of 2019 concerning One Indonesian Data. These settings respond to current conditions, making obtaining an accurate and easily searchable database difficult. In its position, SDI is present as a response to regulate data that has different versions so that it affects overlapping public policy formulation processes and inaccurate policy evaluations. With SDI, the data and metadata presented will have standardization with the principle of one data, which includes one standard data, one standard metadata, interoperability, and reference code/master data, so that the differences in data that have often occurred are small and insignificant.

It is possible to draw five conclusions about the Indonesian government's difficulties in implementing big data technology: data availability, government data standardization, data privacy, human resources competency, and supporting infrastructure. Government agencies must properly design and deploy big data technology to improve public services, beginning with intergovernmental collaboration, data exchange, and integration.

Along with the rapid development of technology, especially in data storage and management, growing technological opportunities can be developed in the public sector related to such data. One area that can be developed is big data technology. Indonesia, home to millions of digital technology users, is one of the world's richest digital data sources. Commonly known as big data because of the quantity, variety and speed in which data is collected, big data opens up endless opportunities for policymakers, from engaging the public in data collection and analysis to gaining new insights into a complex and evolving world.

According to the UN Secretary-General's report, emerging technologies are accelerating the volume and type of data available, opening up endless opportunities to inform and transform society and preserve the environment. It is a data revolution where governments, companies, researchers and society experiment, innovate and adapt in a new era of data that is bigger, faster and more detailed than ever. UN Global Pulse Director Robert Kirkpatrick stressed the importance of using state-of-the-art data analysis technology for policy making. Big data can change the point of view of policymakers in viewing a problem and become input for strategic decisions. Measuring and achieving progress towards the 2030 Agenda for Sustainable Development in today's digitally connected world will depend on our ability to

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see new sources of real-time data and innovative technologies to inform policy formulation.

This is followed by efforts to utilize existing data sets, including those owned by the government, to generate richer insights. Traditional data collection takes a long time. Surveys are expensive, and group discussions are not enough to capture diversity in Indonesia. We need diverse, integrated, timely, and reliable information. This data can complement traditional data sources for better policy formulation.

E-Government, also known as electronic-based government, is one of the government initiatives that has been developed and is now becoming more crucial for all decision-makers. Paper-based administration, linked with traditional government, is beginning to disappear. One of the most contentious public policy topics of the day is converting traditional government to electronic governance (e-government). E-Government in Indonesia only got underway with a project introduced a few years ago, not only in service-related goods but also in management and organizational design (Apriliani, 2022).

In developed countries, e-government results from the transformation of the mechanism of bureaucratic interaction with the community, which is becoming more friendly. Likewise, many policymakers in developing countries believe that a clean, authoritative, and transparent government can be realized through e-government.

The fundamental idea behind electronic government is how to deliver services through electronic means, such as the Internet, computer and mobile phone networks, and multimedia. The management of information management systems and public service operations is also carried out by creating e-Gov, in line with that, and optimizing the use of information and communication technology.

Seeing the development of e-government is capital for the Government to continue to develop electronic services (e-services) by utilizing big data technology. The collaboration of various developments in the fields of electronics and technology will support the government's efforts to adopt or implement better and more efficient services in line with the development of globalization because one of the main factors affecting service quality is efficiency.

The value of the regression coefficient of efficiency is the highest because it affects customer satisfaction; the Indonesian government should try to improve efficiency so that customer satisfaction increases. For example, PT Kereta Api Indonesia provides a mobile application for smartphone or tablet users to improve efficiency. In order make it easier for customers to access the online ticket reservation site anywhere and explain the information on the site in more detail, all information needed by customers can be fulfilled.

If efficiency is the main factor affecting service quality, then the solution that the Government can apply is to improve service quality by utilizing technological advances. Moreover, this big data technology is one of the alternatives. Combined with mobile applications and smart cards, it will open up opportunities for service integration. So, not only e-KTP but there will be smart cards that will store various cardholder data, including data on health insurance coverage (BPJS) and taxpayer data.

It is not an easy thing to implement. However, it is challenging for the government to take advantage of technological advances. Although there will

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be many obstacles in the development of the technology. Following the results of previous research by the Ministry of Communication and Information, it can be concluded that there are several challenges in the adoption of big data technology in the Indonesian government, namely:

1. Data Availability

Data availability is one of the cornerstones of performing large data analysis. Access to new and old data can be a barrier for large data, particularly ancient data stored in various formats, frequently in physical form. Because it takes permissions and licenses to access non-public data legally, access to new data also involves extra work. particularly if there is sectoral ego between the agencies that own the data. The data-collecting phase is perceived by service and information providers who use big data analytics in Indonesia as being the most difficult. In truth, Indonesia has abundant data that may be used for many different purposes. However, because the sources are dispersed, obtaining integrated data at the national level would take more work. So, sharing data and even using open data is required.

Related to data integration, the implementation can be applied as follows: a). Data related to population can be accessed on the e-KTP program that is already running. Although there are many polemics for population data, it can be accessed at the data center. Moreover, this is not an easy thing.

Therefore, it becomes a challenge in its implementation; b). Health insurance data can be collaborated with BPJS. Data can be accessed directly from the BPJS, which will later be integrated into the Smart Card with other data, and d). Taxpayer data can also be accessed at the Ministry of Finance. The principle of transparency related to taxes will support the provision of taxpayer data.

2. Government Data Standardization

According to the open data principle, data made available by Ministries, government organizations, and local governments must be presented in a specific standard/platform form, i.e., a format that is easily reusable, machine-readable, and interoperable, such as in .xls or .csv format, rather than as scanned documents or scanned pdfs. As a result, it can promote the use of public data, government accountability and openness, and community involvement in development oversight. Additionally, data integration between agencies can be done after the standardization of government data to increase efficiency and avoid redundancy. In line with this, there must be data integration from these parties related to e-KTP, BPJS and NPWP. Before implementing big data technology, making all data to the same standard is better. Moreover, this is a challenge for the government to manage these data standards.

3. Data Privacy

Data sharing is necessary, yet technological advancements frequently harm privacy. Personal information that has to be secured is related to privacy. The majority of big data utilized today comes directly from users and contains personal information, making it particularly vulnerable to exploitation by other parties.

If personal information about a person is to be utilized by another party, that person's consent is required. Unwise big data technology use can lead to data privacy problems. Consideration must be given to citizen security, and criminal activity resulting from information exposure must be foreseen, particularly activity that jeopardizes national security. The Information and Electronic Transaction Law, the Public Information Disclosure Law, the Banking Law, and the Consumer Protection Law are just a few of the laws and regulations

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that must be followed to deploy big data in Indonesia.

When only one data needs guaranteed security, the level of security must be increased when data is integrated from several sources because the data stored is not small but related to many things. This security guarantee will also be a challenge for the Government in protecting the data of its citizens.

4. Human Resources Competence

The optimum human resources for using big data in government are data scientists who are experts in data analysis with analytical skills, computer programming abilities, and creativity to develop innovative ways to gather, interpret, and analyze data. Data scientists must be able to filter among the many tools employed and choose and arrange the data that will be studied, even though they may not create their analytical tools.

One of the effects of development is the need for knowledgeable and skilled human resources to manage it. There may even be a team of specialists that produce final implementation plans for decided-upon policies or initiatives.

5. Supporting Infrastructure

The government can utilize any current big data analysis technology (Putri & Eriyanto, 2020). The government can create and maintain the necessary big data systems on their own and use big data solutions customized for their purposes by third parties. The intended usage must be considered when calculating the cost-benefit analysis of the two possibilities. A shortcoming of several open source systems is that they cannot process Indonesian digital interactions, necessitating big data analysis with Natural Language Processing (NLP).

Human resources and infrastructure must also be ready and supportive when using big data technology. The government must also prepare funds to support the provision of such infrastructure. Four crucial components—data, technology, procedures, and human resources—become obstacles when the Indonesian government implements big data technology:

1. Data

Objects, events, activities, and transactions that are recorded, categorized, and stored but are not arranged to convey a particular meaning are referred to as data in their most basic definition. Information is data arranged for the recipient to understand and benefit from it. Several sources can provide information about the population, BPJS, and taxpayer data, which can be further gathered and categorized.

2. Technology

This concerns the big data operation's infrastructure and tools, like computing, analytical methods, and storage medium. The government must have the necessary technologies, including infrastructure and tools to use big data technology.

3. Process

It must modify organizational culture as part of the big data technology adoption process. For instance, before the development of big data, a leader controlling an organization relied solely on intuition based on his principles, assumptions, or beliefs. However, now that big data technology exists, leaders can use data-driven decision-making or make choices based on correct facts and pertinent information. The information on integration will be very helpful for various potential improvements and adjustments in government services.

4. Human Resources

When using big data technology, it is necessary to have human resources with analytical and creative skills, such as the ability to come up with novel ways to gather, interpret, and analyze data, computer

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programming skills, and business skills, such as the capacity to comprehend organizational objectives. The availability of human resources is one of the key factors that need to be prepared before utilizing big data technology. The government must have qualified and innovative human resources available.

Trillions of bytes of data are produced daily through information technology from various sources, including social media, sensors, video surveillance, and smart grids. This ocean of data gives rise to one big data jargon. In making strategic decisions, data is crucial. Therefore, parties who can process and use the vast amounts, diverse types, high levels of complexity, and rapid addition of new data can benefit greatly.

Similarly, its application in the service sector allows both parties—those who give services and those who receive them—to benefit. Benefits include more than just material things; they can also include efficacy, productivity, accountability, openness, satisfaction, etc.

CONCLUSION

Big data has become prominent in this ubiquitous information and communication technology era, permeating every facet of society. Its pivotal role is not confined to the realm of daily activities; it extends to the corridors of government decision-making. Harnessing the potential of big data has become imperative for shaping the future trajectory of public policy.

Big data, with its real-time insights and comprehensive scope, has the potential to serve as the bedrock for crafting effective public policies. Governments, driven by the necessity for swift and accurate responses to societal challenges, can leverage big data to enhance policy quality and relevance in the contemporary landscape. This data-driven approach empowers policymakers, encompassing the executive and legislative branches, to enact precise regulations that proactively address multifaceted development issues.

Moreover, big data serves as a dynamic window into the state of society, shedding light on evolving behavioral trends. It fosters a platform for engaging with the community, facilitating a dialogue that informs the formulation of a robust public policy roadmap. By ensuring that the fundamental needs of the populace are met through well-informed policies, big data plays a pivotal role in shaping the government's strategic plan (rastra).

Nonetheless, integrating big data into policy formulation is not without its challenges. To navigate these hurdles, a legislative framework is imperative. The government and the DPR (People's Consultative Assembly) must enact a comprehensive law governing the use of big data in policymaking. This legal foundation will provide the authority and accountability to utilize big data.

Furthermore, establishing a dedicated agency under the executive or specific ministries is essential to oversee the orchestration of big data utilization in policymaking. This agency should comprise an office and secretariat charged with meticulously managing and utilizing big data in policy formulation.

Additionally, safeguarding personal data is paramount in the era of data-driven governance. The recent ratification of the Personal Data Protection Law on September 20, 2022, represents a significant stride in ensuring the security of personal data collected and employed by the government in policymaking. This legal framework offers reassurance to the public concerning the responsible handling of their personal information.

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The era of big data has ushered in a new paradigm for public policy formulation. By embracing the potential of big data, governments can navigate the complexities of modern challenges and enact policies that truly resonate with the needs of their constituents. However, this journey requires a solid legal foundation, dedicated oversight, and a commitment to safeguarding personal data, ensuring that the power of big data is harnessed for the betterment of society.

CREDIT AUTHORSHIP CONTRIBUTION STATEMENT

Irmulansati Tomohardjo: Writing proposal, categorization and analysis process. **Mokhtarrudin Ahmad**: Writing, data curation, draft compilation, reviewing and methodology. **Haekal Fajri Amrullah**: Data curation, data gathering, and editing.

DECLARATION OF COMPETING INTEREST

We certify that there is no conflict of interest with any financial, personal, or other relationships with other people or organizations related to the material discussed in the manuscript.

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REFERENCES

Ali, H., & Titah, R. (2021). Do cities use big data? Understanding the nature and antecedents of big data use by municipalities. *Government Information Quarterly*, *38*(4), 101600. https://doi.org/10.1016/j.giq.2021.101600

Arbex, R., & Cunha, C. B. (2020). Estimating the influence of crowding and travel time variability on accessibility to jobs in a large public transport network using smart card big data. *Journal of Transport Geography*, *85*, 102671. https://doi.org/10.1016/j.jtrangeo.2020.102671

Atriana, R., & Hidayat, F. (2017, July 20). Ini Penyimpangan Proyek e-KTP yang Bikin Rugi Negara Rp 2,3 Triliun. *Detik.Com*, 1–5. https://news.detik.com/berita/d-3567749/ini-penyimpangan-proyek-e-ktp-yang-bikin-rugi-negara-rp-23-triliun

Broeders, D., Schrijvers, E., van der Sloot, B., van Brakel, R., de Hoog, J., & Hirsch Ballin, E. (2017). Big Data and security policies: Towards a framework for regulating the phases of analytics and use of Big Data. *Computer Law & Security Review*, *33*(3), 309–323. https://doi.org/10.1016/j.clsr.2017.03.002

Bungin, B. (2017). *Metodologi Penelitian Kualitatif* (B. Bungin (ed.); 2nd ed.). PT Rajagrafindo Persada. https://www.rajagrafindo.co.id/prod

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uk/metodologi-penelitian-kualitatif-burhan-bungin/

Chen, F., Hou, J., Gu, X., Hou, J., Pan, Q., & Tang, Z. (2022). Research on the temporal and spatial evolution of the public's response to the mandatory waste separation policy based on big data mining. *Sustainable Production and Consumption*, *31*, 236–248. https://doi.org/10.1016/j.spc.2022.02.013

Cremin, C. J., Dash, S., & Huang, X. (2022). Big data: Historic advances and emerging trends in biomedical research. *Current Research in Biotechnology*, *4*, 138–151. https://doi.org/10.1016/j.crbiot.2022.02.004

Creswell, J. W. (2017). *Research Design Pendekatan Kualitatif, Kuantitatif, dan Mixed* (S. Z. Qudsy (ed.); 3rd ed.). Pustaka Pelajar. https://opac.perpusnas.go.id/DetailOpac.aspx?id=1213690

Desarkar, A., & Das, A. (2017). Big-Data Analytics, Machine Learning Algorithms and Scalable/Parallel/Distributed Algorithms. In *Internet of Things and Big Data Technologies for Next Generation Healthcare* (1st ed., pp. 159–197). Springer Publishing Company. https://doi.org/10.1007/978-3-319-49736-5_8

Firdau, M. I. (2018). Pengaruh Pemanfaatan Teknologi Informasi, Kepatuhan Atas Peraturan, dan Kompetensi SDM Terhadap Kualitas LKKL. *Indonesian Treasury Review Jurnal Perbendaharaan Keuangan Negara Dan Kebijakan Publik*, *3*(2), 129–142. https://doi.org/10.33105/itrev.v3i2.69

Gregory, A., & Halff, G. (2020). Big data-driven public relations did the damage. *Public Relations Review*, *46*(2), 101902. https://doi.org/10.1016/j.pubrev.2020.101902

Guenduez, A. A., Mettler, T., & Schedler, K. (2020). Technological frames in public administration: What do public managers think of big data? *Government Information Quarterly*, *37*(1), 101406. https://doi.org/10.1016/j.giq.2019.101406

Hadi, M. Z. (2020). Peluang Implementasi Teknologi Big Data Dan Block Chain Untuk Peningkatan Kinerja Perdagangan Pada Sektor UMKM di Indonesia Pada Era Industri 4.0. *Cendekia Niaga*, *3*(1), 71–80. https://doi.org/10.52391/jcn.v3i1.463

Hakim, D. N., Ramadan, F., & Cahyono, Y. I. (2021). Studi Pemanfaatan Big Data dalam Perumusan Kebijakan Publik pada Sektor Kesehatan. *SPECTA Journal of Technology*, *5*(3), 308–322. https://doi.org/10.35718/specta.v5i3.379

Hergiansa, G. A.-F., Widuri, S. S., & Hadiapurwa, A. (2020). Pemanfaatan Big Data dalam Lingkup Pendidikan. *Inovasi*

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Profetik Jurnal Komunikasi
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DOI: https://doi.org/10.14421/pjk.v16i2.2631

Kurikulum, *17*(2), 109–116. https://doi.org/10.17509/jik.v17i2.42928

Heryana, D., Setiawati, L., & Suhendar, B. (2020). Sistem Informasi dan Potensi Manfaat Big Data untuk Pendidikan. *Gunahumas*, *2*(2), 350–357. https://doi.org/10.17509/ghm.v2i2.23023

Kandt, J., & Batty, M. (2021). Smart cities, big data, and urban policy: Towards urban analytics for the long run. *Cities*, *109*, 102992. https://doi.org/10.1016/j.cities.2020.102992

Khurshid, M. M., Zakaria, N. H., Rashid, A., Kazmi, R., Shafique, M. N., & Nazir Ahmad, M. (2019). Analyzing diffusion patterns of big open data as policy innovation in the public sector. *Computers & Electrical Engineering*, *78*, 148–161. https://doi.org/10.1016/j.compeleceng.2019.07.010

Kinra, A., Beheshti-Kashi, S., Buch, R., Nielsen, T. A. S., & Pereira, F. (2020). Examining the potential of textual big data analytics for public policy decision-making: A case study with driverless cars in Denmark. *Transport Policy*, *98*, 68–78. https://doi.org/10.1016/j.tranpol.2020.05.026

Kitchin, R., & McArdle, G. (2016). What makes Big Data Big Data? Exploring the ontological characteristics of 26 datasets. *Big Data & Society*, *3*(1), 205395171663113. https://doi.org/10.1177/2053951716631130

Lam, J. C. K., Cheung, L. Y. L., Wang, S., & Li, V. O. K. (2019). Stakeholder concerns of air pollution in Hong Kong and policy implications: A big-data computational text analysis approach. *Environmental Science & Policy*, *101*, 374–382. https://doi.org/10.1016/j.envsci.2019.07.007

Lyu, J., Khan, A., Bibi, S., Chan, J. H., & Qi, X. (2022). Big data in action: An overview of big data studies in tourism and hospitality literature. *Journal of Hospitality and Tourism Management*, *51*, 346–360. https://doi.org/10.1016/j.jhtm.2022.03.014

Maryam, N. S. (2016). Mewujudkan Good Governance Melalui Pelayanan Publik. *Jurnal Ilmu Politik Dan Komunikasi*, *VI*(1), 1–18. https://doi.org/https://doi.org/10.34010/jipsi.v6i1.232

Moleong, J. L. (2018). *Qualitative Research Methodology* (8th ed.). Remaja Rosdakarya. https://opac.perpusnas.go.id/DetailOpac.aspx?id=1133305

Mostafa, N., Ramadan, H. S. M., & Elfarouk, O. (2022). Renewable energy management in smart grids uses big data analytics and machine learning. *Machine Learning with Applications*, 100363. https://doi.org/10.1016/j.mlwa.2022.100363

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DOI: https://doi.org/10.14421/pjk.v16i2.2631

Mubaroq, S., & Insyiroh, I. M. (2020). Teknologi Kecerdasan Buatan, Big Data Analysis, dan Internet of Things: Potensi dan Perannya dalam Penanganan Covid-19 di Indonesia. *Jurnal Kependudukan Indonesia*, 109. https://doi.org/10.14203/jki.v0i0.580

Nainggolan, D. R. M. (2017). Data Science, Big Data, and Predictive Analytics: A Platform for Cyberspace Security Intelligence. *Jurnal Pertahanan & Bela Negara*, *7*(2). https://doi.org/10.33172/jpbh.v7i2.192

Nur, S. K. (2020). Pemanfaatan Big Data Pada Konsep Smart City: Kajian Pustaka. *Jurnal INSTEK (Informatika Sains Dan Teknologi)*, *5*(1), 27. https://doi.org/10.24252/instek.v5i1.12140

Pambudi, A. S. (2021). Optimalisasi Pemanfaatan Big Data dalam Evaluasi On Going DAK Fisik Bidang Kesehatan saat Pandemi COVID-19. *Bappenas Working Papers*, *4*(2), 201–217. https://doi.org/10.47266/bwp.v4i2.96

Patgiri, R., & Ahmed, A. (2016). Big Data: The V's of the Game Changer Paradigm. *2016 IEEE 18th International Conference on High Performance Computing and Communications; IEEE 14th International Conference on Smart City; IEEE 2nd International Conference on Data Science and Systems (HPCC/SmartCity/DSS)*, 17–24. https://doi.org/10.1109/HPCC-SmartCity-DSS.2016.0014

Permana, D., Muchsin, S., & Suyeno. (2021). Inovasi Program Pelayanan Publik Berbasis Digital Government (Studi Kasus pada Pengadilan Agama di Kota Malang). *Jurnal Respon Publik*, *15*(1), 32–40. http://riset.unisma.ac.id/index.php/rpp/article/view/10013

Proskuryakova, L. (2022). The interaction of environmental systems and human development in a time of wild cards. A big data-enhanced foresight study. *Journal of Environmental Management*, *316*, 115169. https://doi.org/10.1016/j.jenvman.2022.115169

Putry, R. A. (2022). Dekonstruksi Kebijakan Publik Masa Kini Melalui Eskalasi Kualitas Satu Data Indonesia: Antara Harapan dan Kenyataan. *Collaborative Governance and Digital Transformation to The Smart Cities*, 23–34. http://repository.unigal.ac.id:8080/handle/123456789/1200

Sirait, E. R. E. (2016). Implementasi Teknologi Big Data di Lembaga Pemerintahan Indonesia. *Jurnal Penelitian Pos Dan Informatika*, *6*(2), 113. https://doi.org/10.17933/jppi.2016.060201

Syafrina, A. E., & Irwansyah. (2018). Privacy Threats in Big Data. *Jurnal Penelitian Komunikasi Dan Opini Publik*, *22*(2).

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Profetik Jurnal Komunikasi
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https://doi.org/10.33299/jpkop.22.2.1503

van der Voort, H. G., Klievink, A. J., Arnaboldi, M., & Meijer, A. J. (2019). Rationality and politics of algorithms. Will the promise of big data survive the dynamics of public decision-making? *Government Information Quarterly*, *36*(1), 27–38. https://doi.org/10.1016/j.giq.2018.10.011

Vydra, S., & Klievink, B. (2019). Techno-optimism and policy-pessimism in the public sector big data debate. *Government Information Quarterly*, *36*(4), 101383. https://doi.org/10.1016/j.giq.2019.05.010

Wanckel, C. (2022). An ounce of prevention is worth a pound of cure – Building capacities for the use of big data algorithm systems (BDAS) in early crisis detection. *Government Information Quarterly*, 101705. https://doi.org/10.1016/j.giq.2022.101705

Xing, Y., Wang, X., Qiu, C., Li, Y., & He, W. (2022). Research on opinion polarization by big data analytics capabilities in online social networks. *Technology in Society*, *68*, 101902. https://doi.org/10.1016/j.techsoc.2022.101902

Zhao, E., Sun, S., & Wang, S. (2022). New developments in wind energy forecasting with artificial intelligence and big data: A scientometric insight. *Data Science and Management*. https://doi.org/10.1016/j.dsm.2022.05.002

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