Behavioral Intention of the Use of COVID-19 Governance Application: A Literature Review

Yoserizal Yoserizal[1], Krismena Tovalini[2], Yulia Hanoselina[3]

[1]Universitas Andalas. West Sumatra Province. Indonesia
[2]STIA Adabiah Padang. West Sumatra Province. Indonesia
[3]Universitas Negeri Padang. West Sumatra. Indoensia

Corespodence: yoserizal.fisip.unand@gmail.com[1]

ABSTRACT

The COVID-19 pandemic has had a profound impact on Indonesia, affecting not only public health but also socio-economic aspects of life. As part of its response to mitigate the spread of the virus, the Indonesian government introduced the PeduliLindungi application, which enables contact tracing and monitoring of COVID-19 cases through public participation. Despite its effectiveness in supporting policy decisions and reducing transmission rates, the application has faced criticism, particularly regarding potential privacy and human rights concerns. This study aims to analyze the behavioral intention of users to adopt the PeduliLindungi application using the Technology Acceptance Model (TAM) as a framework. The research employs a literature review approach, synthesizing findings from existing studies to identify key factors influencing user attitudes and intentions. Results indicate that perceived usefulness, perceived ease of use, and perceived risk are critical determinants of user attitudes. Furthermore, the study hypothesizes that user attitudes significantly influence behavioral intention, with trust in the application playing a reciprocal role. The findings highlight the importance of addressing user concerns, particularly regarding data security and privacy, to enhance adoption rates. This research contributes to the understanding of user behavior in adopting COVID-19 governance applications and provides a theoretical basis for future empirical studies. It concludes with recommendations for policymakers to ensure both the efficacy and ethical implementation of such technologies in public health crises.

Keyword: COVID-19 Governance, Application, TAM, Literature Review

INTRODUCTION

The Coronavirus Disease (COVID-19) continues to be a significant concern in Indonesia, even after several years since its first outbreak. Although there have been indications of the pandemic slowing down, COVID-19 cases in Indonesia persist and have not been fully eradicated. As of May 4, 2022, data revealed that 6,047,491 people tested positive for the virus, with 5,884,325 recoveries and 156,321 fatalities. This situation remains far from normal and demands consistent, serious measures to mitigate its impacts. COVID-19 affects not only public health but also socio-economic conditions across the country. In response, the

Indonesian government has taken numerous strategic initiatives and implemented policies aimed at curbing the spread of the virus.

One of the key initiatives developed by the Indonesian government to control COVID-19 is the PeduliLindungi application. This digital platform serves as an information system designed to assist governmental agencies in tracking and managing the spread of the virus. PeduliLindungi relies heavily on public participation, encouraging individuals to share their location data when traveling. This feature enables contact tracing and facilitates the identification of potential exposure to confirmed COVID-19 cases. Moreover, the application provides notifications to users when they enter crowded areas or red zones, which are designated as regions with reported active COVID-19 cases or individuals under medical supervision.

The introduction of PeduliLindungi has proven to be a crucial tool in the fight against COVID-19 in Indonesia. Not only does the application help in reducing the transmission rate, but it also serves as a data-driven foundation for the government to make informed decisions and policies related to public health. However, the implementation of PeduliLindungi has not been without controversy. The application has attracted criticism from both domestic and international entities, raising concerns about privacy and data security. Specifically, the United States Government has flagged potential human rights issues related to its use.

In its 2021 Country Reports on Human Rights Practices, published on April 15, 2022, the U.S. Department of State highlighted the PeduliLindungi application. The report acknowledged the app's role in tracking COVID-19 cases and limiting public access to areas such as shopping malls through digital verification (Setiawan & Mahadiansar, 2019). However, the report also noted concerns raised by various non-governmental organizations regarding the security and handling of personal data collected through the application. Questions were raised about how the Indonesian government stores, manages, and utilizes the data from users. These concerns have sparked debates about the balance between public health safety and the protection of individual privacy and rights.

Despite these controversies, the PeduliLindungi application has continued to operate as a vital tool in Indonesia's pandemic response. It serves as an example of how digital solutions can contribute to public health efforts during global health emergencies. Nevertheless, the success of such applications depends significantly on their acceptance and sustained use by the public. The willingness of individuals to engage with the platform is influenced by various factors, particularly their level of trust in the system and the government managing it. Trust is a critical determinant of the intention to use technology-based applications like PeduliLindungi. Research indicates that trust and intention have a reciprocal relationship; trust can foster the intention to use, and, conversely, continued usage can enhance trust (Abdulkareem & Ramli, 2014; Abdulkareem & Ramli, 2022). In the context of PeduliLindungi, trust encompasses several dimensions, including confidence in the application's ability to secure personal data, transparency in how information is used, and the perceived reliability of the system.

Moreover, user trust in the PeduliLindungi application is influenced by broader perceptions of the Indonesian government's approach to managing the pandemic. Transparent communication, accountability, and consistent enforcement of policies play a crucial role in shaping public trust. These factors ultimately impact the effectiveness of PeduliLindungi as a digital tool to combat COVID-19. If trust is compromised, it may undermine the public's willingness to use the application and jeopardize its potential benefits. Given these dynamics, it becomes essential to explore the factors that influence trust and intention to use PeduliLindungi. Scientific research in this area can provide valuable insights into the relationship between trust, intention, and the long-term viability of internet-based applications for public health purposes. It also contributes to understanding the socio-technical challenges of implementing digital health solutions during global crises.

The case of PeduliLindungi underscores the importance of balancing public health imperatives with the protection of individual rights. While digital platforms can significantly

enhance the efficiency of pandemic responses, they must be designed and implemented in ways that respect privacy and ethical considerations. This balance is crucial not only for public acceptance but also for maintaining the credibility of government initiatives during times of crisis. This paper aims to examine the trust-related factors that influence the public's intention to use the PeduliLindungi application in Indonesia. By analyzing user perceptions, this study seeks to provide evidence-based recommendations for enhancing trust and ensuring the sustainability of digital health interventions. Understanding these dynamics is vital for leveraging technology to manage current and future public health challenges effectively.

RESEARCH METHODS

This study employs a literature review methodology, focusing on examining existing research related to the behavioral intention of using the PeduliLindungi COVID-19 governance application. The literature review approach was selected to provide a comprehensive understanding of the topic by synthesizing relevant findings and theories from prior studies. By analyzing various peer-reviewed articles and reports, this method enables the exploration of the factors influencing user intention, as well as the challenges and benefits associated with the application. To establish a theoretical foundation, the Technology Acceptance Model (TAM) was utilized as a framework, emphasizing the constructs of perceived usefulness, perceived ease of use, and other relevant variables, such as perceived risk and attitude.

Data for this study were obtained from credible journal articles, conference proceedings, and government reports that discuss the use of PeduliLindungi and other related online applications in managing public health crises. The literature was carefully selected based on its relevance to the TAM framework and its focus on user behavior toward technology. Additionally, studies on e-government services and online application systems were incorporated to compare user acceptance factors across different technological contexts. This structured approach ensures that the findings are both theoretically grounded and applicable to the research objectives.

The analysis involved identifying and categorizing the relationships among TAM constructs and behavioral intention variables. Hypotheses were developed based on the synthesized findings, exploring the direct and indirect effects of perceived ease of use, perceived usefulness, and perceived risk on user attitudes and intention to use the application. By focusing on theoretical insights and empirical evidence, this research method supports the formulation of robust conclusions and highlights areas for further empirical testing to enhance the implementation and adoption of similar governance applications.

RESULTS AND DISCUSSION
1. Technology Acceptance Model

The technology acceptance model (TAM) is a theory that originated in the discipline of psychology and is also widely used in business and management studies. Adapted from the theory of reasoned action (TRA), TAM was first developed by Davis (1989). TAM consists of two distinct constructs, perceived usefulness and perceived ease of use, which directly influence attitudes toward system use and indirectly influence actual use of the system (Davis, 1993; Yoserizal et al., 2023). The systems referred to here include various things, such as the internet, applications, information systems (IT), management systems, and online learning systems. The following is the definition of each construct in TAM:
a. Perceived ease of use: the extent to which individual users feel that their use of the target system will be mentally and physically easy.
b. Perceived usefulness: the extent to which individual users feel that their use of the target system will improve their work performance.
c. Attitude towards using the target system: the extent to which individual users will value and relate their use of the target system to their job performance.
d. Actual use: defined as a form of external psychomotor response measured by the actual

actions of individual users.

The causality of the four TAM components can be explained theoretically and empirically. Management information systems (MIS) research bases the success of actual system use on the frequency and intensity of system use (Davis, 1993). (Davis, 1993). Attitude measures the tendency to use the actual system. According to Davis (1993) when the causal relationship between attitude and usage is established, the antecedents or determinants of end-user attitudes toward the target system are not so difficult to examine. The antecedents mentioned refer to end users' perceptions of the ease and usefulness of the IT system. From the viewpoint of system design features (Davis, 1985), TAM identifies two important determinants of end-user attitudes toward technology: perceived ease of use and perceived usefulness. The causal relationship of perceived ease of use with perceived usefulness is corroborated by Hubona & Blanton (1996). They measured the predictive ability of perceived ease of use and perceived usefulness with three other variables: task accuracy, task latency (i.e., response time), and user confidence in decision quality; their findings indicated that perceived ease of use influenced the three outcome variables much more significantly than user perceived usefulness.
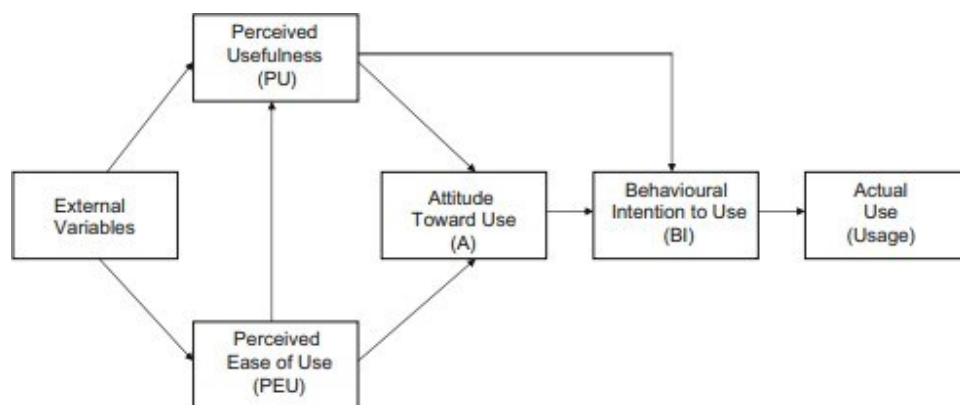

Figure 1. Technology Acceptance Model
Source: Davis (1993, p. 476)

This study uses TAM as a theoretical basis for analyzing the intention to use COVID-19 governance applications for the following reasons (Pan et al., 2005):
a. TAM has been adopted and used in settings using three main types of information systems: office automation tools, software development tools, and business application tools.
b. TAM has been compared with other user acceptance models and theories. For example, theory of reasoned action (TRA) and theory of planned behavior (TPB).
c. Some researchers have alternately used two variables: attitude towards system use and behavioral intention towards system use; some have examined both respectively.
d. TAM has been adapted and extended in the literature, where different causal paths and new external variables are investigated. Frequency and intensity (or duration) are treated as two real variables or two subscales of actual system usage, which are outcome variables, in some relevant studies. Subjective Norm, a latent factor studied in TRA, is usually investigated in extended TAM studies.

2.   Inter-variable Relationships and Hypothesis Development
Inter-variable Relationships and Hypothesis Development refers to the process of identifying and defining the relationships between the variables in a study and formulating hypotheses based on these relationships. In research models like the Technology Acceptance

Model (TAM) or other theoretical frameworks, this involves understanding how key variables interact with each other and predicting their causal or correlational relationships

a. The Effect of Perceived Usefulness on Attitude; TAM suggests that perceived ease of use and perceived usefulness primarily determine users' perceptions and attitudes toward a technology. (Davis, 1989). Perceived usefulness refers to the extent to which users believe that a system or technology improves job performance. (Davis, 1989). This study focuses more on the performance enhancement aspect and rules out perceived ease of use in the research model, as some previous studies found that perceived ease of use often weakens the validity of user acceptance (Kwon et al., 2014; Park & Del Pobil, 2013). (Kwon et al., 2014; Park & Del Pobil, 2013). Accordance with the TAM framework and previous studies, this study proposes the following hypotheses: Hypothesis 1: Perceived usefulness has a positive effect on user attitudes

b. The Effect of Perceived Ease of Use on Attitude; Perceived ease of use is defined as a fundamental predictor of TAM (Chen & Aklikokou, 2020). Perceived ease of use refers to the extent to which potential users of a particular system believe it to be free of effort. (Davis, 1989). Together with perceived usefulness, perceived ease of use is an important construct that plays a central role in the adoption process of a system (Davis, 1989). The importance of perceived ease of use in the adoption of information technology has been noted in several studies (Gefen & Straub, 2000). This construct has also been found to have a significant influence on perceived benefits (Alalwan et al., 2017; Chen & Aklikokuk, 2017). (Alalwan et al., 2017; Chen & Aklikokou, 2020). Therefore, the next hypothesis can be structured as follows: Hypothesis 2: Perceived ease of use has a positive effect on user attitudes

c. Effect of Perceived Risk on Attitude; Perceived risk refers to feelings of fear or uncertainty about using certain information systems/technologies due to anticipated outcomes (Slade et al., 2015). (Slade et al., 2015). In the perspective of online applications, perceived risk is citizens' belief that using an online application system will result in some form of loss. In addition, online applications must be accessed via the internet. Some users may feel hesitant to use these services due to the potential risks associated with the internet (Verkijika et al., 2015). (Verkijika & De Wet, 2018). Rana et al. (2015) argue that more than 80% of internet users are very anxious to disclose their personal information on the web. As a result, citizens' engagement with transactional online applications may be limited. Recent studies suggest that perceived risk has a significant relationship with individual attitudes. Individuals who perceive high risk are less likely to use online application services (Dwivedi et al., 2017). Previous empirical research supports a negative relationship between perceived risk and behavioral intention to use online applications (Zahid et al., 2017). (Zahid et al., 2022). Thus, the researcher formulates the direct relationship as follows: Hypothesis 3: Perceived risk has a negative effect on user attitudes

d. The influence of Perceived Risk on Perceived Usefulness; Perceived risk has two dimensions: technology-based risk resulting from infrastructure and relational risk resulting from the behavior of service providers (Pavlou, 2003). Service providers may not behave in the required manner in terms of reliability, and they behave opportunistically by taking advantage of uncontrolled transactions. Moreover, there is always an inherent possibility of hacking a mobile app due to the security vulnerabilities associated with mobile app technology. This kind of technological and relational risk reduces users' trust in online applications, which in turn reduces the intention to use online applications. In addition, users will not find online apps useful when the perceived risk is high so they will prefer to use offline mechanisms or other traditional channels. There are several studies that show a significant relationship between perceived risk and intention to use (Gumussoy et al., 2014). (Gumussoy et al., 2018; Hanafizadeh et al., 2014). In this regard, the next hypothesis can be structured as follows: Hypothesis 4: Perceived risk negatively affects perceived usefulness

e. The Effect of Perceived Ease of Use on Perceived Usefulness; TAM proposes a causal relationship between two key influential variables of internal beliefs namely, perceived usefulness and perceived ease of use. These two variables shape user attitudes and, thus, intention to use, which are good predictors of actual technology use (Davis et al., 1989). In the context of online applications, previous studies integrated TAM variables into a new model to investigate the determinants of public adoption of e-government services (Al-Hujran et al., 2015; Rana et al., 2015). However, the relative importance of perceived usefulness and perceived ease of use as antecedents of behavioral intentions is likely to be minimized in an environment that requires people to use online applications (Brown et al., 2008). Thus, the intention to use online applications is removed to fit the context of mandatory use. Furthermore, usage behavior has been replaced by user satisfaction as an important factor for the measurement of the success of online applications (Alkraiji, 2021). The next hypothesis is Hypothesis 5: Perceived ease of use has a positive effect on perceived usefulness

f. The Influence of Attitude on Behavioral Intention; Individuals' behavior towards using online applications is influenced by their intention to use the application. The antecedents of intention to use are attitudes, subjective norms, perceived behavioral control, and beliefs derived from previous literature (Rana et al., 2015; Verkijika & De Wet, 2018). Attitude is well defined as "the extent to which a person has favorable or unfavorable evaluations or judgments of the behavior in question" (Ajzen, 1991). Attitude is considered an important factor in determining users' intention to use online applications. Individual attitudes can range from favorable to unfavorable, like-dislike and positive to negative. (Zahid et al., 2022). In the perspective of online application service adoption, individuals who have a favorable opinion of the online application service system are more likely to adopt it and vice versa. (Verkijika & De Wet, 2018). The influence of attitude on intention to use new technology has been theorized and validated by various studies (Al-Hujran et al., 2015; Zahid & Din, 2019). In addition, many studies have also validated the role of attitudes as a strong factor influencing intentions in online applications or e-government (Rana et al., 2015; Zahid et al., 2022). The researcher theorizes the relationship between attitude and intention as follows: Hypothesis 6: User attitude has a positive effect on their intention to use the application

3. Research Model TAM

The Technology Acceptance Model (TAM) is a framework used to study and explain how users come to accept and use a particular technology. Departing from the TAM theory, the relationship between variables, and the research hypotheses that have been compiled, the hypothetical model in this study canbe described as follows:
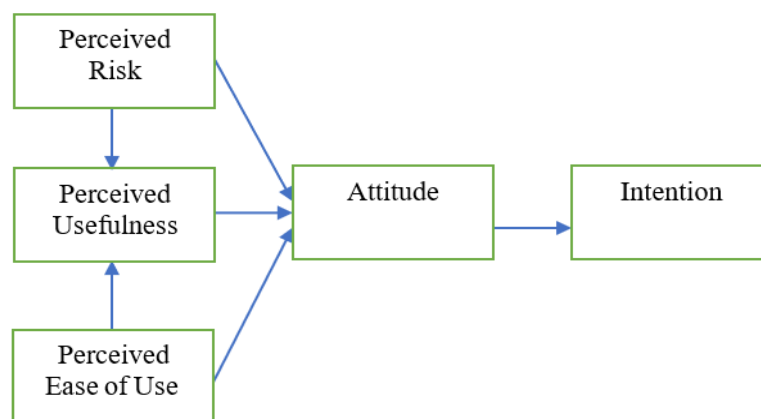

Figure 2. Research Model
Source: Author, 2024

Figure 2 shows that this study has five latent variables, namely perceived usefulness, perceived ease of use, perceived risk, attitude, and intention. Of the 5 latent variables, there are three independent variables (perceived usefulness, perceived ease of use, perceived risk), one mediator variable (attitude), and one dependent variable (intention). From this structural model, five hypotheses have been proposed previously. These hypotheses will be further tested to confirm and extend TAM.

CONCLUSION

The study highlights the critical role of user perception in the adoption of the PeduliLindungi application within the context of the COVID-19 pandemic in Indonesia. Using the Technology Acceptance Model (TAM) as a theoretical framework, the research identifies perceived usefulness, perceived ease of use, and perceived risk as significant factors influencing user attitudes. Perceived usefulness plays a dominant role in shaping attitudes, as users prioritize performance enhancement when adopting the application. Meanwhile, perceived ease of use supports user engagement by minimizing the effort required to interact with the platform. However, perceived risk, encompassing data security and privacy concerns, emerges as a major barrier to adoption, necessitating proactive measures to mitigate user apprehension and foster trust.

Trust, as a multifaceted construct, is central to users' behavioral intention toward adopting digital governance tools like PeduliLindungi. The study underscores the reciprocal relationship between trust and intention, where enhanced trust fosters greater adoption, and sustained usage reinforces trust. Factors such as transparent communication, accountability, and ethical data management practices are pivotal in building public confidence in the application. Furthermore, the study reveals that trust in the PeduliLindungi application is intricately linked to perceptions of the government's pandemic management strategies. As such, the success of digital health interventions extends beyond technological functionality to include the broader socio-political context in which they operate.

This research contributes to the broader discourse on technology adoption during global health crises by providing a nuanced understanding of the interplay between user perceptions, attitudes, and trust. The findings highlight the importance of addressing user concerns to enhance the effectiveness and sustainability of digital governance applications. Policymakers are recommended to implement robust data security measures, ensure ethical usage of collected information, and engage in transparent public communication to balance public health imperatives with individual rights. Future empirical studies are encouraged to validate these findings and explore additional factors influencing the adoption of e-governance tools in similar contexts.

REFERENCES

Abdulkareem, A. K., & Ramli, R. M. (2022). Does trust in e-government influence the performance of e-government? An integration of information system success model and public value theory. *Transforming Government: People, Process and Policy, 16*(1), 1–17.

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50, 179–211.

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management, 37*(3), 99–110.

Al-Hujran, O., Al-Debei, M. M., Chatfield, A., & Migdadi, M. (2015). The imperative of influencing citizen attitude toward e-government adoption and use*. Computers in Human Behavior, 53*, 189–203.

Alkraiji, A. I. (2021). An examination of citizen satisfaction with mandatory e-government services: comparison of two information systems success models. *Transforming Government: People, Process and Policy, 15*(1), 36–58. https://doi.org/10.1108/TG-01-2020-0015

Brown, S. A., Venkatesh, V., Kuruzovich, J., & Massey, A. P. (2008). Expectation confirmation: An examination of three competing models. *Organizational Behavior and Human Decision Processes, 105*(1), 52–66.

Chen, L., & Aklikokou, A. K. (2020). Determinants of e-government adoption: Testing the mediating effects of perceived usefulness and perceived ease of use. *International Journal of Public Administration, 43*(10), 850–865.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319–339.

Davis, F. D. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal of Man-Machine Studies, 38*(3), 475–487.

Dwivedi, Y. K., Rana, N. P., Janssen, M., Lal, B., Williams, M. D., & Clement, M. (2017). An empirical validation of a unified model of electronic government adoption (UMEGA). *Government Information Quarterly, 34*(2), 211–230.

Gefen, D., & Straub, D. (2000). The relative importance of perceived ease of use in IS adoption: A study of e-commerce adoption. *Journal of the Association for Information Systems, 1*(1), 1–30.

Gumussoy, C. A., Kaya, A., & Ozlu, E. (2018). Determinants of mobile banking use: An extended TAM with perceived risk, mobility access, compatibility, perceived self-efficacy and subjective norms. In F. Calisir & H. C. Akdag (Eds.), Industrial engineering in the industry 4.0 era (pp. 225–238). Springer International Publishing.

Hanafizadeh, P., Behboudi, M., Abedini Koshksaray, A., & Jalilvand Shirkhani Tabar, M. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics, 31*(1), 62–78.

Hubona, G. S., & Blanton, J. E. (1996). Evaluating system design features. International Journal of Human Computer Studies, 44(1), 93–118.

Kwon, S. J., Park, E., & Kim, K. J. (2014). What drives successful social networking services? A comparative analysis of user acceptance of Facebook and Twitter. *Social Science Journal, 51*(4), 534–544.

Pan, C. C., Sivo, S., Gunter, G., & Cornell, R. (2005). Students' perceived ease of use of an eLearning management system: An exogenous or endogenous variable? *Journal of Educational Computing Research, 33*(3), 285–307.

Park, E., & Del Pobil, A. P. (2013). Modeling the user acceptance of long-term evolution (LTE) services. *Annals of Telecommunications, 68*(5–6), 307–315.

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce, 7*(3), 101–134.

Rana, N. P., Dwivedi, Y. K., Williams, M. D., & Weerakkody, V. (2015). Investigating success of an e-government initiative: Validation of an integrated IS success model. *Information Systems Frontiers, 17*(1), 127–142.

Setiawan, R., & Mahadiansar, M. (2020). Forecasting analysis: The Riau Islands local government role In Covid-19 disaster management. *Jurnal Studi Pemerintahan*, 301-326.

Slade, E., Williams, M., Dwivedi, Y., & Piercy, N. (2015). Exploring consumer adoption of proximity mobile payments. *Journal of Strategic Marketing, 23*(3), 209–223.

U.S. Department of State. (2021). Indonesia 2021 human rights report. In 2021 Country reports on human rights practices (Issue April, pp. 1–60). *Bureau of Democracy, Human Rights, and Labor.*

Verkijika, S. F., & De Wet, L. (2018). E-government adoption in sub-Saharan Africa. *Electronic Commerce Research and Applications, 30*, 83–93.

Yoserizal, Y., Tovalini, K., Hanoselina, Y., & Yudiatmaja, W. E. (2023, July). A structural equation modeling of electronic learning application during COVID-19 outbreak. In AIP Conference Proceedings (Vol. 2798, No. 1). AIP Publishing.

Yudiatmaja, W. E., Prastya, I. Y., Meilinda, S. D., & Samnuzulsari, T. (2021). A systematic literature review of the research on traditional medicine policy. *Mimbar: Jurnal Sosial Dan Pembangunan, 37*(1).

Yudiatmaja, W. E., Salomo, R. V., & Prasojo, E. (2023). Leadership Styles and Employee's Innovative Behavior: A Systematic Review Using Bibliometrics. *The Journal of Behavioral Science, 18*(3), 120-137.

Zahid, H., & Din, B. H. (2019). Determinants of intention to adopt e-government services in Pakistan: An imperative for sustainable development. *Resources, 8*(3).

Zahid, H., Ali, S., Abu-Shanab, E., & Javed, H. M. U. (2022). Determinants of intention to use e-government services: An integrated marketing relation view. *Telematics and Informatics, 68*, 101778.