

## Strategy for improving human resource quality in government administration in Indonesia, Sytematic Literature Review



## Strategi Peningkatan Kualitas Sumber Daya Manusia dalam Administrasi Pemerintahan di Indonesia, Tinjauan Sistematis Literatur

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ARTICLE INFORMATION	
<b>Keywords</b> <i>Government Administration; Digitalization; e-Government; Public Service; Human Resources Apparatus;</i>	<b>ABSTRACT</b> This study aims to map the development of research and scientific publications related to strategies to improve the quality of human resources in Indonesian government administration. This research uses the Sytematic Literature Review (SLR) approach by following the PRISMA protocol and analyzing 64 relevant scientific articles from the Dimension database, published in 2013-2024. The analysis was conducted using VOSviewer to identify topic clusters, related concepts. As well as research trends. The results revealed that there are five main clusters that are dominant and relevant in the development of human resources for government officials, namely: education, HR management, technology, digital literacy, bureaucratic reform, and public service innovation. The education cluster emerged as the most dominant theme, showing the importance of literacy and continuous training in supporting the digital transformation of the bureaucracy. This research makes a significant contribution to the development of ASN capacity building policies through a data-based approach and scientific trends. In addition, these findings also serve as a strategic reference in strengthening HR management systems and technology-based governance. The limitation of this study lies in the data source that only comes from the data dimension, so that the coverage of the literature does not represent the whole of various relevant sources. Therefore, future studies are advised to combine data from various reputable databases such as Scpus, Web of Science, and EBSCO for more comprehensive results.
<b>Kata Kunci</b> <i>Administrasi Pemerintahan; Digitalisasi; e-Government; Pelayanan Publik; Sumber Daya Manusia Aparatur;</i>	<b>ABSTRAK</b> Penelitian ini bertujuan untuk memetakan perkembangan peneltian dan dan publikasi ilmiah terkait strategi peningkatan kualitas sumber daya manusia dalam administrasi pemerintahan Indonesia. Penelitian ini menggunakan pendekatan Sytematic Literature Review (SLR) dengan mengikuti protokol PRISMA dan menganalisis 64 artikel ilmiah yang relevan dari database Dimension, terbitan tahun 2013-2024. Analisis dilakukan menggunakan VOSviewer untuk mengidentifikasi klaster topik, terkait konsep. Serta tren penelitian. Hasil penelitian mengungkapkan bahwa terdapat lima klaster utama yang dominan serta relevan dalam pengembangan SDM aparatur pemerintahan, yaitu: pendidikan, manajemen SDM, teknologi, literasi digital, reformasi birokrasi, dan inovasi layanan publik. Klaster pendidikan muncul sebagai tema paling dominan, menunjukkan pentingnya literasi dan pelatihan berkelanjutan dalam mendukung transformasi digital birokrasi. Penelitian ini memberikan kontribusi signifikan terhadap pengembangan kebijakan peningkatan kapasitas ASN melalui pendekatan yang berbasis data dan tren ilmiah. Selain itu, temuan ini juga menjadi referensi strategis dalam penguatan sistem manajemen SDM

		dan tata kelola pemerintah berbasis teknologi. Keterbatasan penelitian ini terletak pada sumber data yang hanya berasal dari data dimension, sehingga cakupan literatur belum mewakili keseluruhan dari berbagai sumber yang relevan. Oleh karena itu, studi selanjutnya disarankan untuk menggabungkan data dari berbagai database bereputasi seperti Scopus, Web of Science, dan EBSCO untuk hasil yang lebih komprehensif.
<b>Article History</b> Send 14 <sup>th</sup> May 2025 Review 25 <sup>th</sup> May 2025 Accepted 12 <sup>th</sup> June 2025		Copyright ©2026 Jurnal Aristo (Social, Politic, Humaniora) This is an open access article under the <a href="#">CC-BY-NC-SA</a> license. Akses artikel terbuka dengan model <a href="#">CC-BY-NC-SA</a> sebagai lisensinya.



## Introduction

The study of digital transformation has increased significantly, this is characterized by an increase in the quality of human resources (HR) in government administration which is no longer an option, but a necessity to ensure the continuity and effectiveness of Indonesian government governance (Yazid & Karmila, 2024). In the context of Indonesia, bureaucratic transformation and the application of digital technology in the government sector are very relevant to improving the performance of state civil servants (ASN) and public services. Quality HR is not only required to master knowledge and skills related to administrative tasks, but must also be able to adapt to technological developments, especially in the rapidly developing digital era. Therefore, developing HR competencies in government administration is the main key to ensuring the effectiveness of government policies and bureaucratic reform in Indonesia (Destiana, 2023).

Digital transformation of government in a global context is a top priority for various countries. According to the UN E-Government Survey 2024, Indonesia is ranked 67th out of 193 countries with an EGDI score of 0.7991, indicating a Very High (VH) category in e-government development in the Southeast Asia region (EU, 2024). Although Indonesia has reached the VH category, its position is still below other Asian countries such as Singapore (rank 1), South Korea (rank 4), and Thailand (rank 52). This shows that there is still room for continuous improvement, especially in the Human Capital Index (HCI) component which reached 0.7293 and the Telecommunication Infrastructure Index (TII) of 0.8645. Furthermore, Indonesia's target to achieve a better Digital Government Index by 2025 requires accelerated development of human resources capable of optimizing digital technology. This urgency is further strengthened by the 2020-2024 National Medium-Term Development Plan (RPJMN) which sets digital transformation as one of the national priorities, but its implementation is still constrained by the limited digital competence of ASN at various levels of government (Bappenas, 2019).

**Tabel. UN E-Government Survy 2022 & 2024 – Country Ranking**

Country	Rating Class	EGDI Rank	Subregion	OSI	HCI	TII	EGDI (2024)	EGDI (2022)
Singapore	VH	3	South-eastern Asia	0.9831	0.9362	0.9881	0.9691	0.9133
Republic of Korea	VH	4	Eastern Asia	1	0.912	0.9917	0.9679	0.9529
Saudi Arabia	VH	6	Western Asia	0.9899	0.9067	0.8841	0.9602	0.8539
United Arab Emirates	VH	11	Western Asia	0.9163	0.9436	1	0.9533	0.901

Japan	VH	13	Eastern Asia	0.9427	0.9117	0.9509	0.9351	0.9002
Bahrain	VH	18	Western Asia	0.903	0.868	0.9877	0.9196	0.7707
Israel	V3	23	Western Asia	0.8541	0.8739	0.9763	0.9014	0.8885
Kazakhstan	V3	24	Central Asia	0.939	0.8403	0.9235	0.9009	0.8628
Türkiye	V3	27	Western Asia	0.9225	0.9192	0.8322	0.8913	0.7983
China	V3	35	Eastern Asia	0.9258	0.7902	0.8995	0.8718	0.8119
Cyprus	V2	38	Western Asia	0.8217	0.8698	0.8941	0.8619	0.866
Oman	V2	41	Western Asia	0.8077	0.7977	0.9674	0.8576	0.7834
Mongolia*	V2	46	Eastern Asia	0.8222	0.7775	0.9374	0.8457	0.7209
Armenia*	V2	48	Western Asia	0.7922	0.8561	0.8782	0.8422	0.7364
Thailand	V2	52	South-eastern Asia	0.7611	0.8032	0.911	0.8251	0.766
Qatar*	V2	53	Western Asia	0.7655	0.7114	0.9963	0.8244	0.7149
Malaysia	V1	57	South-eastern Asia	0.728	0.7192	0.9862	0.8111	0.774
Uzbekistan*	V1	63	Central Asia	0.7648	0.758	0.8769	0.7999	0.7265
<b>Indonesia*</b>	<b>V1</b>	<b>64</b>	<b>South-eastern Asia</b>	<b>0.8035</b>	<b>0.7293</b>	<b>0.8645</b>	<b>0.7991</b>	<b>0.716</b>
Kuwait*	V1	66	Western Asia	0.6365	0.7083	0.9988	0.7812	0.7484
Georgia	V1	69	Western Asia	0.5652	0.8654	0.9071	0.7792	0.7501
Viet Nam*	V1	71	South-eastern Asia	0.7081	0.7267	0.878	0.7709	0.6787
Philippines*	V1	73	South-eastern Asia	0.8054	0.7256	0.7254	0.7521	0.6523
Azerbaijan*	V1	74	Western Asia	0.7386	0.7233	0.8203	0.7607	0.6937
Brunei Darussalam*	V1	75	South-eastern Asia	0.5802	0.6991	0.9868	0.7554	0.727

Source: Data processed from UN E-Government survey results

Based on previous research, various challenges in government human resource management in Indonesia have been identified, including issues related to employee competency and their ability to deal with new technologies (Lestari et al., 2021). shows that in the Human Resources and Personnel Development Agency of Dumai City, employee competence in terms of formal knowledge, technical skills, and experience is still a problem that requires attention. In addition, research by (Mohi & Botutihe, 2020). mentioned that many employees recruited to manage Electronic Government do not have competency in technology, which hampers effective implementation of e-Government (Jajuli et al., 2024). Other studies also emphasize the importance of capacity building and leadership in driving innovation and digital transformation in government. In Panggunharjo village, (Prasetyanti

& Kusuma, 2020) identified that good leadership and bureaucratic capacity greatly influences the success of government innovation, which is an important factor in strengthening technology-based government administration.

While various studies have developed government HRM, most focus on partial aspects such as technical training or implementation of specific systems (Yahya et al., 2022; Marlian & Sari, 2020; Sakir et al., 2024). A significant research gap lies in the lack of comprehensive studies that integrate aspects of competence, technology and institutional reform in one strategic framework. More importantly, there is no research that systematically maps the trends and patterns of Indonesian government HR development through a Sytematic Literature Review approach to identify research directions and best practices. This condition makes this research not only academically relevant, but also urgent to provide strategic guidance for policy makers in designing more effective and measurable HR development programs.

This study offers novelty by highlighting the importance of human resource (HR) development through digital transformation in government, particularly in the context of implementing e-Government in Indonesia. Empirical studies confirm that the success of digital transformation in the public sector relies heavily on the competence and preparedness of government personnel. For example, the SmartASN initiative has shown that HR policies aimed at enhancing digital skills and leadership have effectively improved employee competence and contributed to a more efficient bureaucracy (Nyeleker & Fridayani, 2024). In addition, research by Hernawan and Wijaya (2024) highlights that low digital literacy and limited HR readiness are major obstacles to digital transformation in public institutions, underscoring the importance of strategic capacity building to ensure successful e-Government implementation. Furthermore, Sulistya et al. (2019) found that while e-Government platforms have improved transparency and service quality across different levels of government, their effectiveness remains closely tied to the digital capabilities of public servants and the institutional culture of collaboration (Sulistya et al., 2019). Therefore, although many existing studies address the need to strengthen HR competencies in public administration, this research aims to deepen the discussion by examining how digital integration in HR systems directly influences public service performance, and to offer strategic contributions to advancing digital bureaucratic reform in Indonesia.

This study aims to analyze the strategy for improving the quality of human resources in government administration in Indonesia, with a focus on competency development and technology adaptation among ASN. The research question to be answered is: How does the

development of human resource competency in government administration affect the effectiveness of e-Government implementation in Indonesia? To answer this question, this study uses a qualitative approach with literature study methods and policy analysis related to human resource management and technology in government. The main contribution of this study is to provide insight into the importance of improving competency and adaptation to digital technology in improving the quality of public services and supporting bureaucratic reform in Indonesia.

This research is important because improving the quality and digital capacity of ASN has a direct impact on the quality of public services (Jajuli et al., 2024; Salahudin et al., 2024). Problems with the quality of human resources have the potential to hamper public services such as basic administrative services to strategic government programs. In addition, this research is expected to provide practical contributions in the form of policy recommendations that can be implemented directly by government agencies. By utilizing Sytematic Literature Review analysis based on global trends and best practices, the results of this study can be used as material for developing the capacity and digital quality of ASN in Indonesia.

## **Method**

This study follows the PRISMA guidelines for conducting a systematic literature review as to explore the developments, trends and strategies for improving human resource quality in Indonesia's public administration. The identification phase began with a search of academic databases, specifically dimensions, yielding 103 records. These records were then assessed for eligibility in the screening phase, and after applying inclusion and exclusion criteria, focusing on publications from 2013 to 2024 relevant. Keywords such as "human resource development" AND "public administration" AND "government HR strategy" AND "Indonesia" and the exclusion of nonscientific articles. 101 reports were sought for retrieval with 90 assessed for eligibility.

The inclusion criteria allowed for the selection of articles written in either English or Indonesian specifically addressing human resource development in the context of government administration and using theoretical or empirical research approaches excluded from the review were conference proceedings, editorials, non-scientific literature reviews and articles that were not accessible or relevant to the context of the public administration in Indonesia.

After these steps, the final data set included 64 studies that were included for detailed analysis in the review phase. This selection process is visually represented in the Prisma flow chart, which tracks each stage of the study identification screening and inclusion process. Data analysis was performed using VOSviewer software for bibliometric analysis focusing on co-occurrence and cositation analysis to examine relationships and patterns among key concepts in the literature. This analytical framework is structured around four main dimensions (1) ASN competency development, (2) digitalization of government administration, (3) regulatory and institutional support, and (4) innovation in public service delivery. These four dimensions provide the conceptual foundation for understanding how HR strategies contribute to governance effectiveness and apparatus performance in Indonesia's evolving digital era.

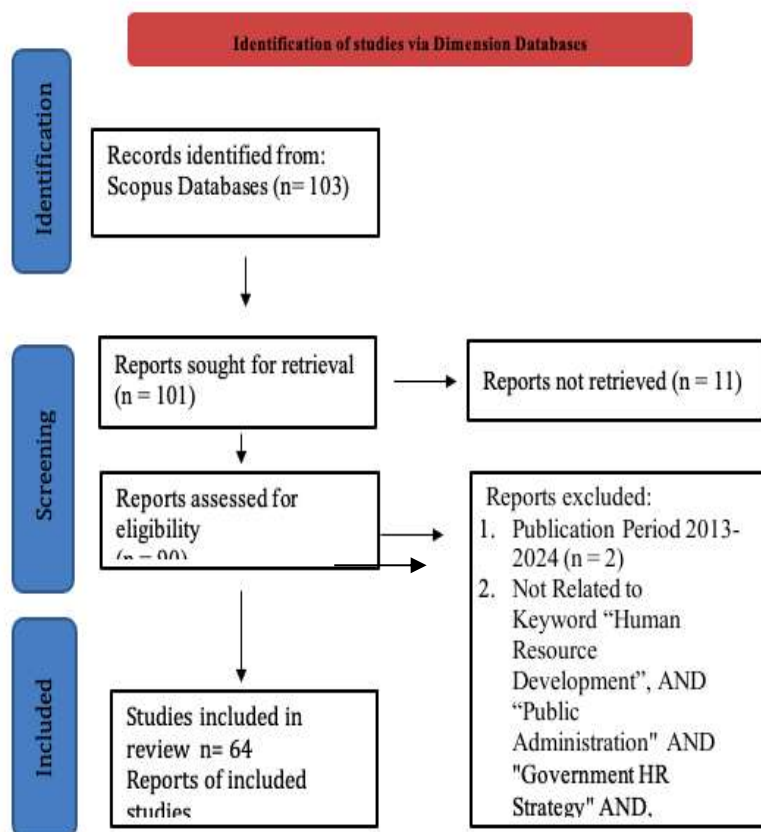


Diagram 1. Data collection stages

## Literature Review

### Concepts related to HR Strengthening Strategy in the Government Sector

The strategy of strengthening human resources (HR) in government administration is closely related to efforts to improve the quality of bureaucracy through the transformation



of the role of the state apparatus. This concept includes the development of managerial, technical, and work ethic competencies that are able to answer the complexity of public service tasks. In practice, strengthening HR is directed so that ASN does not only function as an executor of administrative tasks, but is also able to become an agent of change, who is responsive to the needs of the community and innovative in managing dynamic governance (Destiana, 2023); (Kurniawan & Tiarapuspa, 2023). Thus, quality HR is the main foundation in encouraging efficiency, accountability, and transparency in the public sector.

Digitalization of governance through e-Government is a key concept in the strategy of strengthening human resources. The use of information technology, such as the e-Performance system and digital public service applications, requires ASN to master new skills in technology and improve digital literacy in a sustainable manner (Yahya et al., 2022); (Supriyanto, 2016). Not only does it increase work efficiency, this digitalization also requires a change in mindset and adaptation to a more flexible and data-based work system. The implementation of the SASIKAP system and service models such as Jogja Smart Service and My Like Bone show how performance management and service can be significantly improved through technological support, but still requires HR readiness in running the system (Marlian & Sari, 2020); (Warnita et al., 2024).

Other concepts directly related to the HR strengthening strategy are cross-sector collaboration, adaptive leadership, and community involvement in the bureaucratic transformation process. Studies show that the success of digital systems and improving public services is highly dependent on synergy between agencies, active and responsible citizen participation, and leadership that supports innovation (Sakir et al., 2024) ; (Saputra & Saputra, 2024). In addition, an approach based on rewards, discipline, and organizational communication is an important part of building a work environment that supports improving the quality of ASN (Firdaus et al., 2024). Therefore, the HR strengthening strategy is not only technical, but also includes aspects of work culture, organizational structure, and sustainable professional values.

### **Latest research findings in Government Human Resource Development Strategy**

Several recent studies have shown that the success of improving the quality of human resources in government administration is highly dependent on a combination of individual capacity development and systemic reform in the bureaucracy. Research by (Destiana, 2023) highlights that human resource development is not enough through technical training alone, but requires a leadership role that encourages innovation and collaboration. The same thing



was emphasized by (Jundia & Sarwono, 2023), who stated that continuous training and strengthening technological competencies are key to supporting the digital transformation of government. (Lestari et al., 2021) found that the main weaknesses in human resource development are in the aspects of knowledge, skills, attitudes, and work experience competencies, which are still uneven in many government agencies. Meanwhile, (Winoto & Handayani, 2022) added that institutional strengthening through strategic leadership and legislative support has a significant impact on improving the quality of human resources.

The application of digital technology in public services has proven to be a major driver in increasing the capacity of government officials. (Rochmah et al., 2021) study on the implementation of Jogja Smart Service (JSS) shows that digitalization drives the efficiency of population services while demanding ASNs who are adaptive to technology. A similar thing was also shown by (Warnita et al., 2024) in a study on the My Like Bone application, which revealed that digital platforms can accelerate the development of ASN competencies by simplifying personnel management. (Septian, 2023) in his research in Bandung City found that digital innovation not only increases work efficiency but also strengthens the capacity of public services that are adaptive to change. (Pratama et al., 2023) also emphasized that the implementation of collaborative e-Government can improve the quality of personnel services in local government environments by optimizing elements of collaboration in public administration. Meanwhile, (Marlian & Sari, 2020) proved that the digitalization of managerial processes such as in SASIKAP can significantly increase the accountability and effectiveness of ASN performance management.

However, the implementation of HR development in local government environments still faces a number of obstacles. (Anugerah & Parwanti, 2024) noted that the biggest obstacle in implementing the Electronic-Based Government System (SPBE) is limited budget and HR competency (Saputri et al., 2022) emphasized the need to strengthen policies and regulations to support HR development, especially in zakat-based digital financial management. (Marista et al., 2022) stated that bureaucratic simplification would be more effective if accompanied by rapid adaptation of HR to changes in increasingly digital organizational structures. In this context, (Sakir et al., 2024) revealed that the success of implementing e-Government is largely determined by three key elements, namely support, capacity, and value, all of which require improving the quality of HR as their foundation.

Furthermore, the challenges of modernizing public administration also include social dynamics and digital technology that demand new capacities from government officials. (Dharma et al., 2023) showed that social media content has a significant influence on

political discourse and the potential for polarization, so that ASN are required to have good media literacy and maintain neutrality in the digital space. (Firdaus et al., 2024) added that involvement, discipline, and rewarding are also important factors that can drive HR performance in the government sector, as applied in the private sector. (Salsabila & Darumurti, 2024) emphasized the need for a transformation of post-pandemic ASN work patterns that are responsive to technological changes, with the support of focused training and leadership that is adaptive to digitalization. Overall, these findings show that HR development in government requires not only technical competence, but also structural, cultural, and digital readiness that is integrated as a whole.

## Result and Discussion

In this study, data analysis on "strategies to improve the quality of human resources in government administration in Indonesia" was conducted using data from the dimensions database, and analyzed using VosViewer software. The purpose of this study is to systematically examine trends, key themes and developments in literature related to talent development in the Indonesian government sector. The results of the bibliometric analysis present various important findings that provide insight into the direction of research, interactions between concepts and scientific contributions in the field of public administration, especially in relation to improving the capacity of state apparatus. A strategy in itself is not worth much if it is not monitored. More precisely: a strategy is worth as much as it is implemented. We also consider the development of digital competence important in Europe, and there is a very serious indicator system for what digital competences need to be developed (Budai et al., 2024).

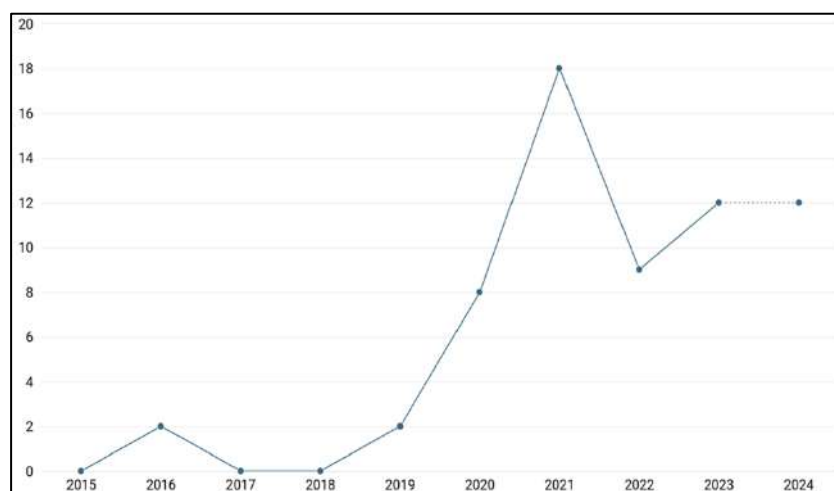


Figure 1. The visualization shows the number of publications published in each year (Vosviewer)

The graph shown illustrates the annual publication trend related to the topic “Strategies for Improving the Quality of Human Resources in Public Administration in Indonesia” from 2015 to 2024. At the beginning of the period, the number of publications was still very low, with zero publications in 2015, 2017, and 2018. 2016 and 2019 recorded two publications, indicating the beginning of interest in this topic, although still very limited. However, there was a significant increase in 2020 with eight publications, and reached a peak in 2021 with a total of 18 publications—the highest point during the analysis period.

After the peak, the trend decreased in 2022 with nine publications, but showed an increase again in 2023 with 12 publications, and is projected to remain stable at the same figure in 2024. This development shows that despite fluctuations, attention to the issue of human resource development in government administration is increasingly gaining ground in scientific studies. The sharp increase since 2020 is most likely related to the dynamics of public policy and the urgent need for bureaucratic reform and improving the quality of state civil servants. This trend reflects the urgency and relevance of the topic in the context of developing more effective and adaptive governance to the challenges of the times.

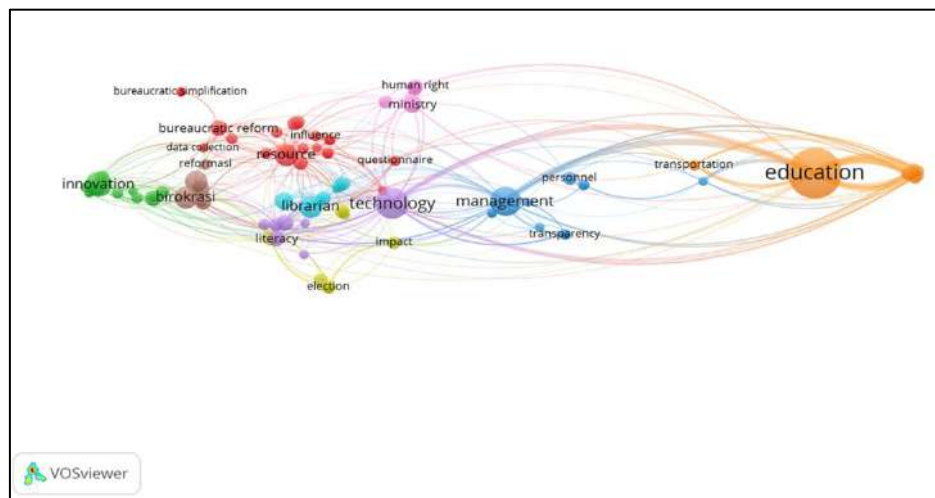


Figure 2. Network Visualization (Vosviewer)

The Network Visualization image displayed shows the relationship between keywords in scientific publications related to strategies for improving the quality of human resources in government administration in Indonesia. This visualization shows several main topic clusters that are interconnected, with the keyword "education" appearing as the largest and most dominant central node, indicating that education has a very significant role in the discourse on improving the quality of human resources in the government sector.

In addition to “education”, other keywords such as “management”, “technology”, “bureaucracy”, “innovation”, and “resource” also occupy important positions in the network,

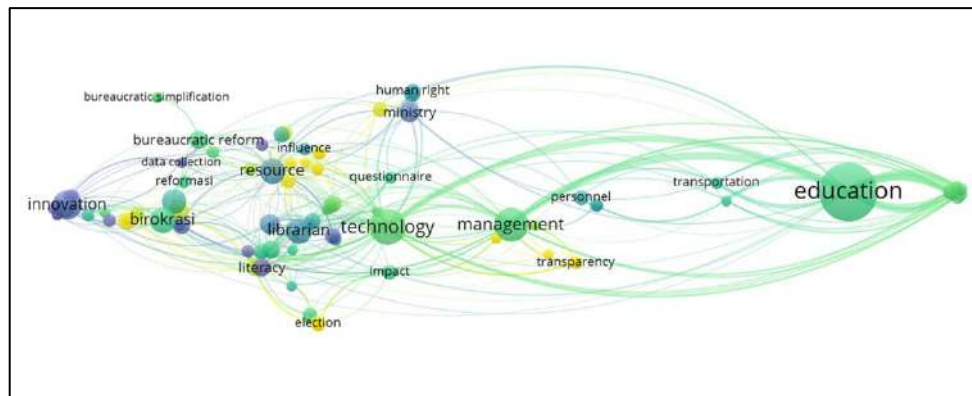
indicating that managerial, technological, and bureaucratic reform aspects are key components in HR development strategies. The clusters formed also show a variety of themes such as “bureaucratic reform”, “transparency”, “impact”, to “human rights” and “transportation”, indicating the wide range of issues that intersect with the main topic. The dense relationship between keywords illustrates the existence of strong interconnections in the literature, indicating that efforts to improve HR in government administration cannot be separated from various supporting factors such as innovation, literacy, and an integrated policy system.

Overall, the results of this visualization provide a comprehensive picture of the focus and direction of research in this field, and can help researchers to identify areas that have been widely researched and gaps that can still be explored further. With this understanding, strategies for improving human resources in the public sector can be formulated more effectively and contextually.

**Tabel 1. Themes categorized by cluster**

Klaster	Topik Utama	Kata Kunci Terkait
Klaster 1	Education	Education, Transportation
Klaster 2	Management & HR	Management, Personnel, Transparency
Klaster 3	Technology & Librarian	Librarian, Technology, Literacy
Klaster 4	Birokrasi	Birokrasi, Reformasi
Klaster 5	Innovation	Innovation

Source: Data processed 2025

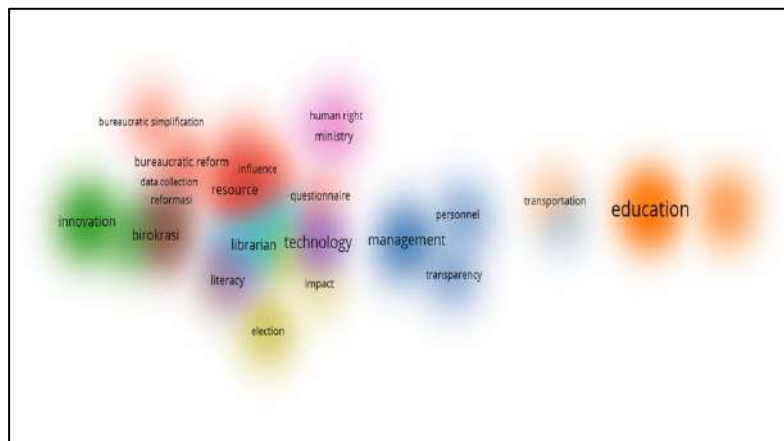


**Figure 4. Overlay Visualization (Vosviewer)**

The Overlay Visualization image generated by VOSviewer software provides an overview of the temporal development of keywords in scientific publications discussing the topic of Human Resource Quality Improvement Strategy in Government Administration in Indonesia. This visualization uses color gradation to show the average year of appearance of each keyword, where blue indicates keywords that appeared earlier, while green to yellow indicates keywords that are more recent or recent in the development of the literature.

The analysis results show that the keywords education, management, and technology have large node sizes and brighter colors (green to yellow), indicating that these three keywords are the most frequently appearing themes in recent publications and are the center of attention in academic discourse. On the other hand, keywords such as bureaucratic reform, data collection, and librarian appear in blue, meaning they are more dominant in early publications. This indicates a shift in research focus from bureaucratic issues and data collection methods to a strategic approach that emphasizes more on education, resource management, and technology utilization.

Thus, this visualization strengthens the understanding that the direction of research in the field of government administration in Indonesia is increasingly directed towards optimizing human resources through the integration of education and technological innovation, which is considered more relevant in facing the challenges of today's public services. These results can be the basis for formulating adaptive strategic policies based on developing scientific trends.



Gambar 5. Density visualization (Vosviewer)

The Density Visualization image provides an overview of the density of keyword occurrences in literature related to the theme “Strategies for Improving the Quality of Human Resources in Government Administration in Indonesia.” This visualization displays keywords based on the frequency and consistency of their association with publications, where brightly colored areas (yellow and orange) indicate high density, while dimmer colors (green and blue) indicate lower density.

From the visualization, it can be seen that the keywords education, management, and technology have the brightest color intensity and large area size, indicating that the three are the most dominant topics in the related literature. This shows that issues of education, management, and technology are the main focus in human resource development strategies in the government sector. On the other hand, keywords such as bureaucratic reform,

innovation, and bureaucracy also appear in a fairly dense area, but with slightly lower intensity, reflecting a supporting role that remains significant in the discourse.

Overall, this visualization reinforces the finding that the quality of human resources in government administration in Indonesia is greatly influenced by educational and technological factors integrated with strategic managerial practices. This visualization also opens up opportunities for further research to explore the synergy between bureaucratic innovation and educational policy in improving government effectiveness.

### ***Strategy for Increasing ASN Digital Capacity in Indonesia***

Based on the data analyzed in the results in Figure 5 of the discussion section above, it shows that the study of increasing ASN digital capacity is increasing from year to year, which shows that researchers pay serious attention to the issue of ASN digital capabilities in Indonesia. A number of studies analyzed emphasize the importance of increasing the capacity of Indonesian government ASN through education, technology training, and integrated bureaucratic management reform.

### ***Integrated Digital Education and Training***

Education is the main foundation in developing ASN's digital capacity (Faedlulloh et al., 2020; Septian, 2023). The improvement strategy through education is not only limited to technical training on the use of applications, but includes the development of comprehensive digital literacy. Digital technology innovation is proven to significantly improve employee competencies and streamline administrative processes (Septian, 2023). An effective education program must integrate cognitive, effective, and psychomotor aspects in digital technology learning. This is in line with the finding that human resource development through technology-based education and training has not been effective in shaping the character of technology-based ASN (Harahap et al., 2021). Implementation of an adaptive training curriculum is key to the success of the ASN digital education program. Research shows that there are still employees who do not understand how to fill out the e-performance application because of the new features that continue to develop, so continuous technical guidance is needed (Yahya et al., 2022).

### ***Strategic Digital Transformation Management***

The leadership aspect is one of the factors that influence HR development in public sector organizations (Destiana, 2023). HR development policies in Indonesia point to the need for innovation technology leadership, adaptive leadership, collaborative leadership, and

leadership that promotes a culture of quality. Other studies also show that digitization in human resource management helps government agencies to modernize HR functions and gives them a competitive advantage, but requires changes in work styles and HR competencies (Rita, 2023). Digital transformation management requires a systemic approach that involves all levels of the organization. However, an effective management strategy is needed, including the development of a clear digital transformation roadmap and the establishment of measurable performance indicators. This is supported by the findings Yahya et al. (2022), that the e-performance application has encouraged employees to be able to improve their work output and support the provision of careful assessments.

### **Technology Integration in Bureaucratic Ecosystem**

The idea of Smart ASN is a step towards facing the era of industrial revolution 4.0 which requires ASN to adapt to technological transformation so that public services are more effective and efficient (Faedlulloh et al., 2020; Febrina & Aisyah, 2021). Mastery of technical competencies supported by mastery of Smart ASN supporting competencies has a positive effect on employee performance, which is strengthened through the development of a digital learning platform integrated with the personnel management system to facilitate the process of upskilling and reskilling ASN on an ongoing basis. However, the implementation of the Personnel Management Information System (SIMPEG) as a form of e-government is still not effective in improving employee professionalism (Harahap et al., 2021), so that the transformation of government management using a centralized population administration information system shows the need for a comprehensive reframing, restructuring, revitalization, and renewal process in digital transformation (Windra et al., 2024).

### **Digital-based Bureaucratic Reform**

Bureaucratic reform must include streamlining procedures, eliminating redundancies, and optimizing workflows through the use of digital technology. The idea of Smart ASN still has an inherent problem, namely the non-optimal use of information technology in the bureaucracy, so it is necessary to optimize the momentum of the presence of the millennial generation in the bureaucratic environment (Faedlulloh et al., 2020). The competency development of civil servants still faces various obstacles, especially in terms of strengthening/intellectual competence, skill competence, experience competence, and attitude competence (Lestari et al., 2021). This shows the need for systemic reform in ASN digital capacity development.



### **Innovation in Digital Capacity Building**

Innovative approaches are needed to design and implement ASN capacity building strategies, this is supported by research results Rita (2023), shows that HR professionals tend to be less elegant when it comes to adopting technology. To overcome this challenge and empower employees through five key strategies: (1) providing work that is in accordance with competence and potential, (2) providing opportunities to open perspectives and learn new knowledge, providing space for the production of ideas, (4) building a humanist work culture, and (5) providing capacity building opportunities for young apparatus (Faedlulloh et al., 2020).

### **Implementation and Continuous Monitoring**

The success of the ASN digital capacity building strategy requires a comprehensive implementation and monitoring system. The analysis shows that the supporting competencies of Smart ASN act as a pure moderator that strengthens the influence of mastery of technical competencies on employee performance (Febrina & Aisyah, 2021). In this context, periodic impact evaluation is needed to measure the return on investment of the digital capacity building program, taking into account the constraints that are often faced such as limited server capacity and lack of employee understanding of new features that continue to develop (Yahya et al., 2022). Through the implementation of this comprehensive and integrated strategy, it is expected that the capacity of Human Resources in improving the quality of government administration in Indonesia can be significantly improved, so as to support the achievement of the vision of an effective, efficient, and responsive government to the needs of society in the digital era.

### **Conclusion**

The study of strategies to improve the quality of human resources in government administration in Indonesia has received increasing attention from various perspectives of academics and practitioners, as seen from the trend of publications that have increased significantly since 2020. Based on an analysis using VOSviewer of 64 scientific publications, this study shows that the human resource development strategy of the apparatus is no longer limited to conventional approaches, but has developed into a multidimensional study that integrates aspects of education, management, technology, bureaucratic reform, and innovation. The five main clusters identified in the ASN capacity development discourse show that education is the dominant foundation, followed by strategic digital transformation

management, technology integration in the bureaucratic ecosystem, digital-based bureaucratic reform, and innovation in capacity development. These findings confirm that improving the quality of Indonesian government human resources requires a holistic approach that combines individual competency development, management system transformation, and digital technology adaptation to address governance challenges in the digital era and support the effectiveness of public servants who are responsive to community needs.

This research contributes to the development of strategic literature on the digital transformation of the state apparatus (ASN) in Indonesia, especially through a Systematic Literature Review approach that has not been done much before. By mapping trends, dominant themes, and connections between concepts in government HR development, this study provides a conceptual framework that can be used as a foothold in designing ASN capacity building policies that are more adaptive and responsive to the digital era. However, this study has limitations on resources that are only sourced from data dimensions, so it does not fully cover the wealth of literature from other reputable databases such as Scopus, Web of Science, or EBSCO. In addition, future approaches are recommended to combine the bibliometric approach with case studies or field surveys to gain a holistic understanding of the challenges and best practices of ASN digital capacity development in various parts of Indonesia. In addition, exploration of the influence of organizational culture and transformative leadership on the effectiveness of digitization and transformative leadership on the effectiveness of bureaucratic digitization also needs attention in future studies.

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### **Reference**

Yahya, A. S., Natalia I. F. Outang, Yeti Fatimah, & Ajud Tajudin. (2022). Kuantitas Dan Kualitas Kinerja Pegawai Pada Badan Kepegawaian, Pendidikan Dan Pelatihan Kota Kupang. *Jurnal Ilmiah Manajemen, Bisnis Dan Kewirausahaan*, 2(1), 59–70. <https://doi.org/10.55606/jurimbik.v2i1.196>

- Anugerah, F. Y., & Parwanti, L. S. (2024). Reformasi Birokrasi melalui Penerapan Sistem Pemerintahan Berbasis Elektronik (SPBE) di Diskominsta Kota Magelang. *Journal of Public Administration and Local Governance*, 8(2), 124–135. <https://doi.org/10.31002/jpalg.v8i2.2026>
- Bappenas. (2019). Rancangan Teknokratik Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020-2024. In *Kementrian Perencanaan Pembangunan Nasional*.
- Budai, B. B., Bozsó, G., Csuhai, S., & Tózsá, I. (2024). Digital literacy and the capability to manage e-government in today's Hungary. *Regional Statistics*, 14(6), 1222–1248. <https://doi.org/10.15196/RS140608>
- Destiana, R. (2023). Kepemimpinan dan Pengembangan Sumber Daya Manusia Sektor Publik. *Dialogue : Jurnal Ilmu Administrasi Publik*, 5(1). <https://doi.org/10.14710/dialogue.v5i1.15762>
- Dharma, F. A., Hariyanto, D., & Muharram, F. (2023). Construction of Political Identity on Instagram: Unveiling the Kadrun Hashtag Movement in Indonesia's 2024 Presidential Election: *Academia Open*, 8(2). <https://doi.org/10.21070/acopen.8.2023.6922>
- Faedlulloh, D., Maarif, S., Meutia, I. F., & Yulianti, D. (2020). Birokrasi dan Revolusi Industri 4.0: Mencegah Smart ASN menjadi Mitos dalam Agenda Reformasi Birokrasi Indonesia. *Jurnal Borneo Administrator*, 16(3), 313–336. <https://doi.org/10.24258/jba.v16i3.736>
- Febrina, R., & Aisyah, S. A. (2021). Pengaruh Penguasaan Kompetensi Teknis Terhadap Kinerja Pegawai Yang Dimoderasi Oleh Kompetensi SMART ASN Pada Jabatan Pelaksana Penyusun Bahan Publikasi Dan Kehumasan. *JENIUS (Jurnal Ilmiah Manajemen Sumber Daya Manusia)*, 5(1), 50–62. <https://doi.org/10.32493/jjsdm.v5i1.13141>
- Firdaus, V., Djuwantoro, V. S., & Sumartik, S. (2024). Employee Engagement, Disiplin, Dan Reward Terhadap Kinerja Pegawai Di Pt Citra Margatama Surabaya. *E-Journal Ekonomi Bisnis Dan Akuntansi*, 11(2), 43–55. <https://doi.org/10.19184/ejeba.v11i2.52324>
- Harahap, B. K. P., Effendy, S., & Rambe, M. F. (2021). Analisis Efektivitas Simpeg Dalam Mewujudkan E-Government Pada Kantor Imigrasi Kelas II TPI Belawan. *Journal of Education, Humaniora and Social Sciences (JEHSS)*, 4(1), 197–202. <https://doi.org/10.34007/jehss.v4i1.618>
- Hernawan, & Wijaya, I. D. (2024). *An Analysis of the Challenges and Opportunities for Governance in Indonesia during the Digital Transformation of Public Organisations*. 2(1), 236–243.
- Jajuli, A. S. A., Salahudin, S., & Firdaus, M. (2024). E-Government Public Relations: A Systematic Literature. *Journal of Government Science (GovSci) : Jurnal Ilmu Pemerintahan*, 5(2 SE-Article), 100–116. <https://doi.org/10.54144/govsci.v5i2.74>

- Jundia, H. S., & Sarwono, A. E. (2023). Pengaruh Kepercayaan Terhadap Pemerintah, Pelayanan Publik dan Kompetensi Pegawai Terhadap Efektivitas E-Government System Di Jawa Timur. *Jurnal Akuntansi Dan Keuangan Kontemporer (JAKK)*, 6(1), 1–11. <https://doi.org/10.30596/jakk.v6i1.14056>
- Kurniawan, A., & Tiarapuspa. (2023). Review Literatur Budaya Organisasi Dan Pelayanan Publik Dalam Penerapan Reformasi Birokrasi Di Lingkungan Instansi Pemerintahan. *Jurnal Ekonomi Trisakti*, 3(2), 2247–2256. <https://doi.org/10.25105/jet.v3i2.16924>
- Lestari, N., Andri, S., & Adianto, A. (2021). Pengembangan Kompetensi Pegawai Negeri Sipil Pada Badan Kepegawaian dan Pengembangan Sumber Daya Manusia Kota Dumai. *JIAP (Jurnal Ilmu Administrasi Publik)*, 9(2), 95–112. <https://doi.org/10.31764/jiap.v9i2.5218>
- Marista, D., Mursyidah, L., & Wijaya, F. R. (2022). Penyederhanaan birokrasi di Kebun Raya Purwodadi BRIN. *Publisia: Jurnal Ilmu Administrasi Publik*, 7(1), 15–25. <https://doi.org/10.26905/pjiap.v7i1.7386>
- Marlian, S., & Sari, D. S. (2020). Implementasi Kebijakan Sabilulungan Sistem Penilaian Kinerja Pegawai (SASIKAP) di Lingkungan Pemerintah Kabupaten Bandung. *Jurnal Administrasi Dan Kebijakan Publik*, 5(2), 208–227. <https://doi.org/10.25077/jakp.5.2.208-227.2020>
- Mohi, W. K., & Botutihe, N. (2020). Strategi Pemerintah Daerah dalam Meningkatkan Pelayanan pada Masyarakat Melalui Sistem Pemerintahan Berbasis Elektronik. *Publik (Jurnal Ilmu Administrasi)*, 9(2), 115. <https://doi.org/10.31314/pjia.9.2.115-124.2020>
- Nyeleker, K. P., & Fridayani, H. D. (2024). *SmartASN: A Sustainable Digital Transformation to Human Resource Management in Indonesia* 's. 04005(18).
- Prasetyanti, R., & Kusuma, B. M. A. (2020). Quintuple Helix dan Model Desa Inovatif (Studi Kasus Inovasi Desa di Desa Panggungharjo, Yogyakarta). *Jurnal Borneo Administrator*, 16(3), 337–360. <https://doi.org/10.24258/jba.v16i3.719>
- Pratama, D. P., Putera, R. E., & Koeswara, H. (2023). Penerapan Kolaboratif E-Government Pada Pelayanan Kepegawaian Badan Kepegawaian Daerah Provinsi Sumatera Barat. *Jurnal Administrasi Dan Kebijakan Publik*, 8(2), 205–236. <https://doi.org/10.25077/jakp.8.2.205-236.2023>
- Rita, N. (2023). Manajemen Sumber Daya Manusia Berbasis Digital: Meningkatkan Kompetensi Dan Kinerja Di Era Digital (Studi Di Lingkungan Pegawai DPRD Jawa Barat). *Inspirasi Ekonomi: Jurnal Ekonomi Manajemen*, 5(4), 316–325. <https://doi.org/10.32938/ie.v5i4.5516>
- Rochmah, F., Sakir, S., & Abhipraya, F. A. (2021). Efektivitas Jogja Smart Service dalam Pelayanan Kependudukan ditengah Pandemi Covid-19. *GOVERNMENT: Jurnal Ilmu Pemerintahan*, 66–77. <https://doi.org/10.31947/jgov.v14i2.13899>

- Sakir, A. R., Almahdali, H., & Amaliah, Y. (2024). Implementation Of E-Government In Public Services: A Case Study On The Department Of Population And Civil Registration Of Bone District. *Publicus : Jurnal Administrasi Publik*, 2(1), 181–193. <https://doi.org/10.30598/publicusvol2iss1p181-193>
- Salahudin, S., Sihidi, I. T., Karida, K., & Firdaus, M. (2024). Digital Budgeting Transformation and Future Challenges: A Bibliometric Analysis. *Journal of Governance and Public Policy*, 11(3 SE-Articles), 257–270. <https://doi.org/10.18196/jgpp.v11i3.21182>
- Salsabila, N. N., & Darumurti, A. (2024). Analisis Transformasi Pola Kerja Birokrasi dalam Pelayanan Publik Pasca-Pandemi Covid-19 di Kantor Regional I Badan Kepegawaian Negara Yogyakarta. *WEDANA: Jurnal Kajian Pemerintahan, Politik Dan Birokrasi*, 9(2). <https://doi.org/10.25299/wedana.2023.14783>
- Saputra, N. D., & Saputra, M. (2024). Pemenuhan Hak Warga Negara Untuk Menyampaikan Pendapat dalam Memperkuat Digital Citizenship Melalui Sambat Online Pemerintah Kota Malang. *Jurnal Kewarganegaraan*, 21(2), 265–282. <https://doi.org/10.24114/jk.v21i2.62116>
- Saputri, O. B., Huda, N., & Hannase, M. (2022). Analisis Rencana Elektronifikasi Keuangan Daerah dalam Memperluas Kontribusi Zakat dengan Pendekatan Fishbone Diagram Analysis. *AL-MUZARA'AH*, 10(1), 1–17. <https://doi.org/10.29244/jam.10.1.1-17>
- Septian, D. (2023). Inovasi Teknologi Digital dalam Meningkatkan Kompetensi Pegawai Dispenduk Kota Bandung (Kajian Studi Literatur Manajemen Sumber Daya Manusia). *Inspirasi Ekonomi: Jurnal Ekonomi Manajemen*, 5(3), 234–242. <https://doi.org/10.32938/ie.v5i3.5502>
- Sulistya, A. Q. W., Sulistiyo, B. B., Aditya, F., Aritonang, I. D., Simangunsong, S. A., Shihab, M. R., & Ranti, B. (2019). A Case Study of Indonesian Government Digital Transformation: Improving Public Service Quality through E-government Implementation. *2019 5th International Conference on Science and Technology (ICST)*, 1, 1–6. <https://doi.org/10.1109/ICST47872.2019.9166234>
- Supriyanto, E. E. (2016). Kebijakan Inovasi Teknologi Informasi (IT) Melalui Program Elektronik Government dalam Meningkatkan Kualitas Pelayanan Publik di Indonesia. *JIP (Jurnal Ilmu Pemerintahan) : Kajian Ilmu Pemerintahan Dan Politik Daerah*, 1(1), 141–161. <https://doi.org/10.24905/jip.1.1.2016.141-161>
- Warnita, Takdir, M., & Mursak. (2024). Implementasi Penggunaan Aplikasi My Like di Kabupaten Bone. *Sawala: Jurnal Administrasi Negara*, 12(2), 389–399. <https://doi.org/10.30656/sawala.v12i2.d6tpz849>
- Windra, P., Redjo, S. I., & Sagita, N. I. (2024). Transformasi Manajemen Pemerintahan Menggunakan Sistem Informasi Administrasi Kependudukan Terpusat di Dinas Kependudukan dan Pencatatan Sipil Kabupaten Kerinci. *Jurnal Ilmiah Pendidikan Pancasila Dan Kewarganegaraan*, 9(2), 168–177. <https://doi.org/10.17977/um019v9i2p168-177>

- Winoto, S., & Handayani, M. T. (2022). Penguatan reformasi birokrasi di pemerintah Provinsi Jawa Timur dalam perspektif policy leadership. *Publisia: Jurnal Ilmu Administrasi Publik*, 7(1), 37–52. <https://doi.org/10.26905/pjiap.v7i1.7312>
- Yahya, A. S., Outang, N. I. F., Fatimah, Y., & Tajudin, A. (2022). Kuantitas Dan Kualitas Kinerja Pegawai Pada Badan Kepegawaian, Pendidikan Dan Pelatihan Kota Kupang: Quantity And Quality Of Performance Of Employees At The Personnel, Education And Training Agency Of Kupang City. *Jurnal Ilmiah Manajemen, Bisnis Dan Kewirausahaan*, 2(1), 59–70. <https://doi.org/10.55606/jurimbik.v2i1.196>
- Yazid, I. D., & Karmila, A. P. (2024). Menuju Pemerintahan Digital Unggul: Tantangan dan Transformasi Indeks E-Government di Indonesia. *Jurnal Ilmiah Wahana Pendidikan*, 10(13), 387–396.