

# Utilization of AI in Optimizing the Legislative Oversight Function Innovation to Increase Government Transparency and Accountability in the Digital Era

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## ABSTRACT

The digital era presents both challenges and opportunities for the oversight function of the Indonesian House of Representatives (DPR RI). The complexity of government and increasing data volumes demand innovation in oversight mechanisms. This qualitative research, based on secondary data analysis from academic journals, government reports, international organization publications, and other relevant sources, explores the potential for utilizing Artificial Intelligence (AI) to optimize the legislative oversight function and improve the transparency and accountability of the Indonesian government. The results of the analysis show that AI can be applied in various areas of oversight, such as budget analysis, monitoring the implementation of laws and policies, and managing public aspirations, through technologies such as Natural Language Processing and Machine Learning. The use of AI has the potential to strengthen the DPR's analytical capacity, encourage evidence-based accountability, and improve access to information. However, its implementation faces significant challenges, including the risk of algorithmic bias, data privacy and security issues, issues of transparency (explainability) and accountability of algorithms, and capacity and infrastructure gaps. A comprehensive AI regulatory and governance framework, infrastructure and capacity investment, and an ethical and responsible implementation approach are needed, while still ensuring the central role of humans in the oversight process.

## INTRODUCTION

Artificial Intelligence (AI) presents a transformative opportunity to address several challenges in legislative oversight, particularly in the digital era. The rapid increase in government data and the complexity of policy implementation often overwhelm traditional oversight mechanisms. AI can enhance the legislative process by enabling faster and more accurate data analysis, real-time monitoring, and anomaly detection, which are crucial for effective oversight. With tools like Natural Language Processing (NLP) and Machine Learning (ML), AI can assist in analyzing vast amounts of textual data, such as legislative documents, public complaints, and government reports, to uncover hidden patterns or inconsistencies that may indicate inefficiencies, corruption, or violations of policy. Furthermore, AI can automate routine oversight tasks, allowing legislators to focus on more complex decision-making processes. In this way, AI can play a pivotal role in ensuring that the legislative body is not only reactive but also proactive, capable of identifying issues before they escalate.

Digital transformation has penetrated almost all aspects of life, including in the administration of the state. Governments in various parts of the world, including Indonesia, are

increasingly adopting digital technology to improve administrative efficiency and the quality of public services, a phenomenon known as digital governance. This era is marked by an exponential increase in the volume of data and the complexity of government operations, which presents new challenges for state institutions, including legislative institutions (Sepriano et al., 2023).

The People's Representative Council of the Republic of Indonesia (DPR RI), as a representative institution of the people, carries out three main functions: legislation, budget, and supervision. The supervisory function (controlling function) is a crucial element in the Indonesian presidential system which adheres to the principle of checks and balances. Through this function, the DPR RI is tasked with supervising the implementation of government carried out by the executive, ensuring that the implementation of laws (UU), the State Budget (APBN), and government policies are in accordance with the legal corridor and the aspirations of the people. This supervision includes an evaluation of the president's constitutional and political actions and the implementation of laws and regulations. Weak legislative control functions can open up opportunities for abuse, corruption, collusion, and nepotism (Antari, 2020).

However, the implementation of the oversight function in the digital era faces increasingly complex challenges. The massive volume of government data, the speed of policy change, and the complexity of technical issues often exceed the analytical capacity and resources traditionally possessed by the DPR. There is the potential for increasingly widening information asymmetry between the executive branch that controls data and technology and the legislative branch that is tasked with overseeing it. This can weaken the effectiveness of government oversight and accountability. Ironically, the digital era that presents these challenges also offers potential solutions through technological advances (Kusnanto et al., 2024).

Amidst these challenges, Artificial Intelligence (AI) has emerged as one of the transformative technologies with potential for broad applications in various sectors, including the public sector. AI refers to computing systems designed to mimic human cognitive abilities, such as learning, solving problems, analyzing large-scale data, recognizing patterns, making predictions, and even automating complex tasks (Kushariyadi et al., 2024). In the context of government, AI offers opportunities to improve operational efficiency, facilitate data-driven decision-making, enable predictive analytics, and strengthen government capacity to deliver responsive public services (Mahendra et al., 2024).

AI has the potential to be an innovative tool to address the challenges of legislative oversight. Its ability to quickly process and analyze large volumes of data, identify hidden anomalies or patterns, and automate routine analysis tasks can significantly enhance the DPR's capacity to carry out its oversight function. The use of AI is expected to help legislators understand complex issues more deeply, monitor government performance more effectively, and ultimately strengthen accountability mechanisms (Santoso et al., 2023).

While AI has been explored in various sectors for improving efficiency, its application to legislative oversight, particularly in the context of the Indonesian House of Representatives (DPR RI), remains underdeveloped. Existing studies have predominantly focused on AI's role in government operations and service delivery, with limited attention to its impact on legislative functions such as budget oversight, law enforcement, and public policy monitoring. This research seeks to fill this gap by investigating how AI can optimize legislative oversight

in Indonesia, focusing on the DPR RI's ability to enhance government transparency and accountability. Specifically, it aims to explore the practical applications of AI technologies within the DPR's supervisory functions and identify the challenges and opportunities in adopting these technologies to improve the legislative process.

## METHOD

This study employed a qualitative research methodology with secondary data analysis to explore the use of *Artificial Intelligence (AI)* in optimizing the legislative oversight function in Indonesia. The primary data sources consisted of existing literature, including national and international academic journals, government reports, and publications from global organizations such as the World Bank and *OECD*. These sources provided insights into *AI* applications, digital governance, and transparency in the public sector.

To ensure the robustness of the analysis, data were gathered from multiple credible sources: academic papers focusing on *AI*, digital governance, legislative functions, and transparency; official publications from the Indonesian government, including reports from the House of Representatives (*DPR*) and the Supreme Audit Agency (*BPK*); and legal documents such as the 1945 Constitution and the Law on Public Information Transparency (*KIP*). Data were also sourced from think tanks, civil society organizations, and reputable media outlets offering analysis on *AI* implementation in public administration.

The analysis employed several techniques to synthesize the collected data. Thematic analysis was used to identify and analyze patterns and themes that emerged from the data sources, organizing information around topics such as *AI*'s potential in legislative oversight and the challenges associated with its implementation. Conceptual mapping was applied to visualize the relationships between various concepts identified in the literature, with a focus on *AI* technologies like *Natural Language Processing (NLP)* and *machine learning*, and their application in oversight functions such as budget analysis and law enforcement monitoring. Information synthesis was then used to integrate insights from multiple sources, providing a comprehensive understanding of the potential benefits, challenges, and implications of *AI* in the Indonesian legislative context.

By combining these analytical techniques, the study aimed to construct a detailed understanding of the role *AI* could play in enhancing transparency, accountability, and efficiency in legislative oversight functions. This approach enabled the exploration of *AI*'s practical applications, associated risks, and the necessary regulatory and infrastructure support needed for effective implementation.

## RESULTS AND DISCUSSION

### Identifying Areas of Surveillance That Can Be Optimized by AI

Based on the scope of the DPR's supervisory function as described previously, several specific areas appear to have great potential to be optimized through the application of AI technology:

1. **Budget Oversight:** The APBN monitoring process, starting from discussing the R-APBN to monitoring its realization, involves the analysis of very large and complex financial data (Santoso et al., 2023). AI can help in:
  - a. **Budget Proposal Analysis:** Process and analyze the R-APBN more quickly and in-

- depth, identify potential inefficiencies, allocation irregularities, or non-conformities with national development priorities.
- b. **Monitoring Budget Realization:** Track budget absorption in real-time (if data is available), compare it with planning, and provide early warning if there is a significant deviation or potential misappropriation.
  - c. **Anomaly and Fraud Detection:** Using machine learning techniques to identify suspicious transaction patterns or indications of potential fraud in APBN implementation data.
  - d. **Estimated Budget Needs:** Helps predict future budget needs based on historical data and other relevant factors, supporting more accurate planning.
2. **Law Implementation Oversight:** Ensuring that laws are implemented effectively by the executive branch is a fundamental oversight task of the DPR (Jati & Fifiana Wisnaeni, 2016). AI can support this task through:
- a. **Regulatory Compliance Analysis:** Using NLP to analyze reports on the implementation of laws from various ministries/agencies, identifying levels of compliance, potential obstacles, or inconsistencies in implementation.
  - b. **Policy Impact Assessment:** Analyze quantitative and qualitative data (e.g., statistical data, survey results, field reports) to assess the actual impact of a law on a particular society or sector.
  - c. **Monitoring the Achievement of Legislative Objectives:** Tracking key performance indicators (KPIs) related to the objectives of an Act provides an objective picture of progress towards achieving them.
3. **Government Policy Oversight:** The DPR also oversees non-legislative policies taken by the government (Wibawa, 2019). AI can contribute in:
- a. **Public Sentiment Analysis:** Using NLP to analyze public opinion and sentiment towards certain policies through social media data, online news, or public complaint platforms, provides qualitative input for the DPR.
  - b. **Policy Impact Simulation:** Using AI-based predictive models to simulate the potential socio-economic impacts of various policy alternatives before they are implemented, helps the DPR in providing more informed recommendations.
4. **Public Procurement Oversight:** This area is prone to corruption and inefficiency (Asmu'i, 2025). AI can improve surveillance through:
- a. **Collusion/Corruption Pattern Detection:** Analyze e-procurement tender data to identify patterns that indicate collusion between tender participants, unreasonable price mark-ups, or other corrupt practices.
  - b. **Project Implementation Monitoring:** Monitor the physical and financial progress of government projects based on reports or other data, compare them with contracts, and detect potential delays or cost overruns.
  - c. **Regulatory Compliance Verification:** Automate compliance checks of procurement documents against applicable regulations.
5. **Managing Public Aspirations:** The DPR functions as a channel for people's aspirations (Dafindri, 2023). The volume of incoming aspirations and complaints can be very large. AI, especially NLP, can help in:
- a. **Automatic Analysis and Classification:** Analyze the text of aspirations/complaints,

identify key themes, classify them by issue or region, and route them to relevant commissions or DPR members more efficiently.

- b. **Identify Trends and Priority Issues:** Identifying the issues that are most frequently complained about or are of primary concern to the public over time, helps the DPR in determining the priority of the oversight or legislative agenda.

The application of AI in these areas has the potential to transform the landscape of legislative oversight. AI's ability to process data at a scale and speed that exceeds human capacity could enable the House to shift from a model of oversight that is reactive and sample-based to one that is more proactive, comprehensive, and based on real-time or near-real-time data. This could be a significant leap in oversight effectiveness, allowing for early detection of problems and more timely intervention, rather than simply conducting a post-mortem evaluation after a problem has occurred.

### Examples of Specific AI Applications for Surveillance Functions

To realize the above optimization potential, various specific AI techniques and applications can be utilized:

1. **Natural Language Processing (NLP):** This technique is very relevant to analyze abundant textual documents in the supervision process, such as UU drafts, derivative regulations, government reports, meeting minutes, BPK audit reports, media news, and public aspirations. NLP can be used for key information extraction, sentiment analysis, automatic summarization, theme identification, and compliance checking for certain clauses (Kang et al., 2020).
2. **Machine Learning (ML) for Predictive Analytics:** ML algorithms can be trained using historical data (e.g., budget data, program performance data, macroeconomic data) to make predictions (Akbar et al., 2024). Examples include predicting potential budget irregularities, identifying government programs at high risk of failing to meet targets, or predicting the social impact of a policy.
3. **Data Mining and Pattern Recognition:** This technique is used to 'mine' hidden insights or patterns from large data sets. In the context of surveillance, this can be applied to APBN financial transaction data or procurement data to detect anomalies, suspicious transactions, or potential networks involved in corrupt practices (Nurirwan Saputra, 2023).
4. **Computer Vision:** Although its applications may be more limited than NLP or ML, computer vision can be used to support physical surveillance. For example, analyzing satellite imagery or drone photos to verify the progress of infrastructure development funded by the state budget, or monitoring changes in land use related to the implementation of certain policies. An example of an application in Indonesia is e-ticketing which uses CCTV and AI to detect traffic violations (Stockman & Shapiro, 2001).
5. **AI-Powered Dashboards:** An AI-powered data visualization platform can integrate information from multiple sources (budget data, performance data, public complaint data) and present it in an interactive dashboard format that is easy for legislators and staff to understand. This allows for real-time monitoring and quick identification of areas that need attention (Jain, 2024).

**Case Study: E-Ticketing in Indonesia**

The implementation of electronic ticketing (e-ticketing) or Electronic Traffic Law Enforcement (ETLE) in Indonesia can be used as a relevant case study, although its focus is on traffic law enforcement, not direct legislative oversight. This system uses CCTV cameras equipped with AI (computer vision) to automatically detect traffic violations, sending tickets to the vehicle owner's address. One of the claimed successes of this system is its ability to reduce the potential for bribery or extortion that often occurs in manual ticketing systems, because direct interaction between violators and officers in the field is minimized (Linanda, 2023).

Although different domains, the e-ticket case provides several important lessons. First, it shows that AI can be applied by government agencies in Indonesia for automated monitoring and enforcement functions. Second, it highlights the potential of AI in improving certain aspects of accountability (in this case, reducing the potential for bribery). However, it is important to note that the complexity of legislative oversight goes far beyond the relatively straightforward detection of traffic violations. DPR oversight involves in-depth policy analysis, political deliberation, complex social impact assessments, and inter-agency negotiations – tasks that require human judgment and wisdom that cannot be fully replaced by AI. Therefore, AI in the context of legislative oversight should be positioned as a support tool to improve analytical capacity and efficiency, not as a substitute for legislators in making final judgments or political decisions.

**Table 1. Potential of AI Applications in the Specific Supervisory Functions of the Indonesian House of Representatives**

Supervisory Function	Specific Tasks	Relevant AI Technology	Application Examples
<b>Budget Supervision (APBN)</b>	Analysis of R-APBN & Realization	ML, Data Mining	Budget anomaly detection, absorption prediction, identification of potential fraud
	Monitoring of Government Expenditure	Data Mining, AI Dash.	Real-time expense tracking (where data exists), visualization of allocation vs. realization
<b>Supervision of Implementation of Law</b>	Regulatory Compliance Monitoring	NLP, ML	Automatic analysis of compliance reports, identification of non-compliance risk areas
	Impact Assessment of the Law	ML, Data Mining	Analysis of socio-economic impact data, correlation of implementation of laws with results
<b>Government Policy Oversight</b>	Public Sentiment Analysis of Policy	NLP	Feedback processing from social media/news, identification of majority/minority opinions
	Simulation of the Impact of Alternative Policies	ML (Predictive)	Predictive model of economic/social impacts of various policy scenarios

<b>Supervision of Procurement Goods/Services</b>	Detecting Collusion/Corruption Patterns in Tenders	Data Mining, ML	E-procurement data analysis for suspicious patterns, vendor risk identification
	Project Progress Monitoring	CV, Data Mining	Image analysis/physical progress reports, detection of delays/cost overruns
<b>Public Aspiration Management</b>	Analysis & Classification of Public Complaints/Aspirations	NLP	Automatic categorization by issue/area, identification of key themes
	Identifying Public Issue Trends	NLP, Data Mining	Longitudinal analysis of aspiration data to see patterns & priorities of public issues

Source : by Researcher

Table inonsummarizes the mapping between the main oversight functions of the DPR with specific tasks that can be supported by AI technology, providing a concrete picture of the potential use of AI in legislative oversight practices.

**CONCLUSION**

The research concluded that the application of *artificial intelligence (AI)* technology holds significant promise for transforming the oversight function of the Indonesian House of Representatives (*DPR RI*) by enhancing the accuracy, efficiency, and responsiveness of legislative decision-making across key areas such as budget supervision, law implementation, government policy analysis, procurement, and management of public aspirations. Through technologies like *machine learning*, *Natural Language Processing (NLP)*, computer vision, and interactive dashboards, AI enables earlier detection of anomalies and fraud, systematic policy impact assessment, broad public sentiment analysis, and the rapid classification of citizen complaints, as demonstrated by successful implementations like the ETLE (e-ticketing) system in Indonesia. However, the study emphasized that legislative oversight still requires human discretion and political judgment, so AI should serve as a strategic support tool rather than a replacement for legislators. For future research, it is recommended to investigate the development of hybrid oversight models that integrate AI-driven analytics with human expertise, focusing on ethical frameworks, transparency, and the practical challenges of implementation within Indonesia’s unique political and institutional context.

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