The Implementation of AI in Government Organizations: Evaluating Readiness

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ABSTRACT

In the past few years, the use of Artificial Intelligence (AI)-based applications in public administration worldwide has increased considerably. AI is allegedly a promising technology that can support digital transformation in government. Among various use cases of AI in the public sector, predictive analytics is one of the most commonly used AI-based systems, besides chatbots (Misuraca and van Noordt, 2020). This AI technology makes predictions about future outcomes using historical data combined with statistical modeling, data mining techniques, and machine learning (Seifert, 2023). It uses algorithms, for example, to automate certain administrative activities, forecast where and when there is a high risk of incidents occurring, or help staff in assessing applications for benefits and tax allowances.

However, the effectiveness of AI implementation to improve public services to date remains debatable, and many government organizations in practice still struggle to implement AI successfully. According to the European Commission data catalogue 2024, a number of AI-based systems in European countries fail in the early stages, and more applications are staying in prototyping than have been institutionalized for routine usage. We believe that one of the reasons for those difficulties is a lack of readiness at the organization. Thus, it is important to learn from the institutions that have started AI adoption and explore factors influencing their readiness and the impacts they perceived in implementing AI. It is necessary to recognize AI-specific factors that differentiate it from other digital technologies and the requirements it expects within institutions.

In the context of Indonesia, the use of Artificial Intelligence (AI)-based applications up to now is perceived as limited. Precise identification of them is difficult to obtain, because there is no single registry to collect information from the government, as discovered on https://algoritmes.overheid.nl/ by the Dutch government to register all algorithms used by the government. The Indonesian government apparently still focuses on realizing a single, big, open, and linked data as an essential resource for AI technologies. But Indonesia must speed up the preparation to avoid being left behind. Massive high-level direction to embrace AI for digital transformation should be followed by practical guidance at the application level. Readiness evaluation is helpful to assess the existing government situation and identify actions to be more ready to implement AI.

The existing research about AI readiness in the public sector typically focuses on the perceptions of those who build AI initiatives within their own organizations (Mikalef et al., 2022; van Noordt & Tangi, 2023). There is a risk of bias that the project managers see the AI innovation as a great success, while other actors involved in the system share different opinions. Besides, previous research frequently did not distinguish different types of AI applications, although we know AI is a collection of data-driven applications and technologies. A specific AI type relates to unique resources and variations in the underlying machine learning algorithm, design, data sources, deployment scenario, or impacts. So, the capability requirements for implementing AI predictive analytics are reasonably different from, for instance, chatbots or image recognition systems (van Noordt & Tangi, 2023). Moreover, earlier empirical research provides insight that the use of AI in government is often heavily focused on technological capabilities and may overlook ethical and human problems (Criado & de Zarate-Alcarazo, 2022). Therefore, to fill that gap, this research aims to evaluate government readiness for AI using a multi-actor perspective, focusing on predictive analytics use cases, and uses an integrated framework that comprises technical, institutional, ethical, and people readiness.

This research will answer a research question: What factors influence the government's readiness for implementing AI predictive analytics? This research question is answered by conducting an exploratory research through case studies in one Indonesian and one Dutch government organization. With explorative case studies, deeper insights into the situation of the organization can be obtained.

From a sample case in the Dutch government, we analyzed the use of predictive analytics in providing risk predictions for thousands of subsidy requests coming from entrepreneurs each year. The AI tool is designed to help the officers make decisions faster, whether to approve or reject the requests. In our study, we recognized that AI developers and AI users have different perspectives on some factors related to the use of that AI application. The AI developers highlight the importance of a dedicated team to handle AI innovations, the provision of sufficient computing power, and strong support from top management as the key factors, while the AI users spotlight the importance of values and trust in the AI system. Furthermore, we found that although the AI developers are confident with the accuracy rate of this AI tool, the users perceive less impact of the tool in helping their work. Here, we conclude that measuring the accuracy is not only a statistical matter, but it calls for alignment with functionality that meets the users' needs. This research also found that employees' readiness, e.g., openness with AI and trust in AI, whether they are policymakers or daily users, shapes the organization's readiness to use AI.

From a case in the Indonesian government, we analyzed the use of predictive AI by the central government to monitor the budgeting and spending of regional governments. The AI features cover a rule-based system for anomaly detection and data validation, natural language processing for data standardization and budget tagging, and machine learning for forecasting budget realization. In this case, we discovered that AI techniques are utilized to obtain data quality for predictive AI analysis. Another finding is that building commitment to data-driven decision-making is crucial to ensure the tool works.

Both case studies allow us to capture the AI-specific and context-specific factors. Our findings are in line with previous work, which says that ascertaining management commitment and the levels of support from different stakeholders for AI solutions is crucial to sustaining the use of AI and scaling up in broader applications (Medaglia and Tangi, 2022). Additionally, we also learn how both organizations apply different approaches in dealing with AI innovations. The Dutch government has a regulation-based approach due to the existence of the AI Act and GDPR, with implications that the organization is more cautious in developing AI applications. The AI innovations developed by a dedicated team have resulted in the application having less sophisticated functions for the users to avoid high risks. The Indonesian government applies an innovation-based approach due to the absence of AI-related regulations, with implications that the organization emphasizes boosting AI innovations and skills, the AI innovations mostly come bottom-up, and technical efforts precede ethical and governance readiness, leaving regulatory frameworks of AI in place.

From this study, we propose several practical actions to support digital transformation through AI implementation in Indonesia. While waiting for a national legal standing of AI use in Indonesia, we can build a single registry to provide information and ensure transparency about the use of AI algorithms for public services, facilitate an AI experimental lab with regulatory sandboxes to foster innovations in controlled environments, and establish a strong collaboration among government institutions to uphold a culture of data-driven decision-making.

References

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