Exploratory Analysis of AI-based Policy Decision-making Implementation

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Abstract

This study seeks to provide implications for domestic-related policies through exploratory analysis research to support AI-based policy decision-making. The following should be considered when establishing an AI-based decision-making model in Korea. First, we need to understand the impact that the use of AI will have on policy and the service sector. The positive and negative impacts of AI use need to be better understood, guided by a public value perspective, and take into account the existence of different levels of governance and interests across public policy and service sectors. Second, reliability is essential for implementing innovative AI systems. In most organizations today, comprehensive AI model frameworks to enable and operationalize trust, accountability, and transparency are often insufficient or absent, with limited access to effective guidance, key practices, or government regulations. Third, the AI system is accountable. The OECD AI Principles set out five value-based principles for responsible management of trustworthy AI: inclusive growth, sustainable development and wellbeing, human-centered values and fairness values and fairness, transparency and explainability, robustness, security and safety, and accountability. Based on this, we need to build an AI-based decision-making system in Korea, and efforts should be made to build a system that can support policies by reflecting this. The limiting factor of this study is that it is an exploratory study of existing research data, and we would like to suggest future research plans by collecting opinions from experts in related fields. The expected effect of this study is analytical research on artificial intelligence-based decision-making systems, which will contribute to policy establishment and research in related fields.

1. Introduction

Until now, digital technology has been recognized as a complementary tool to increase productivity and make life more convenient through automation and intelligence, but the role of digital technology has recently been increasing in the process of responding to the pandemic. In addition, as digital transformation progresses across industries, digital technology is emerging as an essential commodity across all areas of future society.

Recently, scholars have argued that digital transformation is not simply about digitizing work processes at the corporate level but that "advanced digital technologies symbolized by DNA(data, network, artificial intelligence) are revolutionizing not only private companies, but also the public sector, social systems, and the overall economy [1]. And with the spread of AI technology in the private and public sectors, artificial

intelligence technology is being used as a key tool for corporate and government innovation.

AI can contribute to improving public services in a variety of ways, including through smarter analytics, a better understanding of real-time processes, and shorter, richer feedback circuits at all levels of governance. Therefore, this study aims to provide implications when introducing relevant domestic policies through exploratory analysis research to support AI-based policy decision-making.

2. Theoretical Background

2.1. AI-based Decision Making

"AI-based policy decision support system" refers to the establishment or implementation of public policy using artificial intelligence (Public Policy through AI) and has been discussed under the concept of "Evidence-Based Policy (EBP)" [2, 3]. Evidence-based policy is an approach that seeks to input objective evidence obtained through scientific research methods into the government's policy establishment process and use it to make policy decisions [4]. In addition, "Due to the development of computing technology, improved data collection, synthesis, analysis, and dissemination technologies and the information available can be used by policymakers to develop, implement, and evaluate policies and government projects." It can be defined as "using it for".

Based on SCOPUS, over the past 20 years, from 2000 to 2020, the number of social science articles mentioning the concept of "Evidence-Based Policy" has exceeded 1,000, producing many papers beyond public administration and policy studies [5-7].

Academic journals in public administration and policy studies have organized special issues on the topic of evidence-based and evidence-based policies. A new SSCI academic journal, Evidence & Policy, which focuses on public administration, was also published.

With evidence-based policy discussions in full bloom, some argue that we are living in the "Golden Age of Evidence-Based Policy".

Just as evidence-based policy research is empirical research that uses traditional data as evidence for policy decisions, "big data-based policies" that use big data as evidence for policy decisions have been studied since the 2010s [8, 10]. Many of these big data-based policy studies use analysis results using big data on specific policy research cases as evidence for policies. This is because big data has not only expanded the volume of data since the 21st century but also the need to deal with data of other attributes such as velocity and variety has emerged. To analyze such data, rather than relying on traditional statistics, the new science of big data analysis and machine learning methods, a field of artificial intelligence, have begun to be used.

2.2. Data-based Policy Decision Concept

In 2014, the OECD presented the following data-based policymaking concept. According to the OECD concept, the collection, use, and analysis of data are important for data-based policy decisions, but such data analysis must contribute to achieving "economic value and social value," which is the ultimate goal for policy decision-making.

3. Results of AI-based decision support system

3.1. AI-based decision-making case

3.1.1. OECD Artificial Intelligence Policy Observatory

OECD.AI is an AI policy specialized portal built by OECD and provides visualization materials such as AI-related Experts and blogs, AI Principles, Policy Areas, Trends and data, Countries, etc., as well as books, reports, news, dashboards, statistical data, etc. It is based on the OECD's Artificial Intelligence Recommendations, the first intergovernmental AI standard adopted in May 2019. Combining data from the OECD, partners and stakeholder groups, it provides a multidisciplinary, evidence-based policy analysis of areas where AI will have the greatest impact OECD.AI provides the following core properties in Table1 [8].

Table 1. Core attributes of OECD.AI

division	detail
Multidisciplinary	Reviewed in a holistic manner, in collaboration with policy communities across and beyond the OECD
Evidence-based analysis	Gather and share evidence using measurement methodologies and evidence-based analysis
Global multi-stakeholder partnership:	Provides a hub for dialogue and collaboration between government and various stakeholders

OECD identifies AI as a new general-purpose technology that will affect all areas of public policy, and established OECD.AI to attempt analysis of the use of AI in various policy areas in the following areas in Table 2. According to the OECD (2021) report, OECD.AI defines the AI policy cycles as follows [9].

Table 2. AI policy cycle

Division	Detail
AI Policy Design	National AI governance approach (e.g. coordinating body, horizontal coordination, stakeholder engagement and public consultation)
AI Policy Implementation	AI R&D investment
	Data, computing, software and knowledge
	Regulations, testbeds, documentation
	automation, technology, jobs, education
	Tools for trustworthy AI Codes of conduct, standards, and capacity building
AI Policy Intelligence	Link AI policies to action plans and goals
	Evaluate AI policy implementation
	Indicators such as benchmarks and KPIs

3.1.2. Policy Insider

Policy Insider is a policy monitoring and analytics company located in Hamburg, Germany, and aims to be a browser-based knowledge platform that continuously collects, analyzes, and processes public policy documents and social media from related organizations.

The core competency is "an artificial intelligence model that enables specific predictions about political outcomes." You can set up to receive keyword-based alerts as push notifications directly to Microsoft Teams to receive monitoring notifications from relevant policy agencies. In the future, we also plan to include Slack integration to enable you to receive and share policy notifications within appropriate channels.

The application case was used to monitor Spanish parliamentary policy. In the case of the Spanish Parliament, 50% of relevant public policy documents are not searchable on the web. In other words, a general Google search alone cannot find enough documents related to Spanish parliamentary policy, creating a huge knowledge gap. The Spanish Constitution provides for the separation of powers: an executive branch headed by the Prime Minister ("La Moncloa") and represented by the King, a legislative branch consisting of the House of Representatives and the Senate, and a judicial branch containing the Cortes Generales.

Policy Insider AI provides up-to-date information monitored 24 hours a day through a fully automated system, including the relevant institutions in Spain and dozens of institutions across Europe. You can also monitor what policymakers are saying and what they are doing, including actual policymakers and their social media activity. Another application example is the monitoring of the European Parliament. It currently contains 250,000 historical policy documents related to the European Parliament. These include the latest resolutions, parliamentary questions, committee documents, etc., as well as incoming and outgoing emails published by the European Parliament. More than 15,000 pages of policy documents are added daily, including most recently available staff work documents. These documents provide interesting insights into the current European Parliament agenda.

3.1.3. Citizenlab

Founded in 2015, Citizenlab is a Brussels-based civic technology company that works with more than 300 local governments in 9 countries around the world to digitize governance and make decision-making more effective, transparent, collaborative and data-driven. The goal is to create Citizenlab seeks to promote citizen participation through an interactive digital platform. The platform is a cloud-based SaaS (Software as a Service) that allows citizens to participate in the decision-making process and allows local governments to collect data and opinions in an easier and more organized manner.

The features of the Citizenlab platform include participatory features such as participatory budgeting, surveys and voting, idea gathering and voting, and citizen initiatives. The platform enables local governments to efficiently collect and manage citizen data to better address the needs and demands of citizens. Facilitates educated decision-making based on

3.1.4. City of Helsinki AI Register

An AI company called Saidot, founded in 2018 in Helsinki, Finland, is building an AI-based platform called "AI Register" that provides governance and administrative transparency in city administration. AI Register aims to adopt systematic AI governance consistent with ethical standards and regulatory requirements across its clients' AI portfolio, from principles to implementation. Saidot's AI Register platform connects internal and external stakeholders through AI solutions and enables trust through transparency and collaboration. Sadiot is

a platform trusted by businesses and governments around the world to help them apply AI governance and transparency best practices for trust and compliance.

https://ai.hel.fi/en/ai-register/ serves as a notification window for the artificial intelligence system used by the city of Helsinki. With AI Register, you can get a quick overview of the city of Helsinki's AI systems or find more detailed information depending on your interests. Citizens can also participate in building human-centered AI in the city of Helsinki by providing feedback on AI Register. The artificial intelligence systems operated by AI Resister include Helsinki Chatbot, a 24-hour chatbot about Helsinki city administration, Parking Chatbot, a parking assistant, and Obotti, a book recommendation chatbot for Oodi Library, Helsinki's central library. Helsinki City's AI Register has since expanded to Amsterdam in the Netherlands, Nantes in France, Lyon, Antibes, and Chile.

3.1.5. FiscalNote

Fiscal Note is an IT startup founded by Korean-American Tim Hwang in 2013 when he was 23 years old. It is located in Washington, DC, and is the world's first legislative information AI analysis service company that applies artificial intelligence technology to US Congress and government data. FiscalNote is a leading technology provider of global policy and market intelligence, uniquely combining AI technology, actionable data, and expert and peer insights to generate mission-critical insights and action. Provide customers with tools to convert to Home to industry-leading brands such as CQ, Equilibrium, Frontier View, Oxford Analytica, VoterVoice and many others. FiscalNote helps organizations stay ahead in a rapidly evolving political, corporate, and regulatory environment.

Currently, the main services are Prophecy, which analyzes 'legislative information', and 'Sonar', which analyzes 'regulatory information'. Information related to legislation and laws identified through these services is provided in real-time to corporate government policy managers. We operate a business model that analyzes heterogeneous data such as public data, newspaper articles, laws, and policy data. It predicts the impact of policy establishment, such as the possibility of passing laws and analyzing corporate preparations according to policies. Currently, our customers include companies in various industries such as finance, healthcare, and energy, including large law firm Skadden, insurance company Atena, Southwest Airlines, and large pharmacy chain Walgreens.

You can find information about the influence of all senators and representatives, as well as the bills and regulations of the federal government and the 50 states in the United States, and the accuracy of predicting the passage of legislation proposed in the standing committee and plenary session, as determined by Fiscal Note, is 94%.

3.1.6. Data Driven Policy Cluster Project

AI4PublicPolicy is an AI-based public policy development project supported by the EU and led by GFT Italia, and conducted by a consortium of 16 partners [10]. AI4PublicPolicy is an automated, transparent, citizen-centric project that is automated and scalable. Policymakers and cloud/AI experts work together to unlock the potential of AI to the public. To this end, the project will deliver, validate, demonstrate and promote AI4PublicPolicy Platform, a new open cloud platform based on unique AI technologies.

AI4PublicPolicy Platform provides full-scale policy development/management functions based on AI technologies such as machine learning (ML), deep learning (DL), natural language processing (NLP), and chatbots while also providing open virtualization that utilizes citizen participation and feedback. It will be a Virtualized Policy Management Environment (VPME).

Supporting the entire policy development life cycle based on technologies for extracting, simulating, evaluating and optimizing interoperable and reusable public policies, with an emphasis on citizen-centric policy development and optimization through the realization of feedback loops by citizens. do.

AI4PublicPolicy will complement the public policy development function with overarching process re-engineering and organizational transformation activities to ensure an effective transition from legacy policy development models to new AI-based policymaking. AI4PublicPolicy is implemented across five real-world pilot areas in Greece, Italy, Cyprus, Portugal and Bulgaria.

DECIDO provides decision-making support to policymakers using data sources, analytical technologies, and processing capabilities to address complex problems such as migration, poverty and climate change, for which there are still no optimal solutions and which are increasing the complexity of European governments. At the same time, it supports better-targeted policies by engaging citizens and local communities in co-creation activities. DECIDO's mission is to demonstrate the groundbreaking impact of adopting innovative methodologies, tools and data to enable public agencies to effectively develop better evidence-based policies. DECIDO aims to connect public administrations to the data and computing infrastructure of the European Open Science Cloud, testing access to and utilization of vast additional resources to identify and evaluate the benefits and limitations of using current big data methodologies and infrastructure for policymaking in several areas did.

Digital Urban European Twins (DUET) is a European innovation initiative that leverages advanced capabilities of the cloud, sensor data and analytics in the form of digital twins to make public sector decision-making more democratic and effective. By processing large historical and real-time datasets, anomalies and deviations can be investigated before a disaster occurs, and embedded machine learning and AI capabilities can be used to make predictions. DUET is a goal-oriented initiative that provides cost-effective solutions that allow cities to adapt with minimal development effort.

Policy Cloud seeks to make public sector decision-making more agile, break down data silos, and combine day-to-day decisions with long-term policies and strategies for better public services that make citizens' lives easier. Disruptive technologies such as digital twins, artificial intelligence, and high-performance computing open new opportunities for decision-making through visualization, simulation, prediction, and intelligence, increasing transparency, increasing public support and participation, optimizing resources, and solving problems that are too large or complex. Process data sources that cannot be processed with existing tools.

Through the common European roadmap, we aim to illustrate how data-driven policy clusters contribute to the use of European cloud infrastructure for public administration, enabling public sector decision-makers to make more sustainable policies based on real-time information, predicted impacts and citizen input. Encourage the adoption of digital innovation and new innovative technologies to create

IntelComp aims to provide a platform that provides tools to support the full spectrum of STI policy: agenda setting, modeling design, implementation, monitoring and evaluation [11]. Engage multidisciplinary teams to co-develop innovative analytics services, natural language processing pipelines, and artificial intelligence workflows, leveraging open data, services, and computing resources from EOSC, high-performance computing environments, and federated distributed operations at EU, national, and regional levels. do. IntelComp adopts a living lab approach through co-authoring and engages public policy makers, academia, industry, SMEs, local actors, civil society and citizens to explore, experiment and evaluate STI policies at all stages. IntelComp targets domains that are aligned with the European agenda and Horizon Europe's mission: artificial intelligence, climate change and health.

3.2. Evaluation of goals and usability

The evaluation of the goals and usability of each service or project is as follows.

In the case of the OECD AI Policy Observatory, it presents a variety of analyses across various policy areas in accordance with the characteristics of the OECD, an international organization, and especially emphasizes the monitoring function that allows the policy status of each country to be viewed at a glance through visualization. In the case of Policy Insider, CitizenLab, and City of Helsinki AI Register, private companies take the lead and provide AI-based policy support in the public sector. Therefore, the emphasis is on providing public services that current customers need rather than at the level of a pilot project for advanced functions that can be implemented with AI.

Policy Insider, CitizenLab, and City of Helsinki AI Register have a common goal of monitoring the policies of central and local governments and providing services to citizens. Policy Insider aims to be a knowledge platform that continuously collects and analyzes public policy documents and social media.

CitizenLab's goal is to digitize governance by making data-based policy decisions more effective, transparent, and collaborative.

The City of Helsinki AI Register aims to provide governance and administrative transparency in city administration.

In the case of FiscalNote, unlike Policy Insider, CitizenLab, and City of Helsinki AI Register, rather than limiting its services to the general public, it considers companies/organizations significantly affected by policy as its main customers. FiscalNote's goal is to provide customers with mission-critical insights and the tools to turn them into action. In the case of Policy InsiderAI and CitizenLab, it is monitoring and analysis related to city administration. In the case of FiscalNote, it is an analysis of the impact of the law being enacted and a prediction of the likelihood of passing the bill.

The five projects in the Data-Driven Policy Cluster aim to operate pilot projects to check the feasibility and feasibility of providing better public governance using disruptive technologies such as cloud, digital twin, high-performance computing, and 3D modeling as well as artificial intelligence. It is being done. In the case of The AI4PublicPolicy Project, we are conducting a project that focuses on the feasibility and usability of establishing and executing policies with comprehensive and actionable insights using machine learning and deep learning using cloud computing and high-performance computing capabilities.

For IntelComp, we aim to provide a platform that provides tools to support the full spectrum of STI policy, such as public sector agenda setting, modeling design, implementation, monitoring and evaluation. DECIDO emphasizes evidence-based policies, so it is conducting a project to develop and utilize new pilot analysis models based on the data and computing infrastructure of the European Open Science Cloud.

In the case of DUET, the goal is to demonstrate that public sector decision-making is democratic and effective by leveraging advanced capabilities of the cloud, sensor data and analytics in the form of digital twins.

Policy Cloud aims to combine the democratic operation of data and everyday decision-making with long-term policies and strategies to make citizens' lives easier and public sector decision-making more agile.

The five projects in the Data Driven Policy Cluster aim to operate pilot projects to check the feasibility and feasibility of providing better public governance using disruptive technologies such as cloud, digital twin, high-performance computing, and 3D modeling as well as artificial intelligence in Table 3.

Table 3. Analysis of possibilities and feasibility perspectives on public governance

Example	Detail
The AI4PublicPolicy Project	o We are conducting a project that focuses on the feasibility and usability of establishing and executing policies with comprehensive and actionable insights using machine learning and deep learning using cloud computing and high-performance computing capabilities.
intelComp	o We aim to provide a platform that provides tools to support the full spectrum of STI policies, such as public sector agenda setting, modeling design, implementation, monitoring and evaluation.
DECIDO	o Because we emphasize evidence-based policies, we are conducting a project to develop and utilize new pilot analysis models based on the data and computing infrastructure of the European Open Science Cloud.
DUET	o The goal is to demonstrate that public sector decision-making is democratic and effective by leveraging advanced capabilities of the cloud, sensor data and analytics in the form of digital twins.
Policy Cloud	o The goal is to combine the democratic operation of data and day-to-day decision-making with long-term policies and strategies to make citizens' lives easier and public sector decision-making more agile.

3.3. Evaluation of AI capabilities

The evaluation of the AI function of each service or project is as follows.

In the case of the OECD AI Policy Observatory, it analyzes large amounts of data using traditional statistical analysis methods rather than advanced analysis using AI, and emphasizes country-by-country comparison and analysis to understand the current status of each country according to the user's needs.

In the case of Policy Insider, CitizenLab, and City of Helsinki AI Register, they limit the policy domain in advance and emphasize carefully understanding what customers (civilians, related companies, etc.) want and providing services specialized for that demand. Because we value public service, we have already established a digital platform for public-citizen interactivity, public opinion monitoring, and policy priority determination, but the limitations are limited to limited use of AI technology and construction of an analysis model that utilizes existing AI functions rather than advanced AI functions. has

Policy InsiderAI, CitizenLab, and FiscalNote focus on the ability to continuously collect public policy documents and social media, translate them through AI, and analyze context and trends to reflect citizens' opinions on policies. In the case of the AI prediction function, we have not implemented it yet, but we are planning to develop an AI model to predict future voting results.

CitizenLab implements customized analysis functions in idea management, surveys, voting, budget analysis,

and visualization functions based on a customizable platform and uses reports and AI-based data analysis to obtain opinions and insights about policies. In the case of AI Register, AI chatbots that utilize conversational AI technologies such as city administration, library book recommendations, and parking assistant functions by applying AI governance processes and workflows become the core model.

FiscalNote has the most advanced technology in AI analysis services for policy information, especially legislative information. FiscalNote has a variety of product lines, including CQ, Equilibrium, FrontierView, Oxford Analytica, and VoterVoice, and its accuracy in predicting the passage of legislation proposed in standing committees and plenary sessions reaches 94%.

Among the five projects in the Data Driven Policy Cluster, this is an analysis model for decision-making for policy establishment.

In the case of the AI4PublicPolicy Project, optimal allocation of maintenance resources of public institutions such as workers, vehicles, and materials, prediction of traffic/parking policies, modeling of public fees, determination of risk index for road traffic vulnerability categories, pattern recognition for energy management, clustering, etc. We are using the latest AI analysis functions in areas such as optimized operation.

For IntelComp, it highlights projects that analyze large amounts of unstructured text data using artificial intelligence tools (natural language processing pipelines, machine translation systems, automatic classifiers, topic modeling, and graph analytics) to promote science, technology, and innovation policies. IntelComp also uses six criteria for assessing the validity and relevance of data that are not disclosed by other projects: text mining feasibility, time series data analysis feasibility, classification, representativeness, open access, and compliance with the main competitors in the EU (USA, Japan, Korea and China), thereby emphasizing the effectiveness and usability of the AI analysis model.

In the case of PolicyCloud, it is using a real-time big data platform while also testing AI analysis functions such as sentiment analysis and opinion mining. The case of DECIDO, it focuses on traditional data analysis models (rather than AI analysis) to develop solutions for solving specific incidents/situations rather than routine policies such as forest fire evacuation, flood preparation, food distribution, refugee accommodation, and power outage prevention and response. DUET emphasizes building a platform that implements digital twins and 3D interfaces, as well as policy cloud and meta-simulation using various ICT technologies.

3.4. Analysis method evaluation

Classification according to the purpose of quantitative analysis models: prediction, classification, clustering, visualization, prescriptive analysis, simulation, trend analysis, classification, etc. Quantitative analysis models can be classified into prediction, visualization, and prescriptive analysis. Qualitative data analysis models are classified into text analysis models using text mining techniques and models using natural language processing techniques.

Models using natural language processing technology can be classified into topic modeling, text classification, entity name recognition, information extraction, machine reading, and knowledge graph creation and utilization. Next, the analyzed cases are classified into quantitative and qualitative aspects as follows in Table 4.

Table 4. Analysis method of AI-based decision-making system

division		Project Case
quantitative analysis model	prediction	Policy InsiderAI AI4PublicPolicy (energy consumption prediction) DECIDO (Emergency Prediction) Policy Cloud (risk factor prediction)
	visualization	OECD.AI Citizenlab AI4PublicPolicy (Policy visualization) Intel Comp
	prescriptive analytics	AI4PublicPolicy (maintenance policy optimization) AI4PublicPolicy (intervention decision to reduce road accidents) AI4PublicPolicy (water usage monitoring and loss prevention policy development) DECIDO (Development of prognostic measures following power outages) Policy Cloud (policy impact assessment and comparison)
qualitative analysis model	Topic Modeling	TES analysis by EC JRC IntelComp (LDA and Dynamic Topic Moeling) FiscalNote's AI Solutions
	Text classification	TES analysis by EC JRC IntelComp (LDA and Dynamic Topic Moeling) FiscalNote's AI Solutions
	individual recognize	DataHunt by FiscalNote Aicel Technologies by FiscalNote
	information extraction	Policy InsiderAI IntelComp (keyword extraction) FiscalNote's AI Solutions
	Derive insights	Intel Comp Aicel Technologies by FiscalNote

4. Discussion

As a result of analyzing several cases, we found that there was a gap between the needs of actual public

policy problems and existing research as follows.

First, it is not sufficiently or effectively evaluated in real policy contexts. The most notable gap in current methods is the lack of effective evaluation to establish their effectiveness in real-world settings. Assessing the "quality" of an explanation has been a topic of interest in the explainable machine learning community. The most common approach to evaluating explanations is to assess their fidelity to models and data, and in public policy circles the evaluation of explanations is approached in terms of their ability to improve outcomes of public interest. Devising a framework for a given problem domain, such as a public policy issue, requires an effort to account for the specific requirements and nuances of that domain. To fully evaluate the results of data analytics, including machine learning, in a policy context, you need three things: 1) real policy problems with well-defined goals and metrics, 2) real-world data, and 3) well-defined user research. Elements are needed.

Second, it is not explicitly designed for a specific use case. Existing methods are loosely defined or developed without general explainability goals, such as transparency, and without well-defined contextual use cases. Methods are developed without understanding the specific requirements of a given domain, use case, or user base, making adoption difficult and producing suboptimal results. Several existing methods can be applied to each use case, but their effectiveness in real-world applications is not yet well established, so this potential applicability may not have a practical impact.

As more methods are rigorously evaluated in settings where they are actually applied, gaps in their ability to meet the requirements of the use case may become more apparent [13,14].

5. Conclusion

We discover implications that could be reflected when constructing a related decision-making system for government policy in Korea through an exploratory analysis of the implementation of AI-based policy decision-making. When establishing an AI-based decision-making model in Korea, the following contents, including OECD recommendations, must be considered.

First, we need to understand the impact that the use of AI will have on policy and the service sector. The positive and negative impacts of AI use need to be better understood according to a public value perspective, taking into account the existence of different levels of governance and interests across public policy and service sectors.

Second, reliability is essential for implementing innovative AI systems. In most organizations today, comprehensive AI model frameworks to enable and operationalize trust, accountability, and transparency are often insufficient or absent, with limited access to effective guidance, key practices, or government regulations. Trustworthiness and integrity are based on four key principles: explainability, fairness and resilience.

Third, there is accountability of AI systems. The OECD AI Principles provide five value-based principles for responsible management of trustworthy AI.

Inclusive growth, sustainable development and wellbeing require stakeholders to participate in creating trustworthy AI that can contribute to driving beneficial outcomes for people and the planet. Human-centred values and fairness The values of human rights, democracy, and rule of law should be integrated throughout the life cycle of AI systems and human intervention should be allowed through protection mechanisms. Transparency and explainability means that AI actors developing or operating AI systems must have an overall understanding of the system among stakeholders so that those affected by the AI system can understand the

results and contest decisions when necessary. Information that promotes should be provided. Robustness, security and safety require that AI systems operate properly while ensuring traceability, and AI actors must apply a systematic risk management approach to mitigate safety risks. Accountability means that AI actors must respect the principles and be responsible for the proper operation of the AI system. Based on this, there is a demand to build an AI-based decision-making system in Korea, and efforts should be made to build a system that can support policies by reflecting this. The limiting factor of this study is that it is an exploratory study of existing research data, and we would like to suggest a way to collect opinions from experts in related fields through the Delphi method as a future research plan. The expected effect of this study is analytical research on artificial intelligence-based decision-making systems. We contribute to policy establishment and research in related fields.

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