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The Role of Artificial Intelligence in Government Services: A Systematic Literature Review

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A B S T R A C T

Artificial intelligence (AI) technology has become a significant factor in the transformation of government services around the world. AI has opened up new opportunities for governments to improve their effectiveness, efficiency, and responsiveness in providing services to the public. This study aimed to conduct studies in order to conduct an in-depth review of the role of artificial intelligence in government services. Literature search efforts are carried out by searching on search engines using certain keywords. Articles that match the inclusion criteria are reviewed in depth. AI has become a powerful tool for governments to improve public services, administrative efficiency, and better decision-making. The use of AI in government enables fast data processing and accurate analysis, increases the efficiency of public services, strengthens oversight and law enforcement, and supports strategic planning. However, the challenges that need to be addressed, including data privacy, ethics, and public trust, must be looked at carefully.

1. Introduction

In the ever-evolving digital era, artificial intelligence (AI) technology has become a significant factor in the transformation of government services around the world. AI has opened up new opportunities for governments to increase their effectiveness, efficiency, and responsiveness in providing services to the community (Reis et al., 2018). Governments routinely collect and manage large volumes of data, including demographic, economic, and social data. The use of AI in government enables faster and more accurate processing and analysis of data. With algorithms and machine learning techniques, AI can identify hidden patterns and trends in data, providing valuable insights for government decision-making. AI also plays an important role in increasing the efficiency and responsiveness of public services (Hung et al., 2006).

AI-based chatbot systems can be used to provide information and assistance to the public quickly and effectively (Lamberti et al., 2014). People can ask questions, report problems or ask for help through the AI platform, which is available 24/7. This reduces waiting times and frees up human resources to focus on more complex tasks. In addition, AI can assist in processing licensing applications, paying taxes, or processing other administrative documents more efficiently, reducing bureaucracy and increasing community satisfaction (Agarwal, 2018).

The use of AI in government also enables smarter decision-making and better strategic planning (Barth

et al., 1999). With accurate, real-time data analysis, governments can predict future trends, identify pressing issues, and take appropriate action. For example, AI can help in better transportation planning, environmental monitoring, or the development of public policies. Decisions based on data and AI insights can help governments reduce risk, increase efficiency, and better meet societal needs (Wirtz et al., 2018). This study aimed to conduct studies in order to conduct an in-depth review of the role of artificial intelligence in government services.

2. Methods

The literature search process was carried out on various databases (PubMed, Web of Sciences, and Google Scholar) regarding the potential of Artificial Intelligence in Government Services. The search was performed using the terms: (1) " Artificial Intelligence " OR " Government Services " OR" AI for government" OR" Artificial Intelligence in Government Services " AND (2) " Artificial Intelligence " OR " Government Services." The literature is limited to original studies and published in English. The literature selection criteria are articles published in the form of original articles, a study about artificial intelligence in government, studies conducted in a timeframe from 2010-2023, and the main outcome was the effect of artificial intelligence in government services. Meanwhile, the exclusion criteria were original articles that were not related to artificial intelligence in government services, the effect of artificial intelligence in another aspect, and duplication of publications. This study follows the preferred reporting items for systematic reviews and meta-analysis (PRISMA) recommendations.

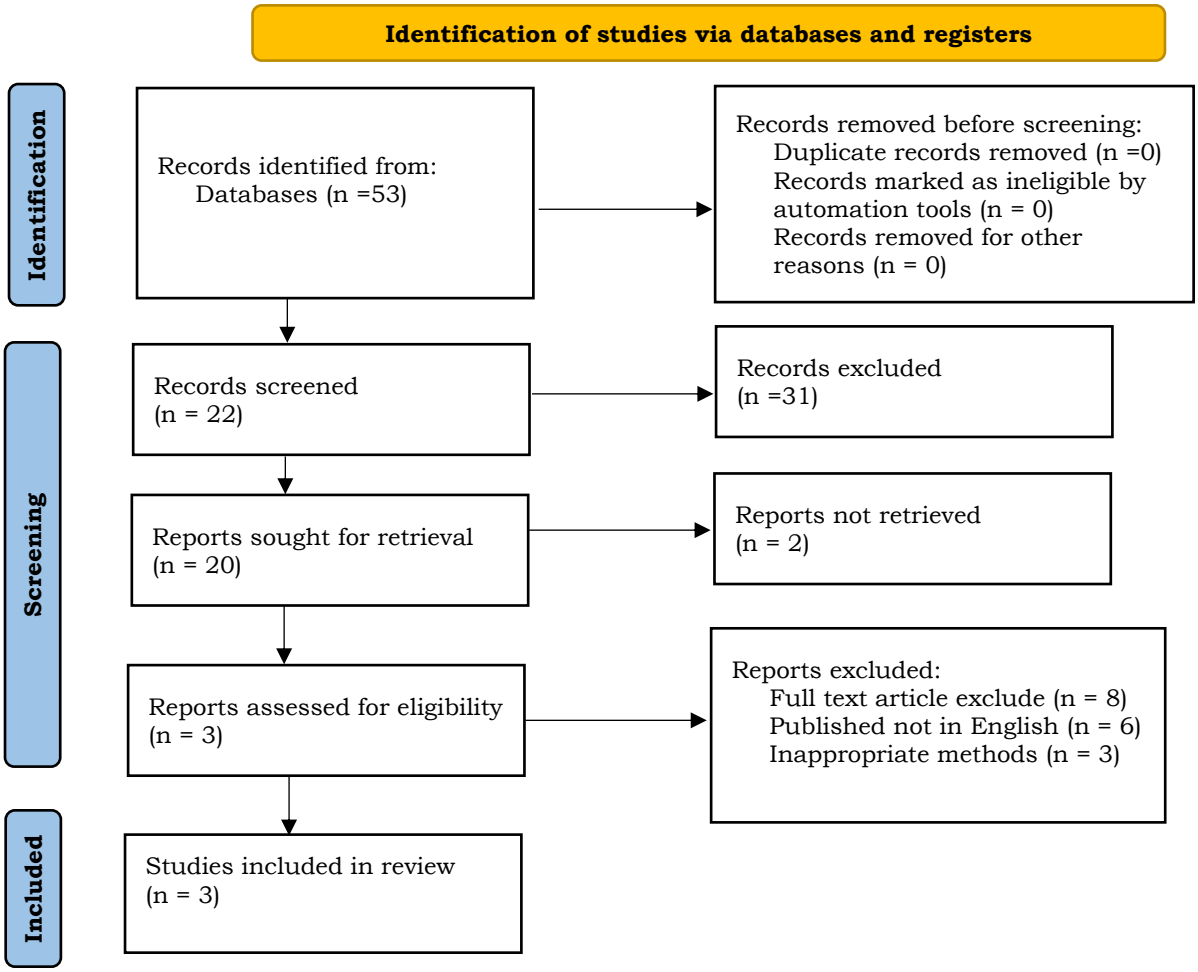

Figure 1. Research PRISMA diagram.

3. Results and Discussion

The use of artificial intelligence in government decision making

The use of artificial intelligence (AI) in government decision-making has become an important aspect of transforming government services in the digital era. AI enables governments to collect and analyze data quickly and provides valuable insights for more informed decision-making (Mikhaylov et al., 2018). AI can analyze large and complex amounts of data with more accuracy and depth than traditional methods. Using machine learning techniques and intelligent algorithms, AI can identify patterns, trends, and relationships that humans might miss. This allows governments to make decisions based on solid evidence and data (Bughin et al., 2018).

AI can be used to predict future outcomes based on the analysis of historical data and trends (Hinings et al., 2018). For example, governments can use AI to predict economic developments, demographic changes, or the impact of certain policies. This information enables the government to make proactive decisions and take appropriate actions in the face of upcoming changes (Gobble, 2018). With the help of AI, governments can efficiently optimize their resource allocation. AI can analyze financial data, budget data, and performance data to assist governments in making wise decisions about the use of public resources. This allows the government to allocate funds and resources appropriately, reduce waste, and increase efficiency (Matthias et al., 2017). AI can assist governments in identifying potential risks and making appropriate decisions based on risk analysis (Heavin et al., 2018). By leveraging AI, governments can predict potential losses, environmental hazards, or security threats. This allows the government to take the necessary precautions and reduce the negative impacts that may occur (Westerman et al., 2014).

AI can provide valuable insights into the public policy-making process. By analyzing social, economic, and environmental data, AI can help governments understand people's needs and preferences. This allows the government to design policies that are more inclusive, have a positive impact, and are in accordance with community needs (Sanchez et al., 2018).

Improving public services through artificial intelligence

The use of artificial intelligence (AI) in public services has brought about significant changes in the way governments interact with society (Demirkan et al., 2018). AI enables the development of chatbots and virtual assistants that can provide assistance and support to communities automatically (Kostin, 2018). People can ask questions, get information, or submit requests through this AI platform. These chatbots and virtual assistants are available 24/7, reducing waiting times and speeding up response to community requests. AI can analyze user data and provide people with more personalized services. For example, by learning individual preferences and needs, AI can recommend services that suit each user. This improves user experience and provides more effective services (McCarthy et al., 2018).

By using predictive analysis techniques, AI can assist governments in forecasting problems that may occur in the future. For example, AI can be used to predict floods, droughts, or disease outbreaks. With this information, governments can take the necessary precautions and warn the public about possible impending troubles. AI can be used to process administrative documents such as forms, letters, or other documents. By using optical character recognition (OCR) techniques, AI can read and recognize the text in the document automatically. This reduces administrative burden, speeds up processes, and avoids human error (Russel et al., 1995).

AI can analyze public sentiment through social media or online surveys. This allows the government to understand the views and opinions of the community regarding the implemented policies or

programs. With this information, governments can evaluate their performance, improve existing policies, and design new policies that are better suited to the needs of society. AI can be used to optimize transportation and traffic management in cities. AI can analyze traffic data in real time, predict congestion, and provide alternative routes to road users. This helps reduce travel time and increases transportation efficiency (Jarrahi, 2018).

Monitoring and data security

In the digital era that continues to grow, surveillance and data security are very important in the use of artificial intelligence (AI). AI can be used to detect suspicious or strange activity in data. Using machine learning techniques, AI can learn normal patterns in data and identify unusual behavior. This enables early detection of cyber attacks or data misuse. AI can assist in managing data security risks by analyzing data and identifying vulnerable areas. AI can provide recommendations to strengthen data security, such as implementing encryption, strict access settings, or improving other security measures (Sanchez et al., 2018).

AI can be used to monitor and enforce established data security policies. AI can perform automated analysis of data and ensure that security and privacy policies are followed appropriately. If there is a violation, AI can issue a warning or take the necessary countermeasures. AI can be used to protect people's personal data and identities. By using strong encryption techniques and careful access management, AI can ensure that personal data can only be accessed by authorized parties. This helps prevent privacy breaches and data abuse. AI can be used to monitor system activity in real time. AI can analyze activity logs and detect cyberattacks or other unauthorized attempts. With early detection, prompt action can be taken to protect systems and data from security threats. AI can assist governments and organizations in ensuring compliance with rules and regulations related to data security, such as the general data protection regulation (GDPR) in the European Union. AI can automate compliance monitoring and reporting, identify potential violations, and help organizations meet regulatory requirements (Demirkan et al., 2018).

Public administration transformation through artificial intelligence

The transformation of public administration through Artificial Intelligence (AI) has brought about significant changes in the way the government manages and provides services to the public. AI can be used to automate various administrative processes, such as form processing, filing, and document management. Using pattern recognition and natural language processing techniques, AI can identify and extract relevant information from documents, reducing time-consuming manual activities and increasing administrative efficiency. By utilizing chatbots and AI-based virtual assistants, the government can provide more responsive public services. Chatbots can provide instant answers to common questions and provide guidance on government procedures and policies. This reduces people's waiting time and ensures the fast and effective availability of public services (Kostin, 2018).

AI enables governments to manage public data more efficiently. With sophisticated data analysis techniques, AI can help identify patterns and trends in data, predict people's needs, and support data-driven decision-making. In addition, AI can also assist in integrating and linking data from different sources, enabling the government to gain a more complete understanding of the situation and conditions. AI can be used to strengthen surveillance and law enforcement. Through data analysis and image processing, AI can help detect patterns of crime or suspicious behavior, speed up law enforcement responses, and improve public safety. An example is the use of AI in video monitoring systems for face

detection, identification of traffic violations, or recognition of certain behavioral patterns in security data. AI can provide valuable insights for governments in planning public policies. By analyzing economic, social, and environmental data, AI can help predict the impact of different policies, evaluate the performance of government programs and provide recommendations for policy improvements or adjustments. Thus, AI enables more informed and evidence-based decision-making (Jarrahi, 2018).

4. Conclusion

In the digital age, AI has become a powerful tool for governments to improve public services, administrative efficiency, and better decision-making. The use of AI in government enables fast data processing and accurate analysis, increases the efficiency of public services, strengthens oversight and law enforcement, and supports strategic planning. However, the challenges that need to be addressed, including data privacy, ethics, and public trust, must be looked at carefully. With wise policies and a responsible approach, AI can become a powerful tool for achieving more effective, transparent, and responsive governance.

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