TEXAS A&M UNIVERSITY
Agricultural Leadership, Education & Communications

PROGRAM EVALUATION MEETS AI: AN INTEGRATIVE LITERATURE REVIEW ON THE POTENTIAL IMPLICATIONS OF ARTIFICIAL INTELLIGENCE IN AGRICULTURAL PROGRAM EVALUATION

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INTRODUCTION

- AI is poised to revolutionize program evaluation methods in agriculture, addressing global challenges like food security, population growth, and climate change. Program evaluation systematically assesses program effectiveness and identifies areas for improvement.
- Recent advancements in AI, such as natural language processing, machine learning, and predictive modeling, have shown potential to transform evaluation methods. However, there is a need for better guidance on AI use in evaluations.

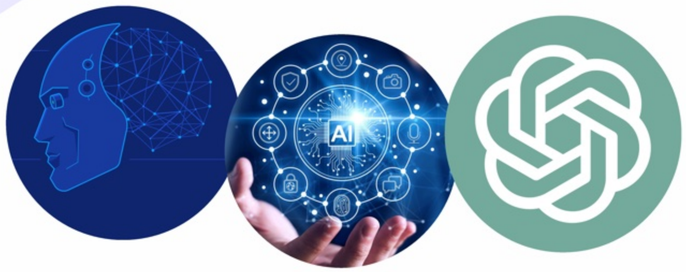
METHODS

- This study used an Integrative Literature Review (ILR) method to consolidate diverse research on AI's applications in program evaluation.
- The review followed a structured approach, identifying a literature gap regarding AI's underutilization in program evaluations.
- The sampling included scholarly publications, specific websites, working papers, blogs, and documents published between 2000-2024. Tools like Research Rabbit and AI software like ChatGPT were used for enhanced search capabilities.
- The review involved keyword-guided literature review and comprehensive document analysis, identifying themes such as data mining, machine learning, generative AI, predictive analysis, and associated challenges.

FINDINGS

The integrative review highlighted several key themes regarding AI's potential contributions to agricultural program evaluation.

- AI-driven systems like ChatGPT were identified as helpful tools for automating evaluation planning and enhancing stakeholder engagement through natural language processing capabilities.
- Data mining techniques were effective in extracting valuable insights from complex agricultural datasets, facilitating evidence-based decision-making.
- Machine learning algorithms emerged as powerful tools for predictive modeling of program outcomes, enabling evaluators to forecast impacts and optimize resource allocation.
- Generative AI technologies may enhance evaluation efficiency and scalability by automating routine tasks and reducing manual workload. However, concerns about data privacy, algorithmic biases, and the necessity of human oversight were noted.



CONCLUSIONS

- Integrating AI into program evaluation offers significant advantages but also presents challenges, such as ensuring factual accuracy, cultural sensitivity, and avoiding biases.
- AI tools reflect a partial view of the world, influenced by their developers and the data they are trained on. Evaluators must critically assess AI outputs and collaborate with AI scientists to create ethical frameworks for AI use.

RECOMMENDATIONS

- Familiarity with AI, conducting pilot projects, and gradual implementation are recommended.
- Comprehensive research and testing are needed to identify AI's benefits and limitations, ensuring ethical standards and maintaining the human element in evaluations.
- Ongoing research and dialogue are crucial for leveraging AI's potential while mitigating risks and ensuring evaluation integrity.

REFERENCES