Research Summaries: Artificial Intelligence and Data for Nonprofits

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Journal of Nonprofit Innovation

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Latest Research (Summaries)

Artificial Intelligence
Summary 1
Enabling Artificial Intelligence on a Donation-Based Crowdfunding Platform: A Theoretical Approach.

Abstract
“Individual or group donations form an important aspect of disaster relief operations. Donation-based crowdfunding (DBC) tasks are often listed on crowdfunding platforms to attract donors to donate for a specific reason in a stipulated time. As the frequency and intensity of disasters has increased over time, these platforms have gained in popularity, and they need a constant and consistent flow of funds to achieve their targets. Artificial intelligence (AI) tools are often adopted by these channels to enhance their operational performance. We understand the process of adoption through uses and gratification theory, which is dominated by motivational factors, such as the utilitarian and symbolic benefits which DBC intends to achieve. The inflow of cash from multiple donors across the world, guided by AI tools, also gives rise to risks; therefore, we have used a moderating variable to better understand the operational performance of DBC. We collected empirical data through 293 responses from owners of DBC tasks in the context of disaster relief operations. We tested our hypotheses using partial least square structured equation modelling and controlled for intensity of disaster and crowdfunding task duration. Our results offer a significant extension to uses and gratification theory by understanding a positive relation between uses and gratification benefits and the adoption of AI tools for boosting operational performance. We project that, whereas the duration of a crowdfunding task plays an essential role in collecting the required funds for disaster relief operations, the intensity of the disaster does not impact the process of adopting AI tools or on their operational performance. Our study offers critical insights for understanding aspects of designing and implementing AI in DBC scenarios, which has been a grey area in understanding donors’ behavior” (Behl, Dutta, Luo, & Sheorey, 2022).

Background
With the recent surge of artificial intelligence (AI) applications integrated into crowdsourcing and crowdfunding platforms, organizations are using AI to help with philanthropy efforts. Historically, for-profit corporations have often adopted AI to enhance operational performance, while nonprofit organizations have used AI on a limited basis until recently. Recent research indicates that “33% of crowdfunding activities, when enabled and catalyzed by AI, will help reach the desired financial goal faster. It results in performing with better efficiency and increased performance” (Behl et al., 2022, p.769).

Additionally, the increasing use of donation-based crowdfunding (DBC) as a common and popular way to collect funds and recruit donors indicates the need “to integrate technologies like AI to understand donorship” (Behl et al., 2022, p.763). Therefore, this research examined the role of AI in DBC platforms for disaster relief operations and provided insight into “how crowdfunding platforms can use AI as a resource to gain utilitarian benefits and, in turn, improve their performance” (Behl et al., 2022, p.763).

Method
The researchers used a mixed-methods approach combining theoretical frameworks, data collection, and statistical analyses. Regarding the theoretical frameworks used, the research drew on the Technology Acceptance Model (TAM) and
the Uses and Gratification Theory (UGT). The Technology Acceptance Model (TAM) is a framework that explains how users come to accept and use a technology while the Uses and Gratification Theory (UGT) explores why individuals actively choose specific media to fulfill their various needs. Based on these theories, the following hypotheses were formulated:

- H1 proposed a positive association between uses and gratification benefits and AI adoption,
- H2 suggested a positive impact of these benefits on operational performance, and
- H3 posited a positive relationship between AI adoption and operational performance.
- Additionally, H4a and H4b hypothesized moderating negative impacts of perceived risk on the relationships between benefits, AI adoption, and operational performance.

Moreover, the researchers used Structured Equation Modeling (SEM) to examine data and test their hypotheses.

Takeaways
The research findings showcase “a positive relation between uses and gratification benefits and the adoption of AI tools for boosting operational performance” (Behl et al., 2022, p. 761). Furthermore, AI tools can comprehend donor behavior through interactive chatbots, organize processes, and suggest causes like those of donors (Behl et al., 2022). Nonprofit organizations can also integrate AI tools to encourage consistent and prolonged donor donations, especially in disaster relief operations. Adopting AI tools can also help organizations better understand the needs of donors. This input can inform the development and design of crowdfunding platforms. Incorporating AI tools into crowdfunding platforms can help organizations enhance their operational performance and understand their donorship to increase their reach and impact.


**Summary 2**

**Artificial Intelligence and Algorithmic Decisions in Fraud Detection: An Interpretive Structural Model**


**Abstract**

“The use of artificial intelligence and algorithmic decision-making in public policy processes is influenced by a range of diverse drivers. This article provides a comprehensive view of 13 drivers and their interrelationships, identified through empirical findings from the taxation and social security domains in Belgium. These drivers..."
are organized into five hierarchical layers that policy designers need to focus on when introducing advanced analytics in fraud detection: (a) trust layer, (b) interoperability layer, (c) perceived benefits layer, (d) data governance layer, and (e) digital governance layer. The layered approach enables a holistic view of assessing adoption challenges concerning new digital technologies. The research uses thematic analysis and interpretive structural modeling.

Background
This study aimed to uncover the perceived drivers of using advanced analytics for fraud detection in social security and taxation domains and how these factors relate. The study also intended to "construct a model considering both individual perceptions of technology adoption and decision-makers' perceptions regarding the interrelationships among factors influencing the adoption of a specific technology in policy-making processes." Tan et al. (2023) specifically focused on cases of "fraud detection in the taxation and social security domains, which are primary policy areas that use machine learning and AI-driven advanced analytics techniques."

Government and managerial practices have rapidly integrated new digital technologies such as AI and machine learning in recent years. The new technologies are reshaping administrative systems, introducing new forms of interaction between people and computers known as algorithmic bureaucracy. Integrating these new technologies in Belgium's public sector has presented numerous challenges, including technical, systemic, administrative, and regulatory barriers. Researchers are looking into these problems, studying how to ensure computer decisions are fair, how much we can trust these new technologies, and how to change organizations to fit them better.

Tan et al. (2023) explained that despite all the available research, we still do not fully understand how to make these technologies a regular part of government and organizational work. This article seeks to develop a model that explains the interrelatedness between various drivers influencing the integration of AI and algorithmic tools in public policy processes. This study also breaks down the complexities surrounding the adoption of machine learning and AI-driven analytics techniques, specifically in fraud detection in taxation and social security.

Tan et al. (2023) conducted this study in Belgium, where tax fraud "is a significant issue, with an estimated €25 billion [approximately $28.7 billion] lost annually" (Vanhoeyveld et al., 2020, p. 1). While these technologies promise to enhance fraud detection, their widespread adoption faces obstacles such as workforce readiness, data constraints, and organizational resistance to change. The goal is to figure out how to use these technologies responsibly and effectively in government.

Methods
In this study, various analytical methods were employed, including thematic analysis, interpretive structural modeling (ISM), matrices of cross-impact multiplication (MICMAC), structural self-interaction matrix (SSIM), initial reachability matrix (IRM), and final reachability matrix (FRM). The researchers collected data through 66 semi-structured interviews with public officials and technical, business, and policy experts from the public sector and stakeholders in Belgium's taxation and social security domains.

The researchers clustered the interview questions under thematic areas such as "tax fraud/social security infringement," "fraud analytics," "data collection and combination," and "data storage." Thematic analysis was conducted on the interview data to identify the underlying reasons or themes driving the adoption of advanced analytics in fraud detection.
Following thematic analysis, the researchers developed SSIM and IRM to assess the transitivity of factors within the system. This step was crucial in determining whether to proceed with MICMAC analysis or develop an FRM. If transitivity was identified, the researchers pursued MICMAC analysis to understand the factors’ relative importance and influence. Conversely, if the emphasis was on understanding the reachability or flow of influence between factors, researchers used FRM.

Subsequently, ISM was employed to establish the relationships between identified factors in MICMAC analysis cases. MICMAC and ISM complemented each other by classifying factors based on their importance and influence within the organizational structure. This integrated approach aided in simplifying the system’s complexities and provided valuable insights for decision-making and policy formulation. Alternatively, in cases where FRM was used, a diagram illustrating each factor’s reachability power was developed. The next step involved employing ISM to further analyze the structural relationships within the system.

**Takeaways**

The researchers explained that stakeholders interested in using advanced analytics in their organizations (including nonprofit organizations) must consider the following takeaways:

- **Assess trust conditions, interoperability factors, and perceived usefulness**: Tan et al. (2023) explained that before incorporating advanced analytics into a nonprofit organization, trust, inoperability factors, and perceived usefulness must be evaluated to ensure alignment of organizational goals and data policy strategies.

- **Highlight Perceived Benefits**: Emphasizing the perceived benefits of advanced analytics to nonprofit stakeholders is essential for driving the adoption of these technologies in an organization. Highlighting potential advantages, like improved efficiency, resource optimization, and enhanced impact measurement, can drive adoptions and support from organizational decision-makers.

- **Align Socio-Cultural Factors**: Aligning socio-cultural factors within nonprofit organizations will ensure the smooth integration of advanced analytics into existing work processes. Tan et al. (2023) recommended considering organizational culture, values/goals, and staff attitudes toward technological changes to promote acceptance and increase the chance of successful implementation.

- **Consider Ethical Implications and Responsible Adoption**: When implementing AI and advanced analytics in nonprofit organizations, prioritize ethical and responsible use. This prioritization includes consideration of regulatory frameworks, the nonprofit’s ethical guidelines, and public values that ensure the new technology aligns with the organization’s mission and values while protecting nonprofit assets.


Summary 3
Artificial Intelligence in the Practice of Work: A New Way of Standardizing or A Means to Maintain Complexity?


Abstract
“The article proposes an analytical perspective on artificial intelligence (AI) that can be fruitful in the sociology of work. The practical logic of new forms of AI (connectionist AI) is described as an interplay of social and technical processes of opening and closing possibilities of knowledge and action. In order to develop this argument, it is first shown in which sense AI can be understood as a contingency-generating technology in socio-technical contexts. The architecture based on neural networks is elaborated as a decisive feature of connectionist AI that not only opens up technical possibilities but can also shape social processes and structures by 'selectivity.'

However, this shaping does not take place solely on the part of the AI, but only becomes apparent in the interplay with specific restrictions that lie both in the social context of use and in the algorithmic architecture of the AI itself. For research in the sociology of work, this means that contingency theory approaches must be linked with approaches that emphasize the limits of ('intelligent') digitalization. The yield of such a perspective is outlined in relation to the control of work with AI."

Background
This study explored the practical functions of artificial intelligence (AI) in workplace settings and examined its implications for the sociology of work. The researchers mainly aimed to provide a new perspective and understanding of the social and technical processes involved in AI deployment in workplace settings. Heinlein and Huchler (2023) explain how AI influences work dynamics, shifting control mechanisms and reshaping workers' roles.

The researchers explain that an exciting aspect of artificial intelligence (AI) is how it is changing the way humans and technology interact. Sociologists have recently turned their attention to the impact AI will have on society. Newer forms of AI, such as connectionist or neuro-symbolic AI, challenge sociological discussions. AI introduces new possibilities (some positive, some negative) in knowledge and action.

Heinlein and Huchler (2023) highlighted the growing importance of AI in changing social structures and processes, affecting political participation, power relations, and social inequalities. AI brings complexities into societal processes due to its ongoing development and pervasive use. Understanding AI's impact will require analysis of its socio-technical (human-computer) dynamics and its role in standardizing and complicating workplace processes.

The latest type of AI, called connectionist AI, can affect social and technical aspects of our work. Connectionist AI is based on neural networks and can create new opportunities and limitations for our jobs. This groundbreaking technology operates through self-learning processes, allowing it to adapt and change to different contexts and tasks. AI's impact on the human workplace is very complex. It could
replace, complement, or empower human work, influencing human autonomy, control, and relationships with technology (and other humans) within organizational settings.

Recognizing AI’s role as both a standardizing and contingent force in work practices is essential for comprehending its societal implications. This perspective emphasizes how AI technologies and social practices interplay, shedding light on how AI shapes and is shaped by the organizational dynamics of work.

**Methods**

Using a structured analytical approach, the researchers developed their perspective on the relationship between social practices and AI technologies. They focused on two main points: how AI can streamline work processes and how to make them more flexible. Then, they looked at the technical details of connectionist AI, a type of AI that mimics how the human brain works, to understand how it can create unexpected results and to see where the technology has limitations or biases, known as selectivities. These selectivities refer to the inherent biases and restrictions within the technology itself. This information was then applied to workplace situations to show how AI affects the management and control of work processes.

The authors explored four main restrictions (selectivities) when implementing AI into organizations: “first, social selectivities in the embedding of AI; second, selectivities in the mastering of social complexity by digital technologies; third, selectivities inherent in the logic of AI and finally, latent selectivities through the anticipatory adaptation of the social environment to the conditions or requirements of AI” (p. 46).

**Social Selectivities**

- This type of analysis describes the decision-making process in setting goals, selecting data sources, designing interfaces, determining output formats, and integrating AI systems into social contexts. Interests and expectations drive these decisions, shaped by AI’s framework of action and influence its effectiveness in various social contexts and work settings.

**Selectivities in mastering social complexity through digital technologies**

- AI’s processing of socio-technical challenges is constrained by complexity, resulting in selective data processing and ongoing system changes. These constraints are present as socio-material, recursive, and non-formalizability limits. Recognizing these limitations is vital for understanding AI’s effects on work and society, impacting automation dynamics, technology-human work interaction, and balancing empowerment and technological constraints.

**Selectivities inherent in AI**

- AI’s inherent selectivities arise as systems assimilate adaptivity, shaping perception, processing, and social connections. Notably, biases are evident, especially in connectionist AI, where reliance on correlations may introduce incorrect connections and statistical biases. Heinlein
and Huchler (2023) emphasized the need for further research to understand the structuring effects of these selectivities on socio-technical adaptation.

**Latent selectivities through socio-technical adaptation**

- Latent selectivities in socio-technical adaptation reveal AI's societal impacts, standardizing social practices and potentially limiting diversity and individual freedom. They highlight AI's subtle influence on behavior and societal norms while acknowledging its limitations in understanding human emotions. Recognizing and addressing these latent social effects of AI selectivity is imperative.

**Takeaways**

Understanding the implications of artificial intelligence (AI) is crucial for nonprofit organizations. Key takeaways for incorporating AI into workplace practices include the following:

**Recognizing biases in AI systems to ensure fair decision-making**

Nonprofit organizations should be aware that AI systems can reflect and amplify any biases in the data they are trained on. This detail can conflict with fair decision-making. Organizations can combat these biases by:

- Audit AI algorithms regularly to check for bias and fairness.
- Use diverse and representative datasets to train AI models.
- Implement bias detection tools and processes to monitor AI outputs.
- Document AI decision-making processes to encourage transparency within the organization.

**Using AI to optimize resource allocation while acknowledging its limitations**

- Use AI for predicting donation amounts.
- Combine AI with human expertise to align decision-making with organizational goals.

**Leveraging AI for community engagement**

AI can be used to leverage community engagement by detecting biases and ensuring inclusivity:

- Organizations can use AI-driven analytics to identify themes in community needs and preferences.

**Addressing ethical considerations in AI usage**

Nonprofits must consider the ethical implications of AI deployment to maintain trust and integrity within their organization. This consideration involves:

- Developing clear guidelines, policies, or a code of conduct for ethical use of AI.
- Promote transparency and fairness by openly communicating with stakeholders about how AI is used, what data is collected, and how decisions are made.

**Building organizational capacity for responsible AI use through training and innovation**

To use AI effectively in nonprofit organizations, staff members must learn how to use it properly. Nonprofits should:

- Providing training and education for staff on AI technologies.
- Encouraging a culture of innovation where staff can experiment with AI tools and try new applications that align with the organization’s goals.

**Balancing management and control with flexibility**

AI can streamline management processes, but organizations must balance this with flexibility. Nonprofits can do this by:

- Using AI to automate routine tasks frees staff members' time to focus on strategic and/or creative work.
Ensure that AI systems support human work rather than replace it. Combining AI with human expertise allows for more adaptivity in response to changing environments.


Summary 4
Human-Centered Artificial Intelligence: The Superlative Approach to Achieve Sustainable Development Goals in the Fourth Industrial Revolution


Abstract
"Artificial intelligence (AI) is currently being developed by large corporations, and governments all over the world are yearning for it. AI isn't a futuristic concept; it is already here, and it is being implemented in a range of industries. Finance, national security, health care, criminal justice, transportation, and smart cities are all examples of this. There are countless examples of AI having a substantial impact on the world and complementing human abilities. However, due to the immense societal ramifications of these technologies, AI is on the verge of disrupting a host of industries, so the technique by which AI systems are created must be better understood. The goal of the study was to look at what it meant to be human-centered, how to create human-centered AI, and what considerations should be made for human-centered AI to achieve sustainability and the SDGs. Using a systematic literature review technique, the study discovered that a human-centered AI strategy strives to create and implement AI systems in ways that benefit mankind and serve their interests. The study also found that a human-in-the-loop concept should be used to develop procedures for creating human-centered AI, as well as other initiatives, such as the promotion of AI accountability, encouraging businesses to use autonomy wisely, to motivate businesses to be aware of human and algorithmic biases, to ensure that businesses prioritize customers, and form multicultural teams to tackle AI research. The study concluded with policy recommendations for human-centered AI to help accomplish the SDGs, including expanding government AI investments, addressing data and algorithm biases, and resolving data access issues, among other things."

Background
With the growing use of artificial intelligence (AI) across industries, the societal impact of AI is increasing worldwide. The recent advancements made in machine-learning algorithms have spearheaded the fourth industrial revolution currently taking place and the economic potential AI provides is immense. However, despite AI's benefits, this research article underscores the potential of a human-centered approach to utilizing artificial intelligence. A human-centered approach, as the author emphasizes, "aims to establish and implement AI systems in manners that enhance humanity and suit their interests" (Mhlanga, 2022, p.12).

The author also illustrates the transformative power of human-centered AI in accomplishing sustainable development goals (SDGs) because
a human-centered approach “should promote and strengthen people’s feelings of competency, participation, authority, and well-being” (Mhlanga, 2022, p.12). Moreover, the author provides policy recommendations to address the ethical challenges that arise in using artificial intelligence especially to achieve SDGs and how prioritizing a human-centered AI approach can help mitigate ethical concerns and foster trust.

**Methods**
Researchers conducted a systematic literature review to examine the role of artificial intelligence in sustainable development. This method involved analyzing existing literature published from reputable sources and using keywords such as "human-centered, artificial intelligence, SDGs, and sustainability" for the search. The primary focus of the research was on journal articles published from 2000 onwards, with some consideration given to earlier work (Mhlanga, 2022, p. 12). Additionally, several principles were used to drive the systematic literature review, with those principles being "transparency, clarity, integration, focus, equality, accessibility, and coverage" (Mhlanga, 2022, p.11).

**Takeaways**
The findings suggested several essential recommendations to ensure the optimal utilization of artificial intelligence in achieving various sustainable development goals. First, increasing investments in AI technologies and prioritizing a human-in-the-loop concept are paramount for governments to ensure the construction of AI systems with a human-centered approach. In addition, organizations that plan to use AI must do so with transparency and should be alert and mindful of the human and algorithmic biases built into AI systems.

To prioritize transparency and mindfulness in leveraging AI tools effectively, organizations should invest in forming diverse teams that can bring insightful perspectives to AI development and integration. Moreover, organizations should ensure AI development aligns with ethical standards by integrating data use in an equitable and unbiased manner. Doing so will help organizations take a human-centered approach to achieving sustainable development goals. With these recommendations in mind, nonprofits can move closer to accomplishing their organizational missions by leveraging the advanced and promising processes AI provides to improve impact and influence.


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**Summary 5**
**Leveraging Potentials of Big Data for Better Decision-Making and Value Creation in Nonprofit Organizations**


https://opus.lib.uts.edu.au/handle/10453/172435

**Abstract**
“In nonprofit organizations, analyzing and understanding donor behavior remain critical and challenging. While big data and machine learning techniques promise technical solutions to address this problem, how to design and build an intelligent decision support system based on these technologies remains unclear. The literature
reveals that nonprofit organizations are deficient in using various data analytics due to a lack of expertise, low financial budgets and insufficient awareness of data analytics capabilities that enable those organizations to be data-driven and decision-making beneficiaries.

Therefore, analyzing and understanding donor behavior remain critical challenges for nonprofit organizations. To address these research gaps, the researcher adopted a design science framework which helped to create an artifact (an intelligent decision support system) to analyze donor behavior in nonprofit organizations.

In addition, the framework led to the creation of a design theory of the artifact which guides the design process and generalizes the design requirements of such analytical and decision-making solutions for NPOs. The results show that (by analyzing public big data sets of donors from different sources) certain variables are essential to analyze donor behavior in nonprofit organizations. These variables are the total amount of donations, the number of donations, gender, age, social level of income, educational level, and the frequency of donations.

Furthermore, these variables assist the researcher in choosing the appropriate analysis model, from classification to predictions, and deciding the most beneficial machine learning techniques that generate a useful analysis for non-profit organizations. The researcher aims to provide a theoretical foundation design for developing an intelligent decision support system for analyzing donor behavior. The research contributes to decision support and data analytics research by presenting the capabilities of data analytics and machine learning techniques in the context that face the difficulty of understanding donor behavior. Finally, it contributes to the literature by producing descriptive and predictive analytics models to support nonprofits for leveraging applications of data analytics and big data awareness.”

**Background**

Nonprofits face increasing competition in recruiting and retaining donors, especially in the era of social media and digital campaigns. As the author noted, understanding donor behavior is pivotal for fundraising success. Data analytics, including artificial intelligence and machine learning, may offer valuable insights into predicting donor preferences and tendencies. Most notably, data analytics can unlock the key to predicting if (and how much) a potential donor may give.

The author used design theory to develop a predictive model in this paper. Design theory is an academic approach where defined principles and features guide designers’ final product. In this case, researchers have done very little to design a decision support system (DSS) to analyze donor behaviors regarding their intention to donate to a nonprofit. This author developed a DSS that will analyze donor behavior for nonprofits. Doing so will help nonprofits find committed donors and increase efficiency in their fundraising.

**Methods**

This author integrated qualitative and quantitative methods to design a DSS for donor behavior. First, the study undertook a systematic literature review on big data, donor behavior, and other key themes. The author next conducted multiple rounds of interviews with relevant stakeholders, including nonprofit decision-makers, data scientists, and volunteering experts. These interviewees offered feedback on the author’s conceptual design.

Next, the author collected multiple variables from a massive public dataset of donors. Some example variables included age, state, gender, history of donations, and amount of donations. Testing these variables in R Studio, a statistical
platform, the researcher developed a DSS on donor behavior and applied cross-validation to ensure the DSS model was effective. The result of the modeling was a primary interface with predictive analysis of donors. After the user plugs in key variables (described above), the model creates a probability percentage of whether the donor will donate. With a high accuracy rate of 94%, this DSS provides sound and swift predictions for a nonprofit organization.

**Takeaways**
Throughout the process, interviewees emphasized several key themes: useability, efficiency, and decision-making. First, most people interviewed praised the DSS as a “user-friendly system” for nonprofit professionals. For instance, it is easy for a nonprofit stakeholder to install and access the DSS. Second, interviewees saw the DSS and its attached machine learning as a valuable means of predicting donor behavior. They also saw it as a helpful tool to enhance decision-making and efficiency. Despite the AI-enabled DSS being so effective, the author noted that the interviewed nonprofit professionals desired proper training materials to help them use and interpret the DSS model.

https://opus.lib.uts.edu.au/handle/10453/172435

**Summary 6**

**U.S. AI Policy-A Balancing Act**

https://dspace.mit.edu/handle/1721.1/151848

**Abstract**
“Artificial intelligence policy is emerging as a critical component of U.S. strategy and strategies for countries around the world. What type of AI policy will allow the United States to continue to lead the world in AI innovation while doing it in an ethical and responsible manner? This work compares and contrasts 13 different countries and
how each government approaches innovation, regulation, government funding, and law scope in the field of artificial intelligence. A significant portion of this analysis evaluates the tradeoffs that come with AI policies and their effects on society. Considering these tradeoffs, the U.S. needs to ensure that innovation in the field of artificial intelligence remains the top priority, while at the same time balancing the ethical deployment of AI to protect U.S. citizens. With China on the heels of the United States in terms of artificial intelligence capabilities, the United States needs to innovate more in the fields of foundation models, generative AI, human machine interaction, natural language processing (NLP), computer vision, and other emerging areas of artificial intelligence as well.

“This thesis takes an in-depth analysis of foundation models and generative artificial intelligence, while highlighting their importance and demonstrating their potential impact in the future. At the end of this body of work, there is a proposed Bill to U.S. lawmakers and Congress, titled ‘The Artificial Intelligence Startup, Innovation, Defense, Industry, and Academia Act (AI STIDIA Act)’ that proposes a strategy for the United States to drive significant innovation in the field of artificial intelligence while deploying it in an ethical and responsible manner. The United States needs to prioritize ethical innovation in the field of artificial intelligence and cannot afford to emplace ineffective regulatory frameworks that curtails innovation. There will be a time when there is proper technology to extensively regulate artificial intelligence; however, there is not sufficient technology to extensively regulate AI as I publish this thesis. As the United States aims to generate the most innovative AI systems and create a culture that encourages the ethical deployment of AI, we should learn from past successes and failures when innovating technology. The United States needs to focus on creating AI technologies that enhance the wellbeing of U.S. citizens and people around the world.”

**Background**

Artificial intelligence has significantly affected several facets of life, from economies and business operations to human interaction and academia. Alongside a rise in artificial intelligence (AI), such as ChatGPT and Stability AI, governments, organizations, and agencies seek to implement policies to regulate the use of AI. As the author describes, AI policy can include funding, research and development, legal frameworks, and national security strategies (Hetrick, 2023). As AI advances rapidly across industries and fields, policymakers must define AI policy just as quickly. In this dissertation, the author explored how AI policy has been developed in various countries by its political leaders and how each policy has impacted the country’s opportunities and direction.

According to the Tortoise Index, which ranks nations based on their level of engagement with artificial intelligence, the United States ranks first in AI capabilities, which include talent, infrastructure, research, government strategy, etc. For instance, in 2021, the National Artificial Intelligence Initiative Act (NAIIA) authorized $6.5 billion in funds for AI research and development, education, and standards development over the next five years. Meanwhile, China ranked second, and the United Kingdom ranked third on the Tortoise Index. Despite the United States’ current lead in AI capabilities, the author argued that the U.S. must continue encouraging AI innovation. The U.S. can encourage innovation through multiple means, such as developing grants for universities to explore AI, investing in AI-centered educational programs, procuring AI systems from the private sector, and instituting fines and punishments on parties who do not follow AI rules and regulations.
The author wrote that the U.S. must prioritize AI innovation while promoting ethical values and standards. He defined these values as principles "that guide our societies to achieve fair use of artificial intelligence to protect international human rights, safety, security, and privacy" (Hetrick, 2023, p. 7). For instance, the U.S. must consider balancing fairness, transparency, privacy, responsibility, and accuracy alongside innovation, national security, and progress. Ultimately, policymakers in the U.S. should shape AI policies with an awareness of tradeoffs, ethics, opportunities, and resources.

Methods
In this study, the author analyzed fifteen countries' AI policies, what their policies can teach the US, and the policies' potential impacts on the future. Specifically, Hetrick (2023) examined Israel, Switzerland, South Korea, Singapore, France, Germany, China, Canada, the United Kingdom, Netherlands, Russia, Japan, Australia, India, UAE, and Kenya. Hetrick (2023) researched and analyzed specific texts from each country's AI policies and laws. The results of Hetrick's (2023) analysis are listed below.

Takeaways
Among several countries, the author highlighted the following nations' AI policies, strategies, and mission statements surrounding AI. This summary only samples the author's complete analysis, specifically listing the author's analysis on the U.S., China, Russia, the U.K., and the E.U.

United States
- The U.S.'s mission statement on AI is "to ensure continued US leadership in AI research and development, to lead the world in the development and use of trustworthy AI in the public and private sectors and prepare the present and future US workforce for the integration of AI systems across all sectors of the economy and society" (National Artificial Intelligence Initiative Act of 2020, as cited in Hetrick, 2023, p. 60).
- Central to the United States' mission is its 2020 National Artificial Intelligence Initiative Act, which established the nation's six strategic pillars: innovation, trustworthy AI, education, infrastructure, applications, and international cooperation. Subsequent legislation, such as the Creating Helping Incentives to Produce Semiconductors (CHIPS) and the Science Act of 2022, further bolstered this commitment by allocating significant funding for AI and semiconductor development and investing in regional innovation hubs. Finally, the author discussed the US Subcommittee on Artificial Intelligence, which plays a crucial role in regulating and promoting the fair use of AI, reflecting the government's dedication to fostering an ethical and competitive AI landscape.

China
- China's AI mission statement is "to standardize internet information service algorithmic recommendation activities, safeguard national security and the social and public interest, protect the lawful rights and interests of citizens, legal persons, and other organizations, stimulate the healthy development of internet information services, and carry forward the socialist core value view of China" (The People's Republic of China, 2021, as cited in Hetrick, 2023, p. 60).
- In 2017, China outlined its three goals for the next twelve years in its New Generation Artificial Intelligence Development Plan: (1) make AI industry an important economic growth point by 2020, (2) make AI China's driving force in economic and industrial transformation by 2025, and (3) become the world's primary AI innovation
China's strategy encompasses various initiatives:

- Build open and coordinated AI science and technology innovation systems.
- Foster a high-end, highly efficient smart economy.
- Construct a safe and convenient intelligent society.
- Strengthen military-civilian integration in the AI domain.
- Build a safe and efficient intelligent infrastructure system.
- Plan a new generation of AI major science and technology projects.

As the author notes, China’s regulations span multiple industries. First, its Internet Information Service Algorithmic Recommendation Management Provisions lays out regulations for algorithmic service providers, including fines for those who place national security at risk. Its regulations also include a $1.6 billion investment for five years in the military for AI-related systems and equipment, indicating China is interested in developing a globally competitive military force.

Russia

- Russia’s AI mission statement is "to become one of the international leaders in developing and using artificial intelligence technologies" (The Kremlin, 2019, as cited in Hetrick, 2023, p. 60).
- While acknowledging its potential to become a leader in AI development, Russia faces challenges posed by dominant players in the global market. In 2019, Russia developed multiple documents, road maps, and programs to strengthen its AI global presence. The author notes Russia’s funding focused on forecasting, production operations, intelligence, and employment.

United Kingdom

- The U.K.’s mission statement is "to invest and plan for the long-term needs of the AI ecosystem to continue our leadership as a science and AI superpower; support the transition to an AI-enabled economy, capture the benefits of innovation in the U.K., and ensure AI benefits all sectors and regions; ensure the U.K. gets the national and international governance of AI technologies right to encourage innovation, investment, and protect the public and our fundamental values" (United Kingdom National AI Strategy, 2021, as cited in Hetrick, 2023, p. 60).
- The United Kingdom’s National AI Strategy fosters an AI-enabled economy that benefits all sectors and regions while upholding fundamental values and ensuring public safety. Legislative measures such as the 2021 National AI Strategy have allocated substantial investments to various AI initiatives in both public and private sectors. By prioritizing long-term planning and governance frameworks, the U.K. aims to maintain its position as a global science and AI superpower while maximizing the societal benefits of AI innovation.

European Union

- The E.U.’s AI mission statement is "to ensure that AI systems placed on the European Union market are safe and respect existing law on fundamental rights and Union values; ensure legal certainty
to facilitate investment and innovation in AI; enhance governance and effective enforcement of existing law on fundamental rights and safety requirements applicable to AI systems; to facilitate the development of a single market for lawful, safe and trustworthy AI applications and prevent market fragmentation” (European Commission, 2021, as cited in Hetrick, 2023, p. 60).

- The European Union focuses on establishing robust regulations to ensure AI technologies’ safety, legality, and ethical use. The 2021 E.U. Artificial Intelligence Act represents a comprehensive framework aimed at safeguarding fundamental rights, promoting transparency, and preventing market fragmentation. With provisions addressing data usage, documentation, human rights, and accuracy, the E.U. seeks to facilitate innovation while upholding legal certainty and ethical standards in developing and deploying AI applications.


### Abstract

“As Western technology companies increasingly rely on user data globally, extensive data protection laws and regulations emerged to ensure ethical use of that data. These same protections, however, do not exist uniformly in the resource-rich, infrastructure-poor African countries, where Western tech seeks to establish its presence. These conditions provide an ideal landscape for digital colonialism. Digital colonialism refers to a modern-day ‘Scramble for Africa’ where large scale tech companies extract, analyze, and own user data for profit and market influence with nominal benefit to the data source.

“Under the guise of altruism, large scale tech companies can use their power and resources to access untapped data on the continent. Scant data protection laws and infrastructure ownership by western tech companies open the door for exploitation of data as a resource for profit and a myriad of uses including predictive analytics. One may believe that strengthening data protection laws will be a barrier to digital colonialism. However, regardless of their relative strength or weakness, data protection laws have
limits. An analysis of Kenya’s 2018 data protection bill, the General Data Protection Regulation (GDPR), and documented actions of large-scale tech companies exemplifies how those limits create several loopholes for continued digital colonialism including, historical violations of data privacy laws; limitations of sanctions; unchecked mass concentration of data, lack of competition enforcement, uninformed consent, and limits to defined nation-state privacy laws,” (Coleman, 2019).

**Background**

Part of the modern-day "Scramble for Africa," this research paper explored Western tech companies’ role in extracting, controlling, analyzing, and using user data for profit with limited benefit to African users. This practice is referred to as digital colonialism, and under it, “foreign powers, led by the United States, are planting infrastructure in the Global South engineered for its own needs, enabling economic and cultural domination while imposing privatized forms of governance" (Coleman, 2019, p. 423). However, unlike traditional practices of colonialism focused on extracting natural resources to reduce a country’s potential for economic freedom and sovereignty, digital colonialism is about extracting a new valuable resource: data.

As the world enters the fourth industrial revolution, data has become a new valuable currency because tech companies use it to sell access and information about users to third-party advertisers who utilize user information for profit (Coleman, 2019). Data protection laws, such as Kenya’s 2018 data protection bill, have been developed to combat this. However, large-scale tech companies have found loopholes in continuing their practice of digital colonialism.

Moreover, documented actions showcase the abuse of large tech companies as they “violate laws and skirt fines, penalties and sanctions, leaving the local citizens whom they exploit for data extraction powerless, despite clear data protection laws” (Coleman, 2019, p. 435). With this in mind, Coleman (2019) aimed to showcase how “digital colonialism is just as oppressive as the early colonialism from the nineteenth century” (p.439) as well as what organizations can do to “protect user data in an increasingly digitally-dependent society” (p.439).

**Methods**

The paper is a literature review and is broken into three parts. Part one will “establish the background of colonization and the role of corporations so as to enable the comparison between nineteenth-century colonialism and twenty-first-century colonialism. Part two will define digital colonialism and explain why data is a rich resource comparable to natural resources, as well as how large tech companies exploit this resource for profit and predictive analytics.

Part three will explain the limits to the purported solution to digital colonialism—data protection laws—using examples from the General Data Protection Regulation (GDPR) and Kenya’s 2018 Data Protection Bill” (Coleman, 2019, p. 418). Based on the information provided, the research paper analyzed power dynamics, major tech corporations’ role in nonconsensual data extraction, and the actions organizations can take to prevent user exploitation.

**Takeaways**

Society is becoming a data-driven economy; therefore, it is paramount that leaders across industries utilize and extract data ethically. Nonprofit leaders, particularly those working in Africa or with African communities or countries, must establish honest conversations and policies surrounding data use early on. Doing so can prevent unethical data use and create a culture of open communication to protect user privacy and prioritize user consent. In terms of program development, nonprofits can use data and
predictive analysis to inform the design of programs and predict social service trends needed in various communities.

Additionally, for nonprofit organizations, decolonizing data use begins with sharing data with users and donors rather than harvesting it for economic profit or gain. By integrating ethical practices of data use, nonprofit leaders can foster an organizational culture of transparency and honesty and utilize data in a way that benefits not just their organization but, more importantly, the communities they serve.


Summary 8

The High-Dimensional Data Components Needed by Big Data Specialists for Improving Decision Making in International Development and Humanitarian Organizations


Abstract

“Humanitarian and international development organizations frequently utilize high dimensional data components, such as data acquisition, storage, and analysis, to support the provision of relief services and development support in the face of global crises and natural disasters. Although high dimensional data offers significant potential benefits to these organizations to allow them to perform these crucial tasks more effectively, these benefits have not yet been fully realized. Further, little is known about the relationships between high dimensional data components used by big data specialists and the satisfaction with decision-making at the organizational level.

Recent research has also found that effort to build absorptive capacity is an effective way to overcome the ‘knowledge filter’ that prevents innovation from being assimilated in ways that could facilitate service improvement, and increase value, market orientation, and product innovation, and therefore increase perceived satisfaction. Therefore, satisfaction with organizational decision-making processes as a function of high dimensional data components and absorptive capacity was investigated, with an exploration of both the potentially moderating and mediating role of absorptive capacity. Data were gathered through a survey administered to big data experts from the United Nations Digital and Technology Network. A series of regression models examined the relationship between high dimensional data components, absorptive capacity, and decision-making satisfaction. The findings demonstrated a direct effect of perceived importance in high dimensional data components of satisfaction with decision-making and a mediating, but not moderating role of absorptive capacity on this effect. These results contribute to building the necessary bridge between theory and practice in high dimensional data components” (Edo, 2020, p. ii).
Background
To support global relief efforts during crises, be it conflict, or natural disasters, humanitarian organizations and international development must analyze vast amounts of data and make decisions based on that information. The purpose and main research question of this study were to determine the relationships, if any, that exist between high-dimensional data components used by big data specialists, absorptive capacity theory (an organization’s ability to consume and act upon new information), and the decisions international development and humanitarian organizations make.

High-dimensional data, also known as big data, “is conceptualized as a large swath of data that has multiple variables” (De Mauro et al., 2015, as cited in Edo, 2020, p. 18). High-dimensional data allows these organizations to perform their relief efforts more effectively. The continuous and dynamic nature of the data analyzed by humanitarian organizations and international development requires considering many variables. According to Walsh (2016, as cited in Edo, 2020, p. 33), a need exists for using more advanced technologies to assess how to efficiently use data from a disaster’s geographical and temporal situation. For example, humanitarian networks must assess the different requirements and challenges for timely food delivery, temporary shelter, and other relief supplies to ever-changing global locations.

Machine learning techniques such as cluster analyses, deep learning, language processing, and dimensionality reduction models are used in various industries to learn from the provided data and adapt algorithms from the data samples based on supplied instructions to achieve a specified goal. Researchers use estimation machine-learning techniques to analyze big data from international development and humanitarian organizations to assess the probability of fluctuating disaster relief situations. As social media networks and internet technologies advance, reports of violence and other disaster-related issues are shared in greater quantity and in real-time, creating an opportunity for these organizations to increase the amount of information they can absorb.

There are limits to how much information an organization can absorb, integrate, and act upon without technological assistance. These organizations are not currently using big data in a way that could be more effective and beneficial. The hope is that through the connection of theory and practice from the improved application of computer science and big data, international development and humanitarian organizations will be able to generate better data-driven decisions and elevate the assistance provided.

Methods
This study used a quantitative approach to establish empirical relationships between high-dimensional data components used by big data specialists, absorptive capacity theory, and the decisions made by international development and humanitarian. Organizations through a non-experimental correlational research design. Ninety experts with over ten years of data analytic practice, big-data practitioners, and senior data analytics professionals within international development and humanitarian organizations from the United Nations Digital and Technology Network across the globe volunteered to...
participate in the survey for this study (Edo, 2020, p. 62). The survey, validated by industry big data experts, consisted of closed-ended questions using a five-point Likert scale to measure three variables of big data used by the participants’ organizations:

- Specific big data dimensions
- Big data absorptive capacity
- “Absorptive capacity for big data that will moderate the relationship between decision-making” (Edo, 2020)

The researchers used Survey Monkey to distribute a 31-question quantitative survey. Researchers analyzed the data using a combination of multiple linear regression and hierarchical multiple regression models on SPSS statistical software.

**Takeaways**

The survey results that examined the association between high-dimensional data components and decision-making satisfaction showed a 79% increase per increased rank in decision-making satisfaction when the components were ranked by importance (Edo, 2020, p. 85). Participants ranked the four most critical high-dimensional data components as follows:

1. Data storage
2. Data analysis
3. Analytics
4. Reporting

The results also showed that the association between high-dimensional data components and absorptive capacity suggested that “... for every unit of increase in perceived importance in high-dimensional data components; there was an increase in absorptive capacity” (Edo, 2020, p. 96). This study aids big data specialists in identifying the necessary high-dimensional data components and the role absorptive capacity plays in improved data-driven decision-making. Through these results, the researcher offered insights and improved comprehension of the practical use of big data in the data-driven decision-making process for international development and humanitarian organizations.


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**Summary 9**

**Exploring Nonprofit and Government Agency AI Policies and Regulations: Systems Leadership**


**Abstract**

“The rapid advancement of Artificial Intelligent (AI) technology has created a need for policies and regulations that govern its use in nonprofit organizations and government agencies. This study examines the policies, regulations, and processes related to AI in both sectors, highlighting insight into how AI is being used to advance social causes and public services. The study draws on Systems Leadership theory to uncover the decision-making process and policy crafting for the entire system or an individual organization’s decision as the unit of analysis. With these insights, leaders can develop effective strategies for using AI to advance their...
missions while ensuring that their policies and regulations are aligned with ethical and legal standards. The paper discusses the benefits of AI, and also addresses the challenges of AI implementation. Government agencies can leverage AI to enhance efficiency and accelerate work processes, but they must also consider unique characteristics such as mandated work and cooperation with other entities. Ultimately, AI implementation in non-profit organizations and government agencies requires thoughtful preparation and a leadership approach centered around humanity.”

**Background**

This study explored generative AI technologies' opportunities, challenges, and implications in nonprofit organizations and government agencies. Additionally, it sought to examine the policies and regulations currently available, highlighting the importance of ethical, thoughtful, and careful use of this groundbreaking technology. In November 2022, a nonprofit organization named OpenAI introduced Chat GPT. This revolutionary technology caused a paradigm shift in the realm of generative AI.

"AI is a game-changer in today's world, and it thrives on two critical factors: extensive data and a precise algorithm" (Iskandarova & Sloan, 2023, p. 197). Chat GPT has the remarkable ability to process enormous amounts of information, making it an exciting asset for organizations. However, the authors highlighted ethical challenges as organizations incorporate this new technology into the world.

Iskandarova & Sloan (2023) stated: "It's crucial to recognize that using AI ethically isn't just a technical challenge but a matter of leadership. Its adoption must be centered around humanity. Leaders must create guidelines, rules, and regulations and provide training to ensure everyone comprehends AI capabilities and uses them thoughtfully and carefully" (p. 197).

Many national and state-level initiatives aimed to regulate the use of generative AI in organizations date back to 2016. "The goal of these efforts is to ensure that the United States remains a leader in AI innovation and that the benefits of AI are shared widely across society" (Iskandarova & Sloan, 2023, p. 199). The researchers emphasized the ethical use of AI and Chat GPT and highlighted organizational leaders' role in ensuring responsible use. Iskandarova and Sloan (2023) used the term "Systems Leadership."

The researchers further explained that the ethical use of AI starts by creating regulations at the state level and gradually scaling out to the national level to create a systematic approach to this challenging task. Systems leadership fosters organizational relationships, facilitates communication, and coordinates efforts among diverse stakeholders to achieve common goals. Leaders must adopt a holistic perspective and engage with stakeholders to develop effective strategies and policies for responsible AI adoption.

**Methods**

Iskandarova and Sloan (2023) reviewed and analyzed the existing literature, research, and case studies on AI implementation in nonprofit organizations and government agencies to find answers to their research questions. The first research question focused on identifying generative AI technologies' opportunities, challenges, and implications in nonprofit organizations and government agencies. They categorized the findings of their analysis in Table 1.

**Table 1**

Opportunities and Challenges of AI Implementation in Non-Profit Organizations and Government Agencies.
The second research question focused on the status of current policies and regulations related to AI implementation in nonprofit organizations and government agencies. Figure 1 shows the timeline of the national initiatives and the history of presidential strategic plans for AI. Table 2 displays a list of states that have already implemented policies and bills to regulate the use of AI at the state level.

### Table 2
States and Local Levels AI Policy Bills

<table>
<thead>
<tr>
<th>States</th>
<th>States Enacted AI Policy Bills at The State and Local Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>o Established the Alabama Council on Advanced Technology and Artificial Intelligence, specified the makeup of the council, and set qualification requirements for council members.</td>
</tr>
<tr>
<td></td>
<td>o Limited the use of facial recognition AI technology.</td>
</tr>
<tr>
<td>Colorado</td>
<td>o Concerning Personal Identity and Privacy</td>
</tr>
<tr>
<td></td>
<td>o Prohibit any facial recognition AI technology</td>
</tr>
<tr>
<td>Illinois</td>
<td>o Artificial Intelligence Video Interview Act</td>
</tr>
<tr>
<td></td>
<td>o Future of Work Act where AI has impact on employment, wages and skills</td>
</tr>
<tr>
<td>Vermont</td>
<td>o Agency of Digital Services to review all aspects of AI Technology developed, employed, or procured by State Government.</td>
</tr>
<tr>
<td>California</td>
<td>o Prohibits business from making false and misleading advertising claims.</td>
</tr>
<tr>
<td>Georgia</td>
<td>o Automated Decision Systems Accountability Act</td>
</tr>
<tr>
<td></td>
<td>o Transparency and Fairness is Automated Decision Making Commission</td>
</tr>
<tr>
<td>Hawaii</td>
<td>o Cybersecurity and Artificial Intelligence business investments tax credit</td>
</tr>
<tr>
<td>Maryland</td>
<td>o Technology and Science Advisory Commission.</td>
</tr>
<tr>
<td></td>
<td>o Algorithmic Decision Systems– Procurement and Discriminatory Acts: require state units purchasing products that contain algorithmic decision system to only purchase products or services that adhere to responsible artificial intelligence standards.</td>
</tr>
<tr>
<td>Michigan</td>
<td>o Michigan employment security act: to evaluate claims for unemployment benefits and prepare a report regarding the system.</td>
</tr>
<tr>
<td>Missouri</td>
<td>o Establishes the Missouri Technology Task Force.</td>
</tr>
<tr>
<td>Nevada</td>
<td>o Create the Emerging Technologies Task Force administrator and coordinate programs, provide information to the public, and assist small business and government entities to prepare for and respond to emerging technological developments, which include AI.</td>
</tr>
</tbody>
</table>

### Takeaways
Iskandarova and Sloan (2023) delineated numerous advantages and drawbacks of integrating AI in nonprofit and government sectors. Key benefits of AI implementation in these organizations include:

- **Streamlining operations and improving efficiency.**
- **Enhancing donor management and fundraising efforts through AI tools.**
- **Personalizing communication with supporters.**
- **Managing volunteer databases effectively.**
- **Streamlining grant application and management processes.**
- **Measuring the impact of programs more accurately.**
- **Managing finances more effectively.**
- **Facilitating collaboration and networking with other nonprofits.**
- **Optimizing resource allocation and community impact.**

However, several challenges accompany the utilization of AI in nonprofit organizations:

- **Ensuring proper protocols and education to prevent the introduction of personal data into AI platforms.**
• Compliance with regulatory requirements regarding data retention and privacy.
• Potential risks of data privacy violations.
• Dealing with misinformation generated by AI systems.
• Addressing algorithmic biases in hiring processes and decision-making.
• Managing ethical considerations surrounding AI implementation.
• Balancing the benefits of AI with the need to protect individual privacy and data security.
• Developing ethical models and frameworks to guide AI usage.
• Mitigating potential discrimination claims arising from biased AI tools.
• Navigating the complexities of AI regulations and policies.

Moreover, the study highlighted two critical considerations for nonprofit organizations contemplating AI integration:

• National and state-level initiatives have established safe and trustworthy AI implementation standards, aiming for transparency, accountability, and ethical practices. Before implementing AI, nonprofit organizations should familiarize themselves with relevant regulations in their state.

• Effective leadership is crucial in advocating for clear rules and regulations. A systematic approach, starting at the state level, allows nonprofits to leverage strengths across sectors and proactively address potential risks associated with AI adoption.