FOREGROUNDING ARTIFICIAL INTELLIGENCE IN THE FIGHT AGAINST HUMAN TRAFFICKING IN NIGERIA: THE ROLE OF SOCIAL SCIENCE EDUCATION

Aboh, Fidelis Isomkwo (PhD),
Department of Sociology, University of Calabar, Calabar
Phone: 08025660701
Email: abohfidel@gmail.com

Okom, Emmanuel Njor (PhD),
Federal College of Education (Technical), Ekiadolor, Benin, Edo State
Phone: 08057775715
Email: njorokom@fcetekiadolor.edu.ng
Correspondence Author

Amoke, Paul Akwagiobe (PhD),
Department of Philosophy and Religion, Ebonyi State University, Abakaliki
Phone: 08062650774
Email: fr.paulamoke@gmail.com

Ngele, Emmanuel Paul (PhD),
Department of Sociology, University of Calabar, Calabar
Phone: 08062451169
Email: ngeleemmanuel2@gmail.com

ABSTRACT
This study addresses the critical disconnect between the technological potential of Artificial Intelligence (AI) and the human expertise required to deploy it ethically and effectively against human trafficking in Nigeria. Grounded in Socio-Technical Systems Theory and the Capabilities Approach, the research investigated the imperative of integrating AI literacy into social science education to bridge a systemic skills gap. A hybrid approach was employed, utilizing online surveys with 300 final-year social science students from six federal universities and online in-depth interviews (via Zoom) with 20 lecturers, curriculum developers, and NAPTIP officials. Findings reveal a stark curricular deficit, with 85% of students reporting no exposure to AI concepts, confirming a significant gap ($H0_2$ rejected, $p < .001$). A strong positive correlation was established between AI awareness and its perceived efficacy in disrupting trafficking networks ($H0_1$ rejected, $r = 0.45$, $p < .001$). Qualitatively, 95% of experts highlighted severe ethical concerns like algorithmic bias, with 85% explicitly advocating for an interdisciplinary, ethics-driven curriculum framework ($H0_3$ & $H0_4$ rejected). The study concludes that the current social science curriculum produces professionals who are ill-equipped to govern AI, perpetuating a cycle of technological failure or misuse. It is recommended that the National Universities Commission mandate an "AI, Ethics, and Society" module across social science programmes, that Colleges of Education lead in curriculum redesign, and that agencies like NAPTIP establish technology desks staffed by socially-literate graduates. This educational reform is the pivotal linchpin for harnessing AI as a tool for justice and sustainable national development.

Keywords: Artificial Intelligence, Human Trafficking, Social Science Education, Curriculum Integration, Ethical Governance, National Development.

INTRODUCTION

Human trafficking remains a severe crime and a major barrier to human security and national development in Nigeria, which is identified as a key source, transit, and destination for forced labour and sex trafficking (U.S. Department of State, 2023). This crime erodes social cohesion and depletes human capital, directly hindering national progress (Aronowitz, 2022). Simultaneously, Artificial Intelligence (AI) presents transformative potential for law enforcement. Machine learning and predictive analytics enable advanced pattern recognition and forecasting of criminal activities like human trafficking (Ibrahim, 2021; UNODC, 2021). However, the deployment of AI carries significant risks, including algorithmic bias that can perpetuate discrimination (Benjamin, 2019) and privacy concerns from predictive policing (Završnik, 2020). Without proper contextual understanding, AI solutions may prove ineffective or harmful (Micheli *et al.*, 2020).

This situation reveals a critical human capital deficit: a systemic skills gap where a lack of professionals, trained to bridge AI's technical aspects with social science insights, creates a governance vacuum. Social Science Education is uniquely positioned to develop this hybrid expertise, producing graduates who can ethically and effectively deploy AI to combat human trafficking and support national development (Akiyama *et al.*, 2020). However, the current social science curricula in Nigerian institutions lack AI literacy components (Akinmayọwa, 2022), producing professionals unequipped to engage with these technologies. This overarching argument – that a systemic skills gap exists and must be addressed through curricular reform – forms the central problematique of this paper.

The general objective of this study is to develop a framework for integrating AI literacy into social science education to enhance Nigeria's capacity to combat human trafficking. The specific objectives are to:

1. examine the potential applications of AI in mapping, predicting, and disrupting human trafficking activities in Nigeria;
2. assess the current level of AI integration and literacy in social science programs in selected Nigerian universities;
3. identify the perceived ethical challenges and societal implications of using AI in anti-trafficking initiatives from the perspective of social scientists and educators; and
4. propose a model curriculum for an AI-and-Society module tailored for social science students, focusing on crime and human trafficking.

The study was guided by the following research questions:

1. How can AI technologies be leveraged to identify, prevent, and respond to human trafficking networks in Nigeria?
2. What are the current gaps in social science education in Nigeria regarding AI literacy and its application to complex social problems like human trafficking?
3. What are the key ethical concerns (e.g., privacy, bias, surveillance) associated with using AI for anti-trafficking efforts, and how can social science education address them?
4. What would a conceptual framework for integrating AI studies into social science and criminology curricula in Nigerian universities look like?

The following null hypotheses were tested:

- $H0_1$: There is no statistically significant positive correlation between the understanding of AI applications and the perceived efficacy of these tools in disrupting human trafficking networks.
- $H0_2$: There is no statistically significant gap between the perceived importance of AI literacy for social science graduates and its current level of integration into the curriculum of selected Nigerian universities.
- $H0_3$: There is no statistically significant relationship between the identification of algorithmic bias and data privacy as primary ethical challenges and the advocacy for embedding ethical modules in social science education.
- $H0_4$: A conceptual framework for integrating AI studies into social science and criminology curricula in Nigerian universities cannot be effectively developed to address contextual needs.

The study focused on the Nigerian context, covering selected federal universities from the six Geopolitical Zones, to ensure regional representation. It was limited to social science faculties (e.g., Sociology, Criminology, Political Science, Economics), and its substantive scope was confined to the role of social science education in mediating the use of AI for counter-trafficking, not on developing the AI algorithms themselves.

This study adhered to the highest ethical standards. All participants provided informed consent after being fully briefed on the research aims and their right to withdraw. Data were anonymized and stored securely on password-protected devices. Discussions on the sensitive topic of human trafficking were handled with utmost care to prevent distress, and the principle of academic integrity was rigorously upheld.

LITERATURE REVIEW

Conceptual Review

Artificial Intelligence (AI) in Criminological Context

Artificial Intelligence (AI) represents a paradigm shift in technological capability, broadly defined as the simulation of human intelligence processes by machines, particularly computer systems. Within this domain, machine learning – a subset of AI – enables systems to automatically learn and improve from experience without being explicitly programmed, while predictive analytics uses statistical algorithms and machine learning techniques to identify the likelihood of future outcomes based on historical data (Russell & Norvig, 2020). The relevance of these technologies to criminology is profound. In combating human trafficking, AI's capacity to process and find

patterns in massive, disparate datasets, including online advertisements, financial transactions, migration records, and social media communications, offers unprecedented potential. It can move beyond reactive policing to proactive prevention by identifying trafficking hotspots, modelling the evolution of criminal networks, and automating the flagging of suspicious online activities for further investigation by human agents (Ibrahim, 2021). This transforms law enforcement from a traditionally reactive endeavour to a potentially predictive and disruptive one.

Human Trafficking: A Multi-Dimensional Scourge

Conceptualizing human trafficking requires moving beyond a simplistic legalistic definition to appreciate its complex, multi-dimensional nature. Legally, it is a serious crime under international and Nigerian law (NAPTIP Act, 2015). However, its characterization as a grave human rights violation is equally critical; it constitutes a fundamental assault on human dignity, freedom, and bodily integrity (Aronowitz, 2022). Furthermore, from a development perspective, human trafficking is both a cause and a consequence of underdevelopment. It thrives in environments characterized by poverty, inequality, and weak governance, while simultaneously undermining development by eroding human capital and destabilizing communities.

The socio-economic drivers of trafficking are a critical area of study. The socio-economic drivers of trafficking are well-documented, with recent empirical research in Nigeria's South-South region confirming that "a significant correlation clearly exists between unemployment and involvement in runs/prostitution," a local term for sex work and trafficking (Achu et al., 2025). This underscores that effective counter-trafficking strategies must address these foundational, societal issues – a role for which social science graduates are uniquely suited, yet currently unprepared due to the identified curricular gaps in AI literacy that prevent them from effectively analyzing these complex problems or governing technological solutions.

This tripartite conceptualization – as a crime, a human rights abuse, and a development issue – is essential for formulating holistic responses that go beyond mere prosecution to include prevention, protection, and the promotion of sustainable development.

Social Science Education as a Foundational Pillar

Social Science Education, particularly within higher education, must be framed as far more than the passive transmission of knowledge about society. It is a pedagogical process dedicated to cultivating intellectual and ethical capacities. Its core mission includes fostering *critical thinking*, *ethical reasoning*, and *policy analysis* (Akiyama et al., 2020). In an era dominated by complex socio-technical systems like AI, these capacities become indispensable. They produce graduates who can not only understand how an AI algorithm works but, more importantly, can critically question the data it was trained on, identify its potential for bias, analyze its societal impacts, and develop ethical governance frameworks. Therefore, Social Science Education is the foundational pillar for ensuring that powerful technologies are directed toward the public good.

Empirical Review

Empirical evidence reveals a fragmented landscape with significant gaps in the Nigerian context. Globally, studies confirm AI's potential in crime prevention (Dubrawski et al., 2015). However, within Nigeria, research indicates this potential remains largely theoretical, hindered by operational challenges such as poor data infrastructure (Ibrahim, 2021). Regarding educational integration, empirical findings consistently show a severe deficit. A comprehensive survey found that over 90% of African social science curricula, including Nigeria's, lack AI literacy modules (Akinmayọwa, 2022) – a gap exacerbated by institutional barriers like faculty resistance and disciplinary silos (Mugo & van der Westhuizen, 2021). Concurrently, studies from comparable developing contexts highlight severe ethical risks, such as algorithms perpetuating bias against marginalized communities (Santos, 2020) and issues of data injustice (Muthaka & Chemngetich, 2022). This synthesis confirms a critical research gap: no existing empirical study connects these three strands – AI's practical applications, curricular shortcomings, and ethical governance – into a cohesive framework for Nigeria. This study addresses this void.

Theoretical Framework

The analytical lens for this study is provided by two complementary theories. The Socio-Technical Systems Theory posits that technology and social structures are co-constitutive (Micheli et al., 2020). This theory frames the analysis, demonstrating that effective anti-trafficking efforts require not just advanced AI but also a concurrently redesigned social system, including educated professionals and updated curricula, that can use it effectively and ethically. Complementing this, the Capabilities Approach, pioneered by Amartya Sen, argues that development is the expansion of individuals' substantive freedoms (Sen, 1999). This study uses this approach to argue that AI, when governed by socially-literate graduates, should enhance the state's capability to provide security and justice while protecting people's capability to live free from exploitation.

METHODOLOGY

A hybrid approach was employed, integrating quantitative data from surveys with qualitative data from interviews, to offer a comprehensive analysis.

The study population comprised final-year social science students, academic staff, curriculum developers, and officials from the National Agency for the Prohibition of Trafficking in Persons (NAPTIP). A multi-stage sampling technique was utilized. Firstly, six federal universities were selected, one from each of Nigeria's Six Geopolitical Zones, using simple random

sampling. Subsequently, a stratified random sampling technique was used to select 300 final-year social science students. The sample was proportionately distributed, with approximately 50 students selected from each of the six universities. For the qualitative component, a purposive sampling method was employed to select 20 participants based on their expertise.

Two primary instruments were used for data collection. A structured online questionnaire was administered to the 300 sampled students. Furthermore, semi-structured in-depth interviews (IDIs) were conducted online via Zoom with the 20 purposively selected experts.

The quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS, Version 26). Descriptive statistics were computed, and hypotheses were tested using Pearson correlation and one-sample t-tests. The qualitative data were transcribed and subjected to a thematic analysis using NVivo software.

RESULTS/FINDINGS AND DISCUSSION

Summary of Findings

The collected data are summarized in Table 4.1 (quantitative survey) and Table 4.2 (qualitative themes).

Table 4.1: Summary of Quantitative Survey Findings (N=300)

Variable Category	Specific Measured Indicator	Frequency (n)	Percentage (%)	Mean (SD)
AI Awareness	Had a dedicated course/module on AI	45	15.0	-
	Could correctly define "Machine Learning"	78	26.0	-
	Composite AI Awareness Score (1-5 scale)	-	-	2.1 (0.9)
Perceived Efficacy	Believed AI could identify trafficking networks (1-5 scale)	-	-	4.32 (0.81)
	Believed AI could predict trafficking hotspots (1-5 scale)	-	-	4.15 (0.92)
Curricular Gap	Rated programme's AI preparation as "Poor"/ "Very Poor"	255	85.0	-
	Believed AI literacy is "Important"/ "Very Important"(1-5 scale)	-	-	4.72 (0.58)
Ethical Concern	Believed AI raises significant ethical concerns (1-5 scale)	-	-	4.56 (0.65)

Data source: Authors' Fieldwork (2025)

Table 4.2: Summary of Thematic Analysis from Key Informant Interviews (N=20)

Emergent Theme	Brief Description	Prevalence (% of Respondents)
Theme 1: AI Efficacy	Belief in AI's potential for data analysis and disrupting trafficking networks.	100%
Theme 2: Curricular Deficit	Observation that current social science curricula lack AI content.	90%
Theme 3: Ethical Apprehensions	Concerns over algorithmic bias, privacy, and lack of governance.	95%
Theme 4: Framework Advocacy	Call for an interdisciplinary, ethics-driven curriculum framework.	85%

Data source: Authors' Fieldwork (2025)

Hypothesis Testing

This section details the statistical analysis of the quantitative data, to test the study's null hypotheses.

- $H0_1$**:** There is no statistically significant positive correlation between the understanding of AI applications and the perceived efficacy of these tools in disrupting human trafficking networks.

Analysis: A Pearson correlation analysis was conducted between the composite AI Awareness Score and the composite Perceived Efficacy score from the survey data.

Result: The analysis revealed a statistically significant positive correlation, *r*(298) = .45, *p* < .001.

Decision: The null hypothesis ($H0_1$) is rejected.

- $H0_2$: There is no statistically significant gap between the perceived importance of AI literacy and its current level of integration into the curriculum.

Analysis: A one-sample t-test was conducted, comparing the mean score for the importance of AI literacy (M=4.72, SD=0.58) against a neutral test value of 3.

Result: The result was statistically significant, *t*(299) = 51.2, *p* < .001.

Decision: The null hypothesis ($H0_2$) is rejected.

- $H0_3$: There is no statistically significant relationship between the identification of algorithmic bias and data privacy as primary ethical challenges and the advocacy for embedding ethical modules in social science education.

Analysis: This was assessed qualitatively.
The data in Table 4.2 shows that 95% of experts(n=19) identified ethical concerns (algorithmic bias and privacy). Furthermore, 85% (n=17) of all experts, which constitutes 89% of those who identified ethical concerns, explicitly advocated for embedded ethics education.
Result: The qualitative data demonstrates a strong, direct relationship between identifying ethical challenges and advocating for educational solutions.

Decision: The null hypothesis ($H0_3$) is rejected**.**

- $H0_4$**:** A proposed conceptual framework for integrating AI studies will not receive a significantly higher rate of approval if it is interdisciplinary, contextually tailored, and emphasizes ethical reasoning.

Analysis: This was assessed qualitatively. The data in Table 4.2 shows that 85% of experts(n=17) advocated for a framework characterized precisely by these features (interdisciplinary, contextual, and ethics-focused).
Result: The high prevalence of advocacy for a framework with these specific characteristics indicates that such a framework would indeed receive high approval.
Decision: The null hypothesis ($H0_4$) is rejected.

The statistical and qualitative analyses led to the rejection of all four null hypotheses. The results confirm a significant positive correlation between AI awareness and its perceived efficacy; a significant gap in the social science curriculum regarding AI; a strong relationship between recognizing AI's ethical risks and advocating for ethics education; and clear expert endorsement for an interdisciplinary, ethics-focused framework for integrating AI into social science education.

Discussion of Findings

The study's findings both confirm and advance existing empirical literature. First, while the positive correlation between AI awareness and perceived efficacy aligns with global studies on AI's crime-fighting potential (UNODC, 2021), qualitative data reveals critical implementation gaps in Nigeria. This substantiates Ibrahim's (2021) observations, as one NAPTIP official noted, *"We have the will to use these tools, but the reality is our different databases – immigration, financial, police – do not speak to each other. The technical potential is meaningless without this foundational integration."*

Second, the dramatic curricular gap (85% of students unprepared) quantitatively validates Akinmayọwa's (2022) regional survey. The expert interviews provided a causal explanation for these deficits, echoing Mugo and van der Westhuizen's (2021) findings on institutional barriers. A professor of Criminology explained, *"The curriculum is a battleship that turns very slowly. Introducing a new field like AI requires overcoming not just a lack of expertise, but a deep-seated institutional inertia that views it as outside the domain of social science."*

Finally, the overwhelming ethical concerns (95% of experts) directly corroborate Benjamin's (2019) and Santos' (2020) warnings about algorithmic bias, while advancing beyond problem-identification. An expert in policy development stated, *"We cannot outsource ethical thinking to a machine. The solution isn't just better algorithms, but better-educated professionals who can ask the right questions. This must start in the classroom."* This strong endorsement for an interdisciplinary framework directly addresses the literature's fragmentation by synthesizing technical potential, ethical governance, and curricular reform into a cohesive model for action.

Conclusion

The research conclusively demonstrates that AI's effective deployment against human trafficking in Nigeria is fundamentally constrained by social science education deficits. Current curricula produce professionals unable to bridge the socio-technical divide, risking either ineffective AI implementation or exacerbation of existing inequalities. Therefore, integrating critical AI literacy into social science education represents not merely an enhancement but a necessary condition for ethical and effective national development.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. For the National Universities Commission (NUC) and University Administrations: It is recommended that the NUC, in collaboration with university senates, mandates the integration of a compulsory, interdisciplinary module titled "AI, Ethics, and Society" into the undergraduate curriculum of all social science disciplines. This module should focus on critical concepts, ethical reasoning, and policy implications, not technical programming.
2.
3. For Colleges of Education and Curriculum Developers: It is recommended that curriculum developers in Colleges of Education proactively design and pilot the proposed "AI-and-Society" framework. This will ensure that the next generation of social science teachers are themselves equipped with the necessary AI literacy to foster it in their future students, creating a sustainable pipeline of expertise.
4.
5. For Policy Agencies (e.g., NAPTIP): It is recommended that NAPTIP establishes a dedicated "Technology and Innovation Desk," staffed by social science graduates who have undergone specialized training in AI ethics and applications. This desk should be tasked with liaising with tech companies, evaluating AI tools for deployment, and ensuring all technological initiatives are grounded in socio-ethical principles.
6.
7. For Future Research: Future research should undertake a longitudinal study to track the impact of graduates from reformed curricula on the effectiveness and ethical governance

of AI initiatives within public and security sectors. Additionally, further empirical work is needed to develop and validate specific teaching materials and pedagogical methods for this interdisciplinary domain.

REFERENCES

Achu, A. A., Jacob, O. E., Michael, T. O., Okongo, J. N., Fedelis, N. A., Tangban, E. E., Aboh, F. I., Neji, O. N., Awubi, E. R., Ede, V. I., Njong, C. A., Ugal, B. U., Ofem, N. O., Idaka, E., & James, R. D. (2025). Human trafficking issue on tourism industry in south-south geo-political zone, Nigeria. *Multidisciplinary Reviews*, 8, e2025236. https://doi.org/10.31893/multirev.2025236

Akiyama, T., Sriprakash, A., & Amos, K. S. (2020). The social sciences in the age of AI: New challenges for education. *Journal of Education for Sustainable Development, 14*(2), 145-162.

Akinmayọwa, T. (2022). *Curriculum reform in Nigeria: Bridging the digital divide in social science education*. Lagos University Press.

Aronowitz, A. A. (2022). *Human trafficking: A global perspective*. Cambridge University Press.

Asongu, S. A., & Nwachukwu, J. C. (2018). Educational quality and the challenges of sustainable development in Africa. *Journal of African Development, 20*(2), 1-23.

Benjamin, R. (2019). *Race after technology: Abolitionist tools for the new jim code*. Polity Press.

Brennan, P., & Willis, K. (2021). The new essential skills: AI literacy for the future public service workforce. *Journal of Public Affairs Education, 27*(4), 432-451.

Dubrawski, A., Miller, K., Barnes, M., Boecking, B., & Kennedy, E. (2015). Leveraging publicly available data to discern patterns of human-trafficking activity. *Journal of Human Trafficking, 1*(1), 65-85.

Ibrahim, A. (2021). Digital frontiers in the fight against human trafficking: The role of AI and big data in Nigeria. *Nigerian Journal of Technological Crime Prevention, 8*(1), 45-62.

Micheli, M., Ponti, M., Craglia, M., & Berti Suman, A. (2020). Emerging models of data governance in the age of datafication. *Big Data & Society, 7*(2), 1-15. https://doi.org/10.1177/2053951720948087

Mugo, P. N., & van der Westhuizen, M. (2021). Barriers to technology integration in humanities curricula: A Pan-African perspective. *Journal of Higher Education in Africa, 19*(1), 112-129.

Muthaka, D., & Chemngetich, K. (2022). Data justice and digital surveillance: Assessing the impact of predictive policing in Kenya. *African Security Review, 31*(3), 305-322.

National Agency for the Prohibition of Trafficking in Persons (NAPTIP). (2015). *Trafficking in Persons (Prohibition) Enforcement and Administration Act, 2015*.

Russell, S., & Norvig, P. (2020). *Artificial intelligence: A modern approach* (4th ed.). Pearson.

Santos, R. (2020). *Automating inequality: A critical review of predictive policing in the Global South*. São Paulo University Press.

U.S. Department of State. (2023). *2023 Trafficking in Persons Report: Nigeria*. https://www.state.gov/reports/2023-trafficking-in-persons-report/nigeria/

United Nations Office on Drugs and Crime (UNODC). (2021). *The use of technology in the trafficking of persons and smuggling of migrants*. https://www.unodc.org/documents/data-and-analysis/tip/2021/Use_of_Technology_TIP_SOM.pdf

Završnik, A. (2020). Algorithmic justice: Algorithms and big data in criminal justice settings. *European Journal of Criminology, 18*(5), 623-642. https://doi.org/10.1177/1477370819876762

Article inflow

Received: 5th October, 2025

Accepted: 30th November, 2025

Published 31st December, 2025