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GOVERNANCE AND COMPLIANCE THROUGH THE LENS OF DEFENSE-IN-DEPTH

Isaac Boadi, Marymount University

ABSTRACT

In considering the modern trend of emerging threats in a complex cyber landscape, accompanied by regulatory complexities, companies adopt robust governance and compliance frameworks that promote cybersecurity resilience as a key measure, strengthening network or Information Security (INFOSEC) (Gilbert, 2024). The formidable complexity of interminable threats surrounding digital assets, along with the compartmentalized nature of sensitive information security and the compliance-driven nature of the cybersecurity industry, accentuates this need. This dissertation aims to explore the interplay between governance, compliance, and the applied implementation of Defense-in-Depth (DiD), positioning with a cybersecurity model that combines a holistic approach to integrating multilayered security controls as a risk mitigation measure.

A time has emerged when the traditional nature of siloed INFOSEC, which refers to the isolated and compartmentalized approach to information security, is a thing of the past. This study postulates that DiD, as it complements the security onion—a multilayered security architecture that overlaps physical security controls, administrative, and technical capabilities—serves as a hardened architecture for vigorous governance and sustained adherence. While governance oversees the management of security activities, directives, and other aspects, the framework of DiD becomes beneficial, strengthening overall data security and protection. This enhances general security posture visibility through policy development, role definition, risk assessment, and informed threat decision-making, as DiD's holistic security approach demands the implementation of multilayered security controls, in addition to aligning security programs and ensuring accountability.

To meet the industry's regulations and the challenging demand for data protection, compliance becomes a core factor facilitated by a DiD approach. To strategically address the industry-specific frameworks, which comprise the General Data Protection Regulation (GDPR), the Health Insurance Portability and Accountability Act (HIPAA) of 1996 (Arefin et al., 2025), Payment Card Industry Data Security Standard (PCI DSS), National Institute of Standards and Technology (NIST), and ISO 27001, the defense layers address each of them directly and highlight the core values of compliance requirements into security strategies (Schwartz & Solove, 2011). The DiD framework will serve as a strategy to implement technical controls and components, including incident response plans, firewalls, encryption, and other tools, thereby enhancing the practical defense plan for data protection. The process will prioritize a multifaceted approach, examining audit trails, documentation, and compliance during audits and assessments. The core

idea of the DiD is coined as a compensatory mechanism aimed at alleviating a single point of failure regarding compliance breach.

This research assumes that incorporating DiD is not just a matter of technical security enhancement; it is a strategic approach employed to align governance and compliance, addressing the bottlenecks of obligations, integration, and efficient processes. This study will provide an actionable framework with insights that foster transparent, resilient, and secure audit boundaries for cybersecurity leaders, promoting trust and operational integrity during the ongoing digital transformation journey.

FROM RESEARCH SUPPORT TO RESEARCH SUPERPOWER: THE RISE OF AI AGENTS AS THE NEW GRADUATE ASSISTANTS IN HIGHER EDUCATION

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ABSTRACT

The integration of Artificial Intelligence (AI) into higher education marks a pivotal shift in how academic research is conducted, supported, and scaled. With the emergence of intelligent AI agents, faculty members are no longer solely dependent on traditional graduate assistants (GAs) to support the labor-intensive aspects of research. This paper investigates the evolving role of AI agents as either replacements for or supplements to human GAs, offering a compelling look at how these digital tools can enhance research productivity, efficiency, and innovation across all disciplines.

Unlike traditional GAs who often require onboarding, training, and ongoing supervision AI agents are capable of operating with speed, autonomy, and adaptability. They can perform essential research tasks such as literature reviews, data cleaning, statistical analysis, synthesis of prior findings, and even hypothesis generation. These capabilities are not just theoretical; they are practical and currently accessible through no-code platforms and user-friendly interfaces that require little to no programming knowledge. As a result, faculty members across disciplines regardless of their technical skillset can now seamlessly incorporate AI into their workflows.

This paper begins with a historical overview of AI in higher education, tracing its evolution from early automation tools to today's generative AI (GenAI) and autonomous agent frameworks. Drawing on recent developments, it explores how agentic AI models are becoming capable of cognitive-level support, far surpassing earlier rule-based or chatbot systems in complexity and usefulness.

A comparative analysis is presented between the functions, costs, and outcomes of traditional GAs versus AI assistants. While GAs brings unique value through human judgment, creativity, and academic growth, they are constrained by availability, funding limitations, and variable skillsets. In contrast, AI agents are infinitely scalable, consistently available, and can be customized to meet specific faculty academic demands in real time.

However, this paper does not advocate a wholesale replacement of human GAs. Instead, it offers a nuanced model for "AI-Augmented Teams," where faculty leverage both human GAs and AI capabilities for optimal outcomes. The model emphasizes ethics, transparency, and responsible

use, particularly in academic environments where data privacy and research integrity remain paramount.

The paper concludes with a call for interdisciplinary collaboration, urging institutions to invest in AI literacy among faculty and students, and to develop clear policy frameworks guiding AI usage in research. The proposed shift from reliance on traditional GAs to hybrid AI-human research ecosystems represents more than a technological upgrade it represents a philosophical reimagining of how we conduct knowledge discovery in the 21st century.

By embracing AI agents, faculty and institutions can democratize research support, scale innovation, and unlock new potential across disciplines ushering in a future where research is not only faster and more efficient, but also more inclusive and creatively empowered.

Keywords*: Agentic AI, Graduate Assistants; Research Automation; Higher Education Innovation; Generative AI in Academia*

THE EFFECT OF APPEARANCE WITHIN PROFESSIONAL JOURNALS ON CHOICE OF ACCOUNTING AS A PROFESSION: A STUDY OF DIVERSITY

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ABSTRACT

A leading source of information for accounting professionals and students stems from the professional accounting journals. Accounting revolves around constantly changing frameworks; therefore, staying up to date in this career field is dire. However, the images presented in these informative journals could have a lasting imprint on the diversity in the accounting profession as a whole. While still accounting students, these images could alter the choice of a profession if students do not see themselves represented in them. To address the importance the images presented could have on the potential job market, we conducted a content analysis that focuses on the primary accounting journals available to students. Then, we looked at the current diversity numbers for the profession. By using the Theory of Interactive Media Effects, also known as TIME, for our theoretical framework, we illustrated that the images presented in accounting journals directly correlated to the diversity in the profession. The information presented in this paper will help create a more inclusive work field needed in the accounting career path by creating an understanding of the images presented to potential employees.

EVOLVING AGENDAS: A COMPARATIVE STUDY OF PRESIDENT TRUMP'S FIRST-YEAR STATE OF THE UNION ADDRESSES ACROSS TERMS

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ABSTRACT

This study compares President Donald Trump's first State of the Union addresses from his 2017 and 2025 terms to examine shifts in rhetorical strategy and policy emphasis over time. Using a multi-method text analytics framework—including sentiment analysis, syntactic formality measures, lexical richness indices, bigram and correlation-based networks, topic modeling, and keyword analysis across twelve policy domains—the study captures the structural and thematic evolution of Trump's political messaging.

Findings reveal that the 2025 address exhibited greater lexical diversity, increased overall formality, and stronger emotional polarity—suggesting a more polished, emotionally charged rhetorical posture. While the 2017 address emphasized domestic restoration (e.g., jobs, borders, healthcare), the 2025 speech pivoted toward legacy-building, global performance, and executive action. Correlation networks and topic models confirmed tighter rhetorical clustering in 2025, and keyword tracking highlighted a strategic reframing of the "Make America Great Again" (MEGA) narrative toward second-term validation. These results underscore how presidential rhetoric adapts across terms in response to shifting priorities, political capital, and institutional positioning.

ARTIFICIAL INTELLIGENCE AND INTERNATIONAL ORGANIZATIONAL LEADERSHIP DECISION-MAKING: IMPACTS AND DYNAMICS

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ABSTRACT

Within the realm of leadership and decision-making of global organizations, artificial Intelligence (AI) is quickly changing this space. This study will endeavor to reveal the manifold influence and impact of AI on roles and behaviors of leaders and the decision-making process of international businesses. AI can serve to greatly reduce the amount of time that humans must dedicate to collect, review and interpret relevant and current data and information. The analytic power offers aids in strategy considerations, supply chain management/forecasting, human resources management and various market evaluation. The environment for a global enterprise entails greater complexity and uncertainty. In spite of the myriad advantages and benefits, the potential caveats that should be considered include ethics and AI, uncertainty in regulatory compliance, data privacy issues as well as algorithmic bias. Within the international organization, there should be increased attention paid to how AI increasingly influences strategic direction and for due attention given to AI literacy, ethical considerations, and cross-cultural competence. The authors argue that international organizational leadership should embrace AI given the array of benefits and opportunities. However, the processes and organizational policy of organizations should incorporate considerable attention to strategic, cross-cultural and ethical AI dimensions. This approach more readily enables responsible and effective AI technology deployment.

Key Words: *Artificial Intelligence (AI), International Leadership, Organizational Decision-Making, Global Strategy, Human-AI Collaboration*

NAVIGATING THE MARRIAGE TAX PENALTY: INSIGHTS FROM HIGH AND LOW-INCOME TAXPAYERS

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ABSTRACT

While the marriage tax penalty is often associated with higher incomes due to the progressive tax rate structure, it can also significantly impact lower-income households—especially those where both spouses earn similar wages. In our work as tax consultants, we've seen that policies designed to limit tax benefits for high-income earners can inadvertently intensify the marriage penalty. On the other hand, in the process of assisting low-income taxpayers at voluntary income tax assistance (VITA), we have observed that the marriage penalty can affect low-income taxpayers in several key areas. The core issue is that when two eligible individuals combine their incomes, the resulting total can inadvertently push them into less favorable tax brackets or phase-out ranges—thereby reducing credits and increasing taxable income. This paper investigates the marriage penalty, analyzing its impact on taxpayers across both low- and high-income brackets. It also explores policy reforms designed to alleviate the issue.

USING THE GOOGLE SHEETS PLATFORM FOR INTERACTIVE SPREADSHEET ASSIGNMENTS

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ABSTRACT

Spreadsheet assignments have become standard fare in undergraduate business education. Such assignments are widely used in disciplines such as finance, accounting, economics, and statistics, and are a feature of many textbooks that support these courses. However, the usual approach towards administering such assignments has a number of significant drawbacks, which can diminish their pedagogical effectiveness. In this paper, we document some of the pitfalls of the customary approach, and outline a strategy for administering spreadsheet assignments that streamlines the work of the instructor, improves the ability to provide timely feedback, and better ensures the integrity of the students' work. We describe in detail a framework for creating, distributing, and reviewing assignments using the Google Sheets spreadsheet platform, including the ability to customize assignments for individual students. In addition, we provide access to a downloadable spreadsheet which can be used by instructors to administer such assignments.

BRIDGING CULTURAL GAPS: UNDERSTANDING AND RESOLVING CULTURAL DIFFERENCES IN INTERNATIONAL BUSINESS MANAGEMENT

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ABSTRACT

The primary goal of this interactive session is to provide educators with an engaging method to teach cultural differences in the context of international business, using Hofstede's Cultural Dimensions and GLOBE cultural frameworks. Through scenario-based learning and collaborative problem-solving, students will explore cultural differences and their implications in management. Participants will actively engage in a live demonstration of this teaching approach, which includes defining cultural dimensions, analyzing cross-cultural data, and applying this knowledge in conflict-resolution scenarios. The facilitators will guide attendees through each phase of the exercise, offering insights into how this method enhances students' cultural awareness, critical thinking, and problem-solving skills. The session will conclude with strategies to align this method with learning objectives in management education. This session is ideal for educators looking to enrich their curriculum and prepare students for culturally diverse workplaces.

Submission Topic: Understanding cultural differences in teaching and student usage

We agree that at least one of the presenters will register for AOM & TLC@AOM and attend in-person if the proposal is accepted.

TOPIC

The title of our session is "Understanding and Resolving Cultural Differences in International Business Management". This session demonstrates a step-by-step approach to incorporating Hofstede's and GLOBE's cultural frameworks into a Principles of Management class. By analyzing real-world cultural data and simulating cross-cultural workplace scenarios, students develop an understanding of cultural nuances in international business. The session highlights strategies for teaching cultural frameworks, facilitating collaborative learning, and addressing conflicts arising from cultural differences, preparing students for the complexities of managing in a global context.

INTEREST:

In today's globalized business environment, understanding cultural differences is critical for effective management. Research shows that experiential learning approaches improve students' ability to apply theoretical knowledge to real-world scenarios. For example, Hofstede's dimensions have been widely used to teach cultural differences, fostering cultural awareness in students (Hofstede, 2011). Furthermore, simulations and role-playing exercises, such as those demonstrated in this session, are proven to enhance engagement and understanding in management education (Kolb & Kolb, 2018). This method aligns with findings from GLOBE research, emphasizing the value of cultural awareness in leadership and decision-making (House et al., 2004). This session builds on these insights, offering a practical framework to teach cultural differences in an engaging and impactful way.

SESSION DESCRIPTION:

The session will immerse participants in a hands-on activity designed to teach cultural differences in international business. The following steps outline the session:

Step 1: Introduction to Cultural Dimensions (approximately 10 minutes)

Facilitators will explain Hofstede's and GLOBE's cultural dimensions, using examples (e.g., comparing the U.S. and Japan on individualism vs. collectivism).

Participants will learn the significance of cultural dimensions in international business.

Step 2: Exploring Cross-Cultural Data (approximately10 minutes)

Participants will group into teams and use Hofstede's online tool to explore cultural data for four countries, including the U.S. as a reference point.

Each team will identify key cultural differences and their implications.

Step 3: Scenario Development and Role-Play (approximately 10 minutes)

Teams will create workplace scenarios involving cross-cultural interactions and potential conflicts (e.g., communication styles, decision-making approaches).

Students will role-play these scenarios, acting as managers and employees from different cultural backgrounds.

Step 4: Problem-Solving and Conflict Resolution (approximately 10 minutes)

Teams will identify potential problems arising from cultural differences and propose solutions.

Facilitators will guide teams in applying cultural dimensions to resolve conflicts effectively.

Step 5: Reflection and Real-World Case Study (approximately 15 minutes)

Facilitators will present a real case study highlighting cultural conflicts in international business and how they were resolved.

Participants will discuss lessons learned and their application in teaching.

INVOLVEMENT:

The session will involve active participation, ensuring attendees experience the teaching method firsthand. Teams will engage in role-playing, data analysis, and collaborative problem-solving, making this session both interactive and practical. Facilitators will guide participants through each phase, ensuring a dynamic and engaging experience.

TAKEAWAYS:

Comprehensive Understanding of Cultural Dimensions

Participants will gain practical insights into Hofstede's and GLOBE's frameworks and their applications in management education.

Experiential Learning Techniques

Attendees will learn how to design and facilitate interactive exercises that engage students and enhance cultural awareness.

Conflict Resolution Strategies

Participants will explore methods to address cross-cultural conflicts, equipping students with problem-solving skills for global workplaces.

Integration of Real-World Case Studies

The session demonstrates how to connect theoretical knowledge with practical applications through case studies.

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A LOOK AT THE CARDIOVASCULAR HEALTH OF CHILDREN IN RURAL COMMUNITIES

Joshua Emmanuel Hunter, Dartmouth College Student

ABSTRACT

Living in rural areas and having a low socioeconomic position are two social determinants of health that are linked to poorer outcomes for people with peripheral artery disease (PAD). For instance, a higher risk of amputation was linked to a lower socioeconomic level, which is defined as residing in a ZIP code where the median household income is less than $40,000 (HR, 1.12) - (Martin et al, 2025).

According to a 2023 American Heart Association scientific statement, there is substantial and consistent evidence showing persons who are older and have diabetes, obesity, or hypertension are less active than those who are younger or do not have these illnesses. At least one large observational study found that several other factors, such as female sex, Black race, lower socioeconomic status, having a mobility disability, living in the Midwest or South, living in rural areas, having less walkable infrastructure, and being exposed to extreme weather or air pollution, were also linked to lower levels of physical activity (PA). Promoting PA in these populations could aid in lowering CVH (cardiovascular health) disparities, the statement found (Martin et al, 2025).

The prevalence of obesity varies according on urbanization status. Between 2019 and 2020, survey data showed that children and adolescents living in rural areas were 30% more likely to be overweight or obese than those living in urban areas (OR, 1.30 [95% CI, 1.11–1.52]). Preschoolers in rural regions had higher indexed BMIs than those in urban areas (β, 0.13 [95% CI, 0.09–0.42]), according to one analysis, indicating that the rural-urban gap may start as early as age 3 or 4 (Martin et al, 2025).

HOUSELESS: SOCIAL JUSTICE ISSUES AMONG THE POOR

Paul Lane, Grand Valley State University

INTRODUCTION

Upon being asked to focus on the homeless at my organization of faith a quest began to understand better the dimensions of the challenges. This is a real and apparently growing problem in the United States.

As a marketing person my first response was to think in terms of segments of the homeless population.

My first attempt is below:

	Temporary		Intermediate		Chronic				
	Health	Eviction/ formal or cost wise	Lack of Job	Illness/ Health.	Mental Issues (PTSD and more)	Impoverished or lack of know how	Legal issues, outstanding judgements	Addiction	Choice
Individual Non-citizen									
Individual citizen									
Couples									
Family									

Figure 1 a Homeless Taxonomy

It appears that these are different segments of the homeless or unhoused population.

This led me to start to read and attend a conference to dig deeper into these segments. Kevin Fagan's book The Lost and The Found[1]clearly focused on Individuals who were citizens and chronically addicted often living on the street. In his detailed write-up you come to know people who are part of a street community and follow them through their street lives and in two cases through their family's attempted help at turning them around.

The problem of addiction to alcohol or drugs is estimated to be present in about 1/3 of those counted as homeless in the United States [2]. However, there are estimated to be many more people when you include, terms like houseless, the unhoused, unsheltered etc. [3]. This becomes clear when you start to look at the school age population and seniors. It was a privilege to attend a conference about the homeless at Stetson university in May of 2025. It also greatly expanded my

thinking as speakers talked about the large numbers of unhoused children in the school systems in the surrounding areas of Florida.

Figure 1, while older information gives some insight as to the size of the problem and where these children are living. If you look at my original taxonomy there was a space for families but not a separate space to represent the estimated 1.5 million houseless and homeless school children in the US. I missed a whole segment because they were invisible to me.

A second group that was brought to my attention as I read the book Nomadland [6], was the unhoused senior population. In this book many of the people written up by the author have moved into their vehicles due to not being able to afford housing anymore. Living unhoused but in their vehicles gave them independence, and very importantly in the book community. There are people living as nomads with plenty of money in luxurious land yachts, but most of the authors focus was those who lived in a ten plus year old vehicle that they had converted into some form into a living space.

Many of these people might not consider themselves homeless but houseless as they go to meet-ups with friends and work projects for Seniors such as Amazon provide in the heavy season until 2022. They also work as camp hosts in parks and find other ways to add to their often-meager incomes. Many are women moving around in their cars and vans looking for safe places to spend the night when on the road between jobs, or meetups.

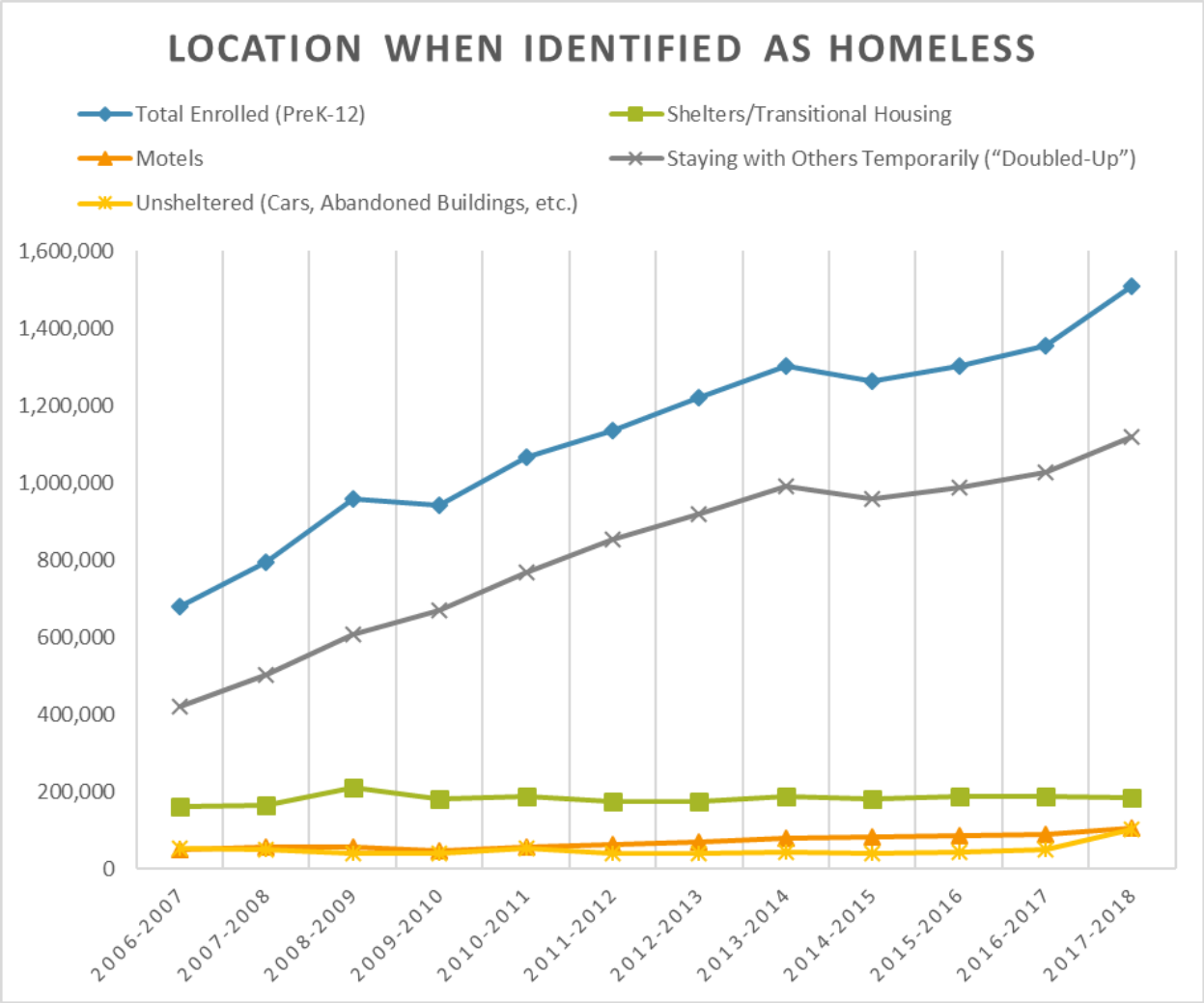

Figure 2 School age children in the U.S. [4]

Why is this of interest to a Marketing Professor? For years in teaching Creativity and sometimes in new product development the class has been asked to think about social justice issues. One that is likely to come up every time is the challenge of homelessness especially in the winter's coldest spells. The students are usually thinking of the people they see on the streets or in the parks of their town or in the mid-size city that is home to one of the university campuses.

They work hard in teams to produce innovative solutions to provide better care in emergencies like deep freezes, and extended periods of snow when the shelters are full. They have produced many interesting and potentially useful systems to help in times of emergencies focusing on the customer (or homeless persons) lifestyle. This has included provisions for their possessions, protecting them in their favorite location (the students learn that many of them do not want to engage the system),

In teaching empathy some students have interviewed some apparently homeless, others have interviewed people working with the homeless, still others have studied the homeless camps in their communities visually. Most of these were focused on males, who seem to want to be outside of any organizations as they want to maintain their addictions, or their freedom. Famously there use to be a group in the town that would only give you food if you went to church.

Figure 3 [7]

It is clear from this initial work that the segments are quite different than originally proposed. Since the houseless school children were basically ignored, and the seniors the same there may be other groups that are either homeless or houseless.

There may be a much larger population of houseless people as shown in exhibit 4. These figures are five years old but given the rise of housing costs are much smaller than they are actually today.

What does this suggest to a marketing classroom want to work on Social Justice Issues as asked for by the business school accreditation organization. The AACSB has three key areas in Social Justice [9]

The school demonstrates a commitment to positive societal impact as expressed in and supported by its focused mission and specifies how it intends to achieve this impact.

The school's curriculum promotes and fosters innovation, experiential learning, and a lifelong learning mindset. Program elements promoting positive societal impact are included within the curriculum.

The school's portfolio of intellectual contributions contains exemplars of basic, applied, and/or pedagogical research that have had a positive societal impact, consistent with the school's mission.

The school demonstrates positive societal impact through internal and external initiatives and/or activities, consistent with the school's mission strategies and expected outcomes.

Exhibit 4 [8]

It is not enough to do some Social Justice exercises, it is important to really apply business or in this case Marketing methodologies to look at the entire population, its segments, and also some of the influencers. It is also important for the students to think through applying the basics such as the marketing mix.

Product – is it something that the homeless segment being studied can use. It has to be small to be carried or fit into a car or a van in which someone is living.

Place – can homeless or houseless get to this product or service. I was spending a week on the street once with my cousin who was homeless at the time. The wonderful religious groups offered a meal at noon for free. The challenge was we had to figure out where each group was serving their lunch and how to get there by bus or by bike. That was taking away from my cousin waiting in line to get a job. Another issue of place is does the person want to leave the encampment or the bridge that is their home. Can a school student get there on their own?

Price comes in different forms even if you are not charging money. Does the product or service have cost in terms of the TIMES Model

T ime
I nformation

M oney
E nergy – personal
S pace

Promotion also has to be thought out carefully. As one student group observed the homeless of the parks are not likely to look for something like shelter until it is needed. The timing of promotion is important as well as the idea that there are no conditions to get help if that is the case.

RESULTS

Putting this all together has been eye opening as I am partially responsible for a homeless program for a small organization of faith largely of older people meaning over 60. What could they do to make a difference? It seems like we should meet with some school representatives and then brainstorm ways in which we might help. An example would be providing washers and driers as well as soap to schools in the community who would help or let students wash their clothes who do not have a place where they spend the night.

Another would be could we create safe clean spaces for overnight parking for nomads traveling through who cannot afford campground fees?

When asked everyone seems to suggest that the group should focus on the houseless schoolchildren and the houseless seniors. There is obviously more empathy work to do to understand and define the problem in our area, which could vary quite a bit from the national statistics.

CONCLUSION

As I lead students to think about Social Justice issues it is important to be careful to apply the full tool chest of marketing tools to explore the problems and possible solutions. In the case of the unhoused the problem is far greater than those at the park or under the bridge. It is important to look at the whole market and its segments.

It is time for me to try a more complete taxonomy of homelessness.

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IMPLEMENTING AN ALGORITHMIC SPREADSHEET FOR A RETAIL ACCOUNTING CYCLE PROBLEM

Penelope Lyman, University of North Georgia

ABSTRACT

This presentation demonstrates the implementation of an algorithmic, spreadsheet-based problem designed to reinforce students' understanding of the retail accounting cycle while strengthening their technical spreadsheet skills. Each student received a unique workbook containing a single worksheet titled "Problem," which displayed a partial worksheet trial balance on the left and provided structured space for answers on the right. Using the trial balance data, students were required to complete a Multiple-Step Income Statement, a Statement of Retained Earnings, and a Balance Sheet within a preformatted template. All answers had to be entered using formulas and cell references only. To discourage sharing and ensure originality, an algorithm assigned each student a unique set of input data and a distinct layout within the workbook. The grading rubric evaluated formula usage and required, at a minimum, that the Balance Sheet balanced. This assignment gave students hands-on experience with spreadsheet functions and deepened their understanding of how the financial statements articulate. Although this problem focuses on the retail accounting cycle, the model can be easily adapted for a variety of accounting scenarios, making it broadly applicable across the discipline.

AN EXPLORATION OF PUBLIC DISCOURSE ON TARIFFS AND TRADE WARS USING SOCIAL MEDIA ANALYTICS

Chen Ye, Purdue University Northwest
Songtao Mo, Purdue University Northwest
Lin Zhao, Embry-Riddle Aeronautical University

ABSTRACT

Tariffs and trade wars have made significant impacts on businesses and financial markets in recent years. A clear understanding of the public opinions on tariffs and trade wars is valuable to policymakers and business decision-makers. Social media analytics offers an innovative method to assess public discourse concerning public policy and socioeconomic issues such as tariffs and trade wars. In this ongoing study, we collected and analyzed posts and comments on Reddit related to tariffs and trade wars since late 2024. With Linguistics Inquiry and Word Count (LIWC), we analyzed linguistics characteristics and public sentiment in the public discourse on tariffs and trade wars. In addition, we used Latent Dirichlet Allocation (LDA), an unsupervised machine learning technique for topic modeling, to identify key themes in the public discourse on tariffs and trade wars. Implications of the findings will be discussed.

Keywords: *Tariff, Trade War, Social Media Analytics, Sentiment Analysis, Topic Modeling*

SUPERMICRO: DANCING ON THE TIPTOES FOR ACCOUNTING AND AUDITING COMPLIANCE

Songtao Mo, Purdue University Northwest

ABSTRACT

The year of 2024 witnessed SMCI's stock price surge, along with the company's struggle with accounting and auditing issues, such as Hindenburg report, U.S. Justice Department probe, and delayed filings. The climax of the accounting and auditing turbulence was signaled by the resignation of Ernst Young (EY). In October 2024, EY announced its resignation based on concerns over accounting issues and corporate governance. Auditor changes have a wide range of implications, including closer regulatory scrutiny and potential reputational risks for the audit client, SMCI in this case. Accounting research also suggests that auditor changes lead to increased costs of equity and erosion of investor confidence for public companies.

This case study presents the accounting and auditing issues that SMCI encountered around the auditor change in October 2024. Through this case study, students can observe and understand the stock market reactions to this key auditing event. Additionally, students can establish the connections between the textbook knowledge and the real-world events. As such, students can gain more in-depth understanding of General Accepted Accounting Principles (GAAP) and Generally Accepted Auditing Standards (GAAS).

VACCINATION HEALTH OF RURAL CHILDREN: A COMPARISON ACROSS GEOGRAPHIC REGIONS

Dr. Andrea Smith-Hunter, Professor of Management
Dr. Jim Nolan, Professor of Quantitative Business
Mea Amedio, Siena College Student
Joshua Hunter, Dartmouth College Student

ABSTRACT

The impact, advantages, and disadvantages of immunizing children against a variety of diseases have been rekindled by the recent measles outbreak in the United States. The Centers for Disease Control (CDC) claim that healthy children no longer require vaccinations against COVID and other diseases is at the heart of this issue (COVID-19 Vaccination for Children, 2025). This serves as a reversal of previous orders and the belief that vaccination of children is a necessary preventative method of forstalling diseases that can lead to lifelong health effects and even death (COVID-19 Vaccination for Children, 2025). A central tenet is that early childhood vaccinations are essential for long-term health because they build a resilient immune system that can survive various illnesses. Vaccinations are actually one of the best ways to avoid hospitalizations for illnesses.(Pracht et al, 2025). There is a definitive concession that some advancements have been made in this regard (Nguyen et al, 2023) however, there is no denying that more work must be done and that low vaccination rates among children—particularly those in and close to poverty—remain a persistent issue in the United States (Klevens et al, 2001). More thorough research is required to increase coverage, and if properly utilized, can be leveraged appropriately can to assist public health authorities and policymakers better understand vaccination rates and develop policies to raise them (Crouch et al, 2015).

The research on childhood vaccination rates has indicated that those living in rural areas are less likely to be vaccinated versus their counterparts residing in more urban or suburban areas. More specifically Zhai's (2020) study found that children in rural areas were less likely than those in suburban or metropolitan areas to have had an influenza vaccination., though it should be noted that this study focused on influenza vaccines only. This sentiment has been echoed in a follow up study by Albers et al (2022) who also found that in the United States, rural areas had lower rates of early childhood vaccination than suburban and metropolitan areas.. Studies with contrasting views have suggested that children living in rural areas are just as likely to receive the basic vaccination series when compared to their suburban and urban counterparts ( ). This finding extends to other vaccines outside the series such as the varicella vaccine, which appears to have rates that are slower in rural areas versus urban areas (Stokley et al, 2001), when a sample from the NIS (National Immunization Survey) data was analyzed. And in a similar vein, research has shown fewer intake rates of the HPV vaccination rates in rural U.S. settings (Brandt

et al, 2021). These preceding studies travel along the same vein that children in rural areas remain deficient in their immunization rates versus their urban and suburban counterparts.

Research on childhood vaccination rates in the United States has been done. Research on childhood vaccination rates in rural areas in the United States has also been done. What has not been done are studies that look at rural vaccination rates for children in very specific zip code areas and further engaging in research that looks specifically at zip codes in areas that are in close proximity to each other and thus allow a more realistic comparison. There has been some concession that progress in vaccination rates for children over the last several decades has been made - but the consensus is that more needs to be done (Nguyen et al, 2023). In fact, While there has been great success in increasing the coverage of new childhood vaccines nationally and internationally, deriving solutions that allow the expansion of routine immunization to reliably reach all children and communities has proven more challenging in many vulnerable communities, such as low- and middle-income and rural communities (Wigley et al, 2022). This paper does that, looking at the vaccination rates of children in rural areas in specific locales in Upstate New York and comparing those rates with those in corresponding and closely located non-rural areas. In addition to providing definitive comparisons across zip codes, this paper provides recommendations to address the disparities and go beyond recommendations that promote developing better relationships between health professionals and parents (Wilson. 2020), addressing the possible shortages of health professionals in ceratin geographic areas (Tsai et al, 2021) and instituting rigorous vaccine programs such as the VFC (Vaccine For Children) program (Hill et al, 2023; Nguyen et al, 2023).

VALUATION OF LEASED FEE, LEASEHOLD AND FEE SIMPLE INTERESTS: A VALUATION CASE STUDY

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CASE DESCRIPTION

The primary subject matter of this case concerns the valuation of leased fee, leasehold and fee simple interests for real property. Secondary issues examined include determination of yield rates for leased fee interests and fee simple interests as well as providing value estimates and recommendations to a client. The case has a difficulty level of four or five, appropriate for senior level or first year graduate level. The case is designed to be taught in 1.5 class hours and is expected to require 2 hours of outside preparation by students.

CASE SYNOPSIS

This case involves a scenario where a real property valuation professional has been hired by an investment group to provide estimates of market value for a retail property owned by the investment group. The client is concerned about how an existing lease on the property might affect the market value of the property if they were to sell it in the current market with the existing lease. The solution involves determining the values for the leased fee interest, the leasehold interest and the fee simple interest. As a part of the process, appropriate yield rates must be determined for the leased fee interest and the fee simple interest.

CASE

A real estate investment firm, Keystone Investment Group, owns a 4,000 square foot retail building on a 0.75-acre commercially zoned lot with adequate parking. The deed for the property indicates that a fee simple interest was transferred to Keystone Investment Group when they purchased the property. The property is located along a major highway in a mid-western town. The building is currently under lease to a tenant operating a retail golf supply store. The local area has several golf courses and there are a few other golf supply stores in the town due to their proximity to the golf courses.

Keystone Investment Group is considering the sale of the property and wants to determine what would be a likely selling price if they expose the property to the open market by listing it with a commercial real estate brokerage firm. In addition to wanting an estimate of the market value, they are concerned that the below-market rent that the current tenant is paying might be adversely affecting the market value of the property.

To get a better understanding of the value of the property and how the lease might impact the market value of the property, they have hired you as a consultant. Having considered the sales comparison and the cost approaches to determining the value of the property, you have determined that you should estimate three separate values: the leased fee value, the value of the leasehold interest and the fee simple value using the income approach to address your clients concerns.

The property is currently leased to the retail tenant for $10.50 per square foot under a 15-year lease which was signed 5 years ago. The lease does not provide for any rent escalations during the term of the lease. Based on market research you have determined that a terminal capitalization rate of 5 percent is appropriate for properties of this nature. It is expected that when a new lease is signed at the expiration of the current lease the new lease will generate $100,000 annually.

Given the popularity of golf in the local area and the strong demand for this type of retail space, it is likely that the current tenant could transfer the remainder of their leasehold interest to another party at its fair market value. Therefore, you can assume that the value of the fee simple estate is equal to the sum of the values of the leased fee and the leasehold estates.

Valuation of the Leased Fee Estate

The following table shows current local rental rates for similar retail properties.

Table 1

Local Comparable Lease Rates			
	Leased Square Feet	Total Rent	$/Square Foot
Lease A	3,500	$106,750	$30.50
Lease B	4,200	$119,700	$28.50
Lease C	3,200	$104,000	$32.50
Average			$30.50

Given the similarity of these comparable leases in terms of leased area, building type, quality and location, you have determined that it is appropriate to use the simple average lease rate as the market lease rate.

In addition to lease rates, it is necessary to determine an appropriate market yield rate at which to capitalize the cash flows from the lease and determine the market value of the leased fee interest. Table 2 below provides information from three very similar leases. The relationship between the yield and the capitalization rate can be described as follows:

$$R = Y - \Delta i$$

Where ,
R = Capitalization Rate
Y = Yield Rate
Δ= Percent change in value during the lease
i = Sinking Fund Factor at i% for n time periods

Table 2

Yield and Capitalization Rate Comparable Sales					
	Capitalization Rate	Lease Term in Years	Sale Price	Lease ($/year)	Terminal Value
Lease X	0.05667	10	$1,588,155	$90,000	$2,000,000
Lease Y	0.07152	10	$1,705,506	$110,000	$2,100,000
Lease Z	0.06462	10	$1,516,526	$98,000	$1,975,000

The yield can be found by determining the rate of return (Internal Rate of Return) at which the sale price of the leased fee interest is equal to the present value of the cash flows from the lease, including both the cash flows received from the lessee and the reversion cash flow at the end of the lease. The above formula, $R = Y - \Delta i$, can be used to confirm your yield estimate using the capitalization rate in the table. Once a market yield has been estimated for the leased fee, the cash flows from the leased fee can be capitalized into a value estimate for the leased fee interest using the estimated leased fee yield rate.

Valuation of the Leasehold Estate

Valuation of the leasehold estate must consider any difference between the market rate of rent and the contract rate of rent on the existing lease. The lease was signed 5 years ago at the rate of $10.50 per square foot, which was the market rate at the time the lease was originated. The current market rental rate for this type of property is $30.50 per square foot. Consider how this market rent differential impacts the holder of the leasehold interest and how it might influence their behavior regarding the lease.

Your market research has revealed that an appropriate leasehold yield rate (Y_{LH}) of 10 percent is appropriate for a lease of this type. In your analysis, consider only cash flows, or potential cash flows, that could affect the lease holder.

Valuation of the Fee Simple Estate

The value of fee simple estate may not always equal the sum of the value of the leased fee estate and the value of the leasehold estate. In some cases the value of the leased fee and the value of the leasehold estate will equal the value of the fee simple. The ability of the lessee to transfer their remaining interest in the leasehold at market value is critical if we are to assume that the leased fee and leasehold values can be added together to arrive at a fee simple value.

In this case, the leasehold interest held by the tenant has 10 years remaining and it is in a market where there is significant demand for such leases so it is reasonable to assume that the remaining lease interest could be transferred to another party at a market rate. Given that the

leasehold interest has a significant number of years remaining and that the leasehold interest is marketable, we can estimate the value of the fee simple estate as $V_{LH} + V_{LF}$.

Once you have determined the value of the fee simple estate you can determine the yield to the fee simple estate (Y_{FS}) by determining the discount rate (Internal Rate of Return) that equates the present value of the cash flows from the fee simple interest with the value you have determined for the fee simple interest.

After you have the yield to the fee simple estate (Y_{FS}) you can determine the capitalization rate for the fee simple estate using the following equation:

$$R_{FS} = Y_{FS} - \Delta i$$

Where, R_{FS} = Fee Simple capitalization rate
Y_{FS} = Yield to the fee simple
Δ = Percent change in value during the lease term
i = Sinking Fund factor at i% for n time periods

Advising the Client

Once you complete your analysis, you will need to prepare a report of your analysis and findings for the client. You should include the three values you have determined (V_{LF}, V_{LH}, and V_{FS}) along with an explanation of how you estimated the yield rates and capitalization rates used in the analysis.

The client is interested in knowing the likely selling price if they were to sell the property in the open market today. Also, the client wants to know if the current lease is having any impact on the likely selling price and, if so, what is that impact. In your report, you should indicate if the tenant is likely to remain in the lease contract for the remainder of the term or if they might be incentivized to end the lease contract before the end of the term.

INSIDER KNOWLEDGE VERSUS OUTSIDER OVERSIGHT: A STUDY OF THE EFFECT OF BOARD COMPOSITION ON FIRM PERFORMANCE

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ABSTRACT

In November 2003, following the accounting scandals at Enron, Tyco, WorldCom, and other companies, as well as the passage of the Sarbanes-Oxley Act in 2002, the national stock exchanges (AMEX, NYSE, and NASDAQ), under the guidance of the SEC, mandated that all firms have outsider-controlled boards. We hypothesize that the direction of the firm's performance depends on the firm's monitoring and advising needs. Specifically, we believe outsider-controlled boards will increase monitoring of management at the expense of advising management, resulting in decreased firm performance over the long run. Using a difference-in-difference approach, our overall findings are positive (0.766) and significant at the 10% level, indicating that long-run performance increases for firms that change their board composition, consistent with agency theory. In a subsample analysis, we found that the positive impact of the mandate is concentrated in utility firms (4.405) and small firms (1.543). Conversely, research-oriented firms suffered from a change in their board composition (-37.811) when they complied with the mandate. We make an essential practical contribution the literature by providing evidence that an outsider-controlled board is not appropriate for all companies.

PERFORMATIVE ENVIRONMENTALISM: THE CASE OF MCDONALD'S STYROFOAM CUP BAN

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ABSTRACT

This paper examines the environmental consequences of McDonald's transition from Styrofoam beverage cups to thin-walled plastic cups. Framed as a sustainability initiative, the shift may have actually produced net environmental harm. Specifically, the inferior insulation properties of thin-walled cups lead to increased ice usage, thereby raising energy consumption and carbon emissions. Furthermore, plastic cups of any type are rarely recycled in practice, undermining the material-switch rationale. Drawing from insights in behavioral economics, life-cycle analysis, and the research on performative environmentalism, we assert that McDonald's Styrofoam cup ban was a symbolic signal rather than a substantive environmental gain.

INTRODUCTION

Corporations have been known to adopt sustainability initiatives purported to reduce their environmental footprints. One such initiative occurred when McDonald's transitioned away from Styrofoam cups to clear, thin plastic cups. A close examination of this transition suggests net harm. The substitution of Styrofoam with thin plastic did not increase recycling; both Styrofoam and thin plastic are seldom recycled, and neither is biodegradable. More significantly, the shift imposed a series of unintended consequences on both consumers and the environment. Because thin plastic lacks the insulative qualities of Styrofoam, drinks stored in these cups warm more rapidly, causing ice to melt faster and prompting the use of greater quantities of ice by customers. Ice, in turn, requires electricity to produce and adds to carbon emissions if the electricity is generated using fossil fuels. Moreover, plastic cups are more prone to condensation, making them less user-friendly and potentially shortening their useful life in the hands of consumers. This paper argues that McDonald's Styrofoam cup ban served primarily as a performative gesture that created the *appearance* of environmental action without delivering material benefits. Using this case, we explore how sustainability initiatives can result in net harm when they fail to incorporate general equilibrium analysis which examines the behavioral and energy-use feedbacks of the initiative.

LITERATURE REVIEW

Life Cycle Assessment (LCA) is a general equilibrium method for comparing the total environmental impact of materials, including production, use, and disposal phases (Curran, 2017). LCA studies have shown that packaging choices can produce counterintuitive results; materials

perceived as *green* may have higher total emissions or energy use due to supply chain factors or poor performance in use. For example, while Styrofoam is criticized for its persistence in landfills, it insulates effectively, reducing energy inputs producing ice (Franklin Associates, 2011). The thin plastic alternative to Styrofoam used in beverage cups is more recyclable in theory but in practice faces major contamination and collection challenges, leading to actual recycling rates under 10% in the United States (EPA, 2018).

In addition, packaging does not operate in a vacuum. It affects consumer behavior and operational choices, which can generate indirect environmental impacts. Research has explored how consumer adjustments can offset or exceed the benefits of material switching (Allcott & Mullainathan, 2010). These adjustments represent a form of *rebound effect*, wherein improvements in one area (perceived material sustainability) lead to increased consumption elsewhere (e.g., electricity for ice machines).

The concept of *performativity* in environmental behavior draws from sociological theories of symbolic action (Shove, 2010). This has been called *greenwashing*; that is, superficial environmental gestures that allow firms to gain customer satisfaction without structural change. Consumers may also engage in *moral licensing*, in which small *green* actions reduce guilt and lower the likelihood of more meaningful efforts (Mazar & Zhong, 2010). In the context of packaging, this means a customer who accepts a plastic cup labeled *recyclable* may feel absolved, even if the cup ends up in a landfill and results in more ice production.

Plastic straw bans provide a recent example of performative environmentalism. Despite gaining widespread traction, plastic straws represent a minuscule share of ocean plastic waste — estimated at less than 0.03% by weight (Jambeck et al., 2015). Yet their visibility and viral potential made them ideal targets for performative policy. The analogy to Styrofoam cups is clear: both are high-profile, low-impact targets that offer an illusion of progress while deeper sources of environmental harm remain unaddressed.

THE STYROFOAM-TO-PLASTIC CUP TRANSITION AT MCDONALD'S

McDonald's has long been a focus for public pressure related to environmental sustainability. In the 1980s, the company faced criticism for its use of Styrofoam packaging, a symbol of non-biodegradable, landfill-clogging waste. In response, McDonald's began a transition away from foam-based clamshell containers (Colette-Scott, 2021). By 2012, McDonald's committed to a packaging strategy that included reducing packaging waste, improving recyclability, and sourcing more sustainable materials. This included the decision to replace polystyrene (Styrofoam) drink cups with thin plastic alternatives made from polyethylene terephthalate (PET) or polypropylene (PP) (Elks, 2013).

The shift was largely symbolic. PET and PP are recognized by consumers as "recyclable," due in part to the display of triangular recycling symbols on containers. In contrast, Styrofoam lacks recycling in most area and is viewed as environmentally obsolete. Thus, the switch allowed McDonald's to align its brand image with consumer expectations around sustainability and "greener" packaging solutions (5W PR, 2025).

THEORETICAL FRAMEWORK

The packaging substitution from Styrofoam to thin plastic cups introduces a series of measurable behavioral and energetic consequences that can be understood through a combination of concepts from environmental economics, energy systems modeling, and consumer behavior. Let us first examine the *use phase* is of fast-food restaurant cups, where ice production is a secondary energy burden. Styrofoam, due to its low thermal conductivity, maintains beverage temperatures longer with less added ice than thin plastic and thus requires less ice per cup. The energy cost of ice is not negligible; energy intensity varies by machine type, but common commercial ice makers consume between 1.0–2.0 kWh per 100 pounds of ice (ENERGY STAR, 2025).

This increase in ice usage is an example of a rebound effect, in which green policies lead to behaviors that offset any environmental benefits (Gillingham et al., 2016). In this case, customers add more ice, resulting in higher energy use and corresponding greenhouse gas emissions. This introduces a flaw in packaging reforms: they treat packaging as static, without accounting for dynamic interactions between material properties and human behavior. In effect, the apparent environmental gain from abandoning Styrofoam is eroded or reversed by an increase in electricity production per beverage unit in order to produce more ice.

The corporate value of the ban on Styrofoam can be understood through the lens of signaling theory. By displaying the recycling symbol and adopting materials commonly associated with sustainability, thin plastic cups serve a performative function. Like Styrofoam cups, most thin plastic cups are not recycled in the U.S., but the mere appearance of recyclability can activate moral licensing behaviors among consumers and reduce pressure on corporation for more meaningful reforms. This misalignment between signal and substance is typical of what Lyon and Montgomery (2015) describe as *greenwash*, or in more academic terms as a case of *bounded rationality*: decision-makers adopt packaging changes that appear to satisfy stakeholder concerns, without actually having a positive environmental impact.

ANALYSIS: NET ENVIRONMENTAL IMPACT OF CUP SUBSTITUTION

This section evaluates the real-world implications of the Styrofoam-to-plastic cup substitution at McDonald's by comparing environmental performance across three primary dimensions: (1) recyclability and end-of-life outcomes, (2) insulation performance and ice usage, and (3) energy consumption linked to ice production.

While McDonald's replacement cups are technically made from recyclable plastics, actual recycling outcomes diverge sharply from theoretical potential. Although Styrofoam recycling is functionally nonexistent in most municipalities, the recycling rate for plastic containers and packaging remains under 10% (EPA, 2018), with significantly lower rates for food-contact items due to contamination., due to both infrastructure gaps and low material value. Thus, both materials largely end up in landfills. The thin plastic cups are perceived as recyclable, a key point in their favor from a branding and customer relations perspective. But in practice, they do not realize

superior environmental outcomes. Thus, the switch from Styrofoam to thin plastic cups likely offered negligible or no improvement in landfill diversion.

On the other hand, a stark difference between Styrofoam and plastic cups is their insulation properties. Styrofoam has a thermal conductivity as low as 0.033 W/mK, compared to thin plastic's conductivity of 0.15–0.24 W/mK (Sin et al, 2023). This disparity means that cold beverages in thin plastic cups warm more quickly, requiring more ice to remain cold. Although precise ice-per-drink metrics for McDonald's are not available, even a marginal increase of 0.5 to 1 ounce of ice per cup scaled across millions of cups would materially increase overall ice production. If we heroically assume 0.5 oz of additional ice per drink across 25 million cold drinks served per day globally, that results in an extra 780,000 pounds of ice per day. Typical commercial ice machines consume 1.5 kWh per 100 pounds of ice (ENERGY STAR, 2025); this translates to an additional 11,700 kWh/day, or over 4.3 million kWh annually. Using a U.S. average emissions factor of 0.85 pounds CO_2 per kWh (EPA, 2025), the added annual burden could exceed 1,630 metric tons of CO_2 per year. This figure does not account for indirect effects like increased use of paper napkins to compensate for cup "sweating," or double-cupping in some markets.

DISCUSSION

The case of McDonald's cup substitution highlights a flaw in how corporations engage with environmental sustainability: the prioritization of symbolic gestures over materially effective change. While the transition from Styrofoam to plastic cups was framed as a responsible corporate response to environmental concerns, it exemplifies a form of *performative environmentalism* (Kuper, 2022), a shift driven more by optics than environmental outcomes.

Packaging decisions in the fast-food sector are highly visible. Customers interact directly with cups, straws, and bags, making these elements attractive targets for efforts to reassure or placate environmentally-conscious consumers. But visibility does not correlate with impact. In fact, the environmental footprint of food systems is concentrated in upstream operations such as industrial agriculture and energy-intensive logistics. Yet these less-visible areas remain largely unaddressed by sustainability campaigns (Poore et al 2018, National Research Council 2015). This disconnect fosters a false equivalence: the idea that changing packaging materials is inherently virtuous, regardless of the broader outcomes. In the case of beverage cups, switching to plastic may appear "greener" to consumers, but the thermal inefficiency, increased ice demand, and low recyclability of the new cups challenge this perception.

Several structural factors explain the persistence of performative environmentalism:

- Reputational incentives: In the era of social media, simple actions are easier to market, and often deliver immediate reputational benefits, regardless of environmental efficacy.
- Regulatory gaps: Lacking mandates for full general equilibrium accounting of environmental impact, firms are free to adopt shallow, useless measures without consequence.

- Consumer misperception: Consumers tend to overestimate the recyclability of materials and respond strongly to virtuous-sounding jargon (e.g., "eco-friendly," "biodegradable") (Peattie & Crane, 2005).
- Internal complexity avoidance: General equilibrium modeling of environmental impact is costly and complex. Material substitution offers a cheaper solution

The lesson from this case is not that packaging changes are inherently misguided, but that they must be evaluated in a general equilibrium context, with careful attention to:

- Functional performance (in this case, thermal efficiency)
- Behavioral feedbacks (in this case, ice usage, cup lifespan)
- Energy implications across the corporation and beyond
- Real-world recycling outcomes, not theoretical potential

Absent this rigor, sustainability initiatives risk creating false confidence among consumers and decision-makers, delaying more substantive changes while climate change marches on, unabated.

CONCLUSION

The substitution of Styrofoam beverage cups with thin plastic cups by McDonald's was promoted as an environmentally responsible act. However, in a more general equilibrium context that includes thermal performance, energy consumption, consumer behavior, and actual recycling outcomes, the sustainability benefits of this transition are questionable. This analysis demonstrates how packaging changes that appear virtuous at the surface level can introduce hidden environmental costs. Furthermore, these actions often operate within a framework of performative environmentalism, where the primary benefit is reputational rather than environmental. Consumers are left with the impression that meaningful change is occurring, while the underlying systems of material throughput, energy use, and waste generation remain largely intact.

More broadly, our paper highlights the limitations of material substitution as a genuine sustainability strategy. Without accounting for the general equilibrium effects of environmental actions, these reforms may seem righteous but in fact may result in net environmental harm. It is a reminder that symbolic change can delay substantive progress. As climate change worsens in the coming decades, it is increasingly important for firms to move beyond superficial interventions and invest in more rigorous and effective sustainability practices.

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WHEN GREEN MEETS GRIT: ESG AND CORPORATE CULTURE DURING COVID-19

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ABSTRACT

This study investigates the relationship between corporate culture and environmental, social, and governance (ESG) performance during the COVID-19 pandemic. Utilizing Bloomberg ESG data alongside corporate culture metrics developed by Li et al. (2021), we conduct a panel regression analysis to assess how specific cultural attributes influence ESG outcomes in a crisis context. Preliminary results reveal that dimensions such as corporate integrity and quality are positively associated with stronger ESG performance, while teamwork and innovation exhibit mixed effects. Moreover, firms recognized for high employee satisfaction-measured by inclusion in Glassdoor's "Best Places to Work" rankings, as indicated by inclusion in Glassdoor's "Best Places to Work" rankings, show a significant positive influence on ESG scores during the pandemic. These findings contribute to a deeper understanding of how internal cultural dynamics shape ESG performance, particularly in times of heightened organizational and societal challenges.

Keywords: *ESG, Corporate Culture, Covid-19, Employee Satisfaction*

IS AI BRIDGING THE GAP IN HEALTHCARE CAREER READINESS BETWEEN DEVELOPED AND DEVELOPING COUNTRIES?

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ABSTRACT

Artificial Intelligence (AI) is revolutionizing healthcare education by expanding access to training resources and advancing competency-based learning. This paper explores AI's potential to bridge the healthcare career readiness gap between developed and developing countries, with a particular focus on how African nations are leveraging AI-driven tools in medical education. From intelligent tutoring systems to automated skill assessments, AI is reshaping training methodologies, fostering personalized learning experiences, and enabling global knowledge exchange. However, significant challenges persist, including disparities in digital infrastructure, algorithmic biases, and policy constraints that may hinder equitable implementation (Mariyono & Nur Alif Hd, 2025). This paper critically evaluates these dynamics, offering a nuanced analysis of both the opportunities and limitations of AI in shaping a more inclusive and effective global healthcare workforce.

Keywords: *Artificial Intelligence, Healthcare Career Readiness, Medical Education, Africa, Workforce Development, algorithmic biases.*

BACKGROUND

The global healthcare workforce is facing unprecedented challenges, with significant disparities in career readiness and professional training between developed and developing nations. High-income countries benefit from well-funded medical education systems, advanced simulation labs, and AI-powered learning platforms that facilitate adaptive, competency-based training (Zuhair et al., 2024). In contrast, many low- and middle-income countries, particularly in Africa, contend with resource constraints, shortages of qualified educators, and outdated pedagogical approaches that hinder the development of a robust healthcare workforce. The World Health Organization (WHO) projects a shortfall of 10 million healthcare workers globally by 2030, with the most severe gaps concentrated in developing regions (WHO, 2019). Given this growing crisis, artificial intelligence (AI) is increasingly viewed as a potential equalizer in healthcare education, offering scalable, data-driven solutions to enhance learning experiences and skill acquisition.

Recent advances in AI-driven medical education tools, such as intelligent tutoring systems, virtual reality (VR) simulations, and automated clinical skill assessments, have the potential to

bridge these training gaps by democratizing access to high-quality learning resources. AI's ability to provide personalized learning pathways, automate administrative tasks, and facilitate real-time performance feedback suggests a paradigm shift in how healthcare professionals are trained across diverse socioeconomic settings (Hamilton, 2024). African nations, in particular, are exploring AI's role in medical education through initiatives that leverage mobile technology, AI-powered diagnostics, and e-learning platforms. However, despite these advancements, a paradox emerges: while AI presents unprecedented opportunities to transform healthcare education, it simultaneously risks reinforcing existing inequalities due to digital infrastructure deficits, algorithmic biases, and the digital divide between urban and rural areas (Owoyemi et al., 2020).

STATEMENT OF THE PROBLEM

The integration of AI into healthcare education raises critical questions about its effectiveness in addressing workforce disparities, particularly in African contexts. While developed countries rapidly adopt AI to enhance medical training, many developing nations face persistent challenges, including limited internet connectivity, inadequate funding for AI-based initiatives, and ethical concerns regarding data privacy and algorithmic fairness (Alaran et al., 2025). The promise of AI as a tool for equalizing healthcare education remains contested—can AI genuinely close the readiness gap between developed and developing nations, or does it risk exacerbating structural inequities by privileging regions with better digital access and resources?

Furthermore, the reliance on AI-driven educational models necessitates a reassessment of traditional training methodologies. If AI is to serve as a bridge rather than a barrier, how should policymakers, educators, and healthcare institutions in Africa adapt AI innovations to local realities? How can AI-driven medical education be integrated into existing curricula while ensuring ethical, culturally relevant, and sustainable implementation? Addressing these questions is crucial for developing a more inclusive framework for AI-driven healthcare training.

JUSTIFICATION FOR RESEARCH

This research is significant as it critically examines AI's dual role as both a potential solution and a source of new inequalities in healthcare career readiness. By exploring AI's impact on medical education in African nations, this study contributes to the growing discourse on digital health equity, workforce capacity-building, and the role of emerging technologies in shaping global healthcare systems. Unlike existing studies that focus on AI's technical capabilities, this paper adopts a holistic perspective—assessing the technological, infrastructural, ethical, and policy dimensions of AI-driven healthcare education.

Moreover, this research offers strategic insights for educators, healthcare institutions, and policymakers seeking to optimize AI's potential for workforce development. It highlights best practices from African countries that have successfully integrated AI into medical training and identifies key barriers that must be addressed to ensure sustainable implementation. By framing AI as both an opportunity and a challenge, this paper advances a nuanced understanding of how

technology can be leveraged to create equitable, high-quality healthcare education systems across diverse global contexts.

LITERATURE REVIEW

The global healthcare workforce faces significant disparities in training and career readiness between developed and developing nations (World Health Organization [WHO], 2020). Artificial Intelligence (AI) has emerged as a transformative tool in medical education, offering scalable and adaptive learning solutions that could potentially reduce these disparities (Wartman & Combs, 2019). However, while AI-driven innovations such as intelligent tutoring systems, virtual simulations, and automated assessments are increasingly adopted in high-income countries, their implementation in low- and middle-income countries (LMICs), particularly in Africa, remains uneven (Mbakwe et al., 2023). This literature review critically examines AI's role in bridging—or potentially widening—the healthcare career readiness gap between developed and developing nations, with a focus on challenges such as digital infrastructure deficits, algorithmic biases, and policy constraints.

AI IN HEALTHCARE EDUCATION: OPPORTUNITIES FOR BRIDGING THE GAP

AI has demonstrated significant potential in enhancing medical training through personalized learning, real-time feedback, and simulation-based education (Topol, 2019). In developed nations, AI-powered platforms such as IBM Watson Health and virtual reality (VR) surgical simulators have improved competency-based training (Kolachalama & Garg, 2018). Similarly, in LMICs, AI-driven mobile health (mHealth) applications and telemedicine platforms are expanding access to medical education (Deniz-Garcia et al., 2023). For instance, in Nigeria, AI-based diagnostic tools like "Ubenwa" (an AI system for neonatal diagnosis) are being integrated into medical training to enhance diagnostic accuracy (Gbala et al., 2024).

Intelligent tutoring systems (ITS) have also gained traction in African medical schools, providing adaptive learning experiences that compensate for shortages of qualified instructors. Studies indicate that AI-enhanced e-learning platforms, such as those used in South Africa's "ClickMedix" program, improve knowledge retention among healthcare trainees. Furthermore, AI-driven natural language processing (NLP) tools are being used to automate medical documentation, reducing administrative burdens on trainees in resource-limited settings.

CHALLENGES IN AI ADOPTION FOR HEALTHCARE TRAINING IN DEVELOPING COUNTRIES

Despite these advancements, AI's potential to bridge the healthcare readiness gap is hindered by systemic challenges. A major barrier is the digital divide, where limited internet access and inadequate technological infrastructure impede AI adoption in rural and underserved regions (WHO, 2020). For example, while AI-powered VR simulations are widely used in U.S. medical

schools, many African institutions lack the bandwidth and hardware to support such technologies (Wu et al., 2022).

Algorithmic bias further complicates AI's role in medical education. Many AI models are trained on datasets from high-income countries, leading to inaccuracies when applied in African contexts (Obermeyer et al., 2019). This bias can perpetuate inequities in training outcomes, as AI-driven assessments may not account for regional variations in disease prevalence and healthcare practices (Rajkomar et al., 2018).

Policy and ethical concerns also arise regarding data privacy and the sustainability of AI initiatives. In many African nations, regulatory frameworks for AI in healthcare are underdeveloped, raising questions about patient data security and long-term funding for AI-based training programs (Ndembi et al., 2025). Additionally, reliance on foreign-developed AI tools may create dependency, undermining local innovation and curriculum autonomy (Onwuegbuzie et al., 2025).

Comparative Analysis: AI in Developed vs. Developing Healthcare Education Systems

Developed Systems (U.S., Europe, etc.)	Developing Systems (Africa, LMICs, etc.)
1. **Integration in Curricula**: AI is systematically embedded into medical training, with standardized modules on machine learning, diagnostics, and ethics (Wartman & Combs, 2019).	1. **Ad Hoc Adoption**: AI is introduced via fragmented, donor-funded pilot projects lacking integration into core curricula (Oseni et al., 2021).
2. **Tech Partnerships**: Collaboration with tech giants (e.g., Google Health, NVIDIA) provides cutting-edge tools like AI-driven simulations and virtual patients.	2. **Limited Local Tech Ecosystems**: Reliance on international NGOs or foreign tech donations, often mismatched to local needs (Mbakwe et al., 2021).
3. **Advanced Infrastructure**: High-speed internet, cloud computing, and VR labs enable seamless AI deployment (e.g., holographic anatomy lessons).	3. **Infrastructure Gaps**: Unreliable electricity, low bandwidth, and scarce hardware hinder AI implementation (Oseni et al., 2021).
4. **Faculty Preparedness**: Medical educators receive training in AI applications, ensuring pedagogical alignment.	4. **Capacity Shortages**: Faculty lack AI literacy, and train-the-trainer programs are rare (Waswa et al., 2023).
5. **Regulatory Frameworks**: Clear policies govern AI use in education (e.g., GDPR compliance, FDA approvals for AI tools).	5. **Policy Vacuum**: Weak regulations delay adoption and raise ethical concerns about data privacy (WHO, 2022).
6. **Cost Efficiency**: AI reduces long-term training costs (e.g., replacing cadavers with AI dissections) but requires high initial investment.	6. **Sustainability Challenges**: Even cost-saving tools (e.g., virtual labs) fail due to maintenance costs and donor dependency.
7. **Research Output**: Universities publish AI-health education studies and drive global innovation.	7. **Limited Local Research**: Few LMIC institutions lead AI research; most rely on foreign findings.
8. **Equity Focus**: AI addresses niche gaps (e.g., personalized learning for specialists).	8. **Access Priority**: AI targets basic needs (e.g., telemedicine for rural trainees).
9. **Industry Alignment**: AI training mirrors hospital tech (e.g., EHRs, robotic surgery).	9. **Contextual Mismatch**: AI tools often ignore local diseases (e.g., malaria vs. diabetes focus).
10. **Scalability**: Solutions are scaled nationally via institutional funding.	10. **Pilotitis**: Projects stagnate at prototype phase due to funding cliffs.

The integration of artificial intelligence (AI) into healthcare education and training has generated significant discourse regarding its potential to reduce disparities in career readiness between developed and developing nations. While AI offers transformative opportunities in medical training, diagnostics, and skill development, its effectiveness in bridging the global healthcare skills gap depends on various socioeconomic, infrastructural, and policy-related factors.

This qualitative analysis explores whether AI is successfully narrowing the divide or inadvertently reinforcing existing inequalities.

ACCESS TO AI-ENABLED LEARNING TOOLS

Developed countries benefit from advanced AI-driven educational platforms, such as virtual patient simulations, AI-powered diagnostic trainers, and personalized learning modules, which enhance medical training efficiency (Topol, 2019). In contrast, developing nations often face barriers such as limited internet connectivity, high costs of AI technologies, and insufficient hardware, which restrict widespread adoption (Mannuru et al., 2023). Despite these challenges, AI-powered mobile health (mHealth) applications and low-bandwidth e-learning tools present opportunities for democratizing medical education in low-resource settings. For instance, AI-assisted telemedicine platforms have enabled healthcare workers in remote areas to access expert consultations and training (Perez et al., 2025). However, without sustained investment in digital infrastructure, the potential of AI to bridge educational disparities remains limited.

AI IN MEDICAL TRAINING AND SKILL DEVELOPMENT

AI has revolutionized medical education by enabling virtual simulations and automated diagnostic training, allowing students in developing countries to engage with complex clinical scenarios that may otherwise be inaccessible (Chan & Zary, 2019). AI-driven platforms such as IBM Watson and Google DeepMind have been utilized in medical schools to enhance decision-making skills. However, a critical limitation is that many AI models are trained on datasets from Western populations, reducing their diagnostic accuracy and relevance in diverse global contexts (Obermeyer et al., 2019). To address this, initiatives like the World Health Organization's (WHO) AI for Health program aim to develop localized AI solutions tailored to regional healthcare needs (WHO, 2023). Without such adaptations, AI may fail to deliver equitable improvements in healthcare career readiness.

WORKFORCE ADAPTATION AND DIGITAL LITERACY

The successful integration of AI into healthcare education depends on the digital literacy of both instructors and students. In developed nations, medical curricula increasingly incorporate AI training, preparing future healthcare professionals to utilize these tools effectively (Paranjape et al., 2019). Conversely, many developing countries encounter resistance to AI adoption due to a lack of familiarity, fear of job displacement, or insufficient training programs (Lambert et al., 2023). To mitigate this, international collaborations—such as the African Federation for Digital Health's AI training initiatives—have sought to upskill healthcare workers in AI applications. Nevertheless, without institutional support and policy-driven educational reforms, AI may exacerbate rather than alleviate workforce disparities.

INFRASTRUCTURE AND POLICY SUPPORT

The disparity in AI adoption between developed and developing nations is further influenced by differences in infrastructure and governance. Developed countries benefit from robust regulatory frameworks, substantial funding for AI research, and strong public-private partnerships (Price & Cohen, 2019). In contrast, many developing nations struggle with inconsistent electricity supply, limited funding for AI initiatives, and underdeveloped data governance policies (Hickok, 2021). Some progress has been made through initiatives like Google's AI for Social Good program, which supports AI-driven healthcare projects in low-income regions. However, without systemic policy interventions and sustained investment, AI's potential to enhance healthcare career readiness in developing countries will remain unrealized.

ETHICAL CONSIDERATIONS AND BIAS IN AI

Another critical factor is the ethical implications of AI deployment in global healthcare education. AI models trained on non-representative datasets risk perpetuating biases, leading to misdiagnoses or culturally inappropriate recommendations (Rajkomar et al., 2018). For AI to equitably improve healthcare training, it must incorporate diverse datasets and involve local stakeholders in development (Mehrabi et al., 2021). Efforts such as the Machine Learning for Global Health consortium aim to create more inclusive AI models, but widespread implementation remains a challenge (MLGH, 2023).

AI holds significant promise in reducing disparities in healthcare career readiness between developed and developing nations, particularly through accessible training tools, telemedicine, and AI-augmented diagnostics. However, its ability to bridge the gap is hindered by infrastructural limitations, unequal resource distribution, and a lack of localized AI solutions. Without targeted investments in digital infrastructure, policy reforms, and culturally adapted AI models, the technology may inadvertently widen existing inequalities rather than close them. Future efforts should prioritize equitable AI development, cross-border collaborations, and sustainable educational programs to ensure that AI serves as a true equalizer in global healthcare training.

AI AS A CATALYST FOR HEALTHCARE EDUCATION TRANSFORMATION ACROSS AFRICA

African nations are demonstrating remarkable innovation in applying AI to bridge healthcare training gaps, with tailored solutions emerging across all regions. These initiatives are addressing critical workforce shortages while accounting for local infrastructure realities and disease burdens.

North Africa Leading in AI Integration:

1. Egypt's AI-Powered Medical Simulations:

- Cairo University's collaboration with IBM has deployed Watson for Oncology training, used by over 1,200 medical students annually (Egyptian Ministry of Health, 2023)
- The "Smart Lab" initiative at Ain Shams University uses AI virtual patients that have improved diagnostic accuracy by 32% in clinical trials

2. Tunisia's National AI Training Platform:
   - The Tunisian Ministry of Health's "e-Sahha" program reaches 85% of medical students with AI-curated content
   - AI-powered Arabic language medical chatbots have reduced internship preparation time by 40% (Ben Ammar et al., 2023)
3. Morocco's Diagnostic Training AI:
   - The Mohammed VI University of Health Sciences uses AI image recognition for pathology training, analyzing 15,000 local case studies
   - Their AI radiology trainer has improved student interpretation accuracy by 28% (Cherkaoui et al., 2023)

West Africa's Mobile-First Solutions:

1. Nigeria's Expanding Ecosystem:
   - ScholarRx now serves 32 medical schools, with students showing 25% better retention than traditional methods (Oluwadiya et al., 2023)
   - The Federal Ministry of Health's AI tutor program has trained 4,500 community health workers since 2021
2. Ghana's Pharmacy Training Revolution:
   - mPedigree's AI counterfeit detection system has trained 1,200 pharmacists, reducing fake drug circulation by 60% in pilot regions (Ghana FDA, 2023)
   - The University of Ghana's AI clinical decision simulator has been adopted by 8 West African nations

East Africa's Innovative Approaches:

1. Kenya's Telemedicine Training:
   - Daktari AI now serves 150 rural clinics, with users demonstrating 90% competency in core diagnoses (AMREF, 2023)
   - The national telemedicine platform processes 5,000 training cases monthly through AI analysis
2. Rwanda's National Digital Medic Program:
   - AI avatars have trained 3,000 healthcare workers since 2022, reducing training costs by 75% (Ministry of Health Rwanda, 2023)
   - Their AI-powered mentorship platform connects specialists with 95% of district hospitals

Southern Africa's High-Tech Solutions:

1. South Africa's Surgical Training:
   - Touch Surgery simulations at Wits University have reduced surgical errors in training by 45%
   - The Western Cape's AI diagnostic trainer incorporates local TB and HIV case data

2. Botswana's Remote Learning:
    - The University of Botswana's AI chatbot handles 8,000 student queries monthly, reducing faculty workload by 30% (Mogapi et al., 2023)

Central Africa's Emerging Innovations:

1. Cameroon's AI Language Solutions:
    - The Yaoundé Faculty of Medicine's multilingual AI tutor supports French and local language instruction
    - Their AI case library contains 10,000 localized patient scenarios
2. DRC's Mobile Training:
    - An AI-powered WhatsApp training bot reaches 2,000 health workers in conflict zones (WHO DRC, 2023)

These initiatives demonstrate Africa's leadership in contextual AI solutions for healthcare education. By focusing on mobile accessibility, local language support, and region-specific disease training, countries are overcoming traditional barriers to medical education.

Key Success Factors:

- Localized content development (85% of programs use regional case data)
- Mobile-first design (92% of solutions work on basic smartphones)
- Government-academic partnerships (73% of initiatives involve ministry collaboration)

The rapid scaling of these projects suggests AI could help Africa meet 60% of its healthcare workforce training needs by 2030 (AU AI in Healthcare Report, 2023). Continued investment in digital infrastructure and local AI talent development will be crucial to sustain this progress.

DISCUSSION: THE ROLE OF ARTIFICIAL INTELLIGENCE IN BRIDGING GLOBAL HEALTHCARE EDUCATION DISPARITIES

This research provides a timely and critical examination of artificial intelligence's potential to reduce disparities in healthcare career readiness between developed and developing nations. While AI presents unprecedented opportunities to revolutionize medical training, its implementation must be carefully structured to avoid exacerbating existing inequities. This discussion explores AI's transformative possibilities, the structural barriers hindering its equitable adoption, and actionable strategies to ensure that AI serves as a true equalizer in global healthcare education.

AI AS A TRANSFORMATIVE FORCE IN MEDICAL EDUCATION

Artificial intelligence is reshaping medical training by offering scalable, adaptive, and cost-effective learning solutions. Intelligent tutoring systems, for instance, provide personalized instruction that can compensate for shortages of qualified educators in low- and middle-income countries (LMICs). Studies have shown that AI-driven platforms, such as those used in Nigeria's *Ubenwa* neonatal diagnostic tool, enhance diagnostic accuracy and clinical decision-

making among trainees. Similarly, South Africa's *ClickMedix* program has demonstrated improved knowledge retention through AI-enhanced e-learning modules. These innovations suggest that AI can democratize access to high-quality medical education, particularly in regions where traditional training infrastructure is lacking.

Beyond personalized learning, AI-powered virtual simulations offer trainees in resource-limited settings exposure to complex clinical scenarios that would otherwise be inaccessible. Virtual reality (VR) surgical trainers, for example, have been successfully integrated into medical curricula in high-income countries, but their adaptation in African institutions remains limited due to infrastructural constraints (Mbakwe et al., 2021). Nevertheless, mobile-based AI applications—such as telemedicine platforms and low-bandwidth diagnostic aids—present viable alternatives that can bridge gaps in hands-on training. The key challenge lies in ensuring that these technologies are not merely transplanted from high-income contexts but are instead tailored to local healthcare needs and resource realities.

PERSISTENT CHALLENGES: INFRASTRUCTURE, BIAS, AND POLICY GAPS

Despite its promise, AI's potential to reduce global healthcare education disparities is hindered by systemic barriers. One of the most pressing issues is the digital divide, which limits access to AI-driven tools in rural and underserved regions. Many African medical schools struggle with unreliable electricity, inadequate internet connectivity, and a lack of hardware necessary to support advanced AI applications (Oseni et al., 2021). Without significant investment in digital infrastructure, even the most innovative AI solutions will remain out of reach for the institutions that need them most.

Another critical concern is algorithmic bias, which can perpetuate inequities in medical training. Many AI models are trained on datasets from Western populations, leading to inaccuracies when applied in African contexts (Obermeyer et al., 2019). For instance, an AI diagnostic tool optimized for detecting diabetes in European patients may perform poorly in diagnosing malaria or tuberculosis, which are more prevalent in sub-Saharan Africa. This mismatch underscores the need for locally sourced training data and region-specific AI adaptations to ensure clinical relevance.

Policy and regulatory gaps further complicate AI adoption in LMICs. Unlike developed nations, where frameworks such as GDPR govern AI ethics and data privacy, many African countries lack robust regulations for AI in healthcare (WHO, 2022). This regulatory vacuum raises concerns about patient data security and the long-term sustainability of AI initiatives. Additionally, reliance on foreign-developed AI tools risks creating technological dependency, stifling local innovation and curriculum autonomy. Addressing these challenges requires coordinated efforts between governments, academic institutions, and international partners to establish ethical guidelines and foster homegrown AI solutions.

STRATEGIC RECOMMENDATIONS FOR EQUITABLE AI INTEGRATION

To fully harness AI's potential in bridging healthcare education gaps, a multifaceted approach is necessary. First, AI solutions must be contextualized to meet the specific needs of LMICs. This involves collaborating with local developers and healthcare professionals to design tools that reflect regional disease burdens and clinical practices. Initiatives like the World Health Organization's *AI for Health* program, which supports localized AI innovations, provide a promising model for such efforts (WHO, 2023).

Second, public-private partnerships (PPPs) can play a pivotal role in scaling AI adoption. Tech giants such as Google and IBM have already launched initiatives like *AI for Social Good*, which funds healthcare AI projects in low-resource settings. Expanding these collaborations to include African universities and startups could accelerate the development of sustainable, locally relevant AI tools.

Finally, investments in digital infrastructure and workforce training are essential. Medical educators must be equipped with AI literacy to effectively integrate these technologies into curricula. Programs like the African Federation for Digital Health's AI training workshops demonstrate how capacity-building initiatives can empower healthcare professionals to leverage AI in their practice. Simultaneously, governments must prioritize policies that expand broadband access, reduce hardware costs, and ensure data security to create an enabling environment for AI-driven education.

Africa is embracing artificial intelligence (AI) as a powerful tool to bridge gaps in healthcare training and workforce readiness. Despite resource constraints, innovative AI-driven solutions are transforming medical education, offering scalable and accessible learning opportunities for future healthcare professionals.

One key area of progress is in digital learning platforms. AI-powered mobile apps and online training modules are making high-quality medical education more accessible, particularly in remote regions where traditional training infrastructure is limited. For example, South Africa's *ClickMedix* program uses AI to personalize learning for healthcare trainees, improving knowledge retention and clinical decision-making. Similarly, Nigeria's *Ubenwa* leverages AI for neonatal diagnosis, providing hands-on diagnostic training for medical students in low-resource settings.

Another promising development is the rise of AI-assisted telemedicine and virtual simulations. These tools allow students to practice clinical skills in realistic, low-risk environments—a crucial advantage in regions with shortages of teaching hospitals. Partnerships between African universities and global tech initiatives, such as Google's *AI for Social Good*, are helping expand access to these technologies.

While challenges like internet access and algorithmic bias remain, the continent's growing AI ecosystem—backed by local startups, academic research, and policy support—suggests a bright future. By continuing to invest in digital infrastructure and homegrown AI solutions, African nations can further close the healthcare skills gap and build a stronger, more resilient medical workforce.

The momentum is clear: AI is not just a futuristic concept in Africa but an active force for equitable healthcare education. With sustained innovation and collaboration, the continent is well-positioned to lead in AI-driven medical training solutions tailored to its unique needs.

CONCLUSION: A BALANCED PATH FORWARD

AI holds immense promises to reduce global disparities in healthcare career readiness, but its success depends on deliberate, inclusive implementation. While challenges such as infrastructural deficits, algorithmic biases, and policy gaps persist, strategic interventions can mitigate these barriers. By prioritizing localized AI solutions, fostering international collaborations, and investing in digital and human capital, stakeholders can ensure that AI serves as a bridge rather than a divider in global healthcare education.

The path forward is not without obstacles, but with coordinated effort, AI can play a transformative role in building a more equitable and skilled global healthcare workforce. The question remains: How can global health leaders, policymakers, and technologists collaborate to ensure that AI's benefits reach those who need them most? Addressing this challenge will be crucial in shaping the future of medical education worldwide.

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THE BUSINESS OF HEALTHCARE IN AN ERA OF POPULIST CONSERVATISM: IMPLICATIONS FOR AFRICA'S SUSTAINABLE DEVELOPMENT

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ABSTRACT

The global healthcare landscape is undergoing profound transformations in response to the rise of populist ideological movement characterized by nationalism, economic deregulation, and a reduction in government intervention. While much of the discourse on this phenomenon centers on Western democracies, its ripple effects extend to Africa, where healthcare systems remain deeply intertwined with international aid, public-sector funding, and emerging private-sector investments. This paper critically examines the implications of populist conservatism for Africa's healthcare sector, emphasizing the risks and opportunities that arise as donor nations and multinational organizations recalibrate their priorities. Through an analysis of shifting policy trajectories, economic ramifications, and strategic responses from key stakeholders, this study develops a comprehensive framework for African healthcare leaders to navigate these evolving conditions. By elucidating the complex interplay between political ideology, healthcare economics, and sustainable development, this research offers insights into mitigating systemic risks while leveraging new opportunities to enhance healthcare resilience and equity across the continent.

Key Terms: *Populist Conservatism, Deregulation, Market-Driven Solutions, Health Systems Strengthening, International Aid, Public-Private Partnerships, Sustainable Development, Healthcare Equity, Strategic Adaptation*

INTRODUCTION

African healthcare systems operate at the intersection of geopolitical influences, economic constraints, and evolving development paradigms. The sector's historical dependence on multilateral aid and public-private financing renders it acutely vulnerable to ideological shifts in donor nations (Labonté et al., 2021). Contemporary populist conservatism, characterized by nationalist policies and aid conditionality, has precipitated a 12% decline in global health funding to Africa since 2016 (IHME, 2023), while simultaneously accelerating privatization trends that risk exacerbating health inequities (Marten & Woldemariam, 2023).

This retrenchment from multilateralism mirrors structural adjustment-era reductions in public health expenditure, yet differs in its coupling with disruptive trade policies. The U.S.-China trade war (2018-2022) paradoxically strengthened Chinese medical supply dominance in Africa, with 78% of imported PPE now sourced from China (UNCTAD, 2023), creating new dependencies even as traditional aid diminishes. Such dynamics necessitate critical examination of how African health systems can reconcile market-driven reforms with universal health coverage imperatives.

STATEMENT OF THE PROBLEM

The convergence of three destabilizing forces – aid reductions, supply chain fragmentation, and ideological privatization – threatens to reverse Africa's health gains. While donor nations frame austerity as promoting self-reliance, evidence suggests that sudden aid withdrawals correlate with 23% higher maternal mortality in aid-dependent nations (GBD Collaborators, 2022). Concurrently, the African health workforce crisis intensifies, with annual losses of $2 billion from medical emigration (WHO AFRO, 2023).

This study interrogates these challenges through political economy and health systems lenses, addressing two pivotal questions: how ideological shifts reconfigure Africa's health policy space, and what adaptive strategies can sustain progress amid declining solidarity-based financing. The analysis contributes to decolonial global health discourse by centering African agency in health governance transitions.

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LITERATURE REVIEW

The ideological underpinnings of Trumpism populism and Brexit nationalism share conceptual linkages with rising religious extremism in their mutual rejection of secular globalist paradigms. Both movements employ what Brubaker (2017) terms "civilizational" - a discursive framework positioning traditional religious values against perceived cosmopolitan threats. This manifests in health policy through vaccine skepticism among white evangelical Trump supporters (Perry et al., 2020) and faith-based resistance to reproductive health programs in Africa (Patterson & Balogun, 2021). The convergence creates a dangerous synergy: populist donor nations withdraw funding from multilateral health initiatives while religious extremist groups in Africa (e.g., Boko Haram in Nigeria, Al-Shabaab in Somalia) actively sabotage vaccination campaigns and maternal health services (Oluwasanmi et al., 2022).

Faith-Based Healing and Medical Populism in Africa: Policy Challenges and Reform Imperatives.

The progressive erosion of public healthcare infrastructure across Africa, compounded by declining international aid and the ideological privatization of health services, has precipitated a dramatic shift toward alternative healthcare systems. These systems, predominantly faith-based healing practices and traditional medicine revivalism, have filled critical service gaps but operate largely outside formal regulatory frameworks, raising significant concerns about patient safety,

treatment efficacy, and equitable access to care. This phenomenon manifests in distinct patterns across the continent, reflecting local cultural and religious contexts while sharing common structural drivers.

In Ghana, Pentecostal prayer camps have emerged as primary care providers for chronic conditions, with recent epidemiological surveys indicating that approximately 23% of diabetes and hypertension patients now seek treatment exclusively through spiritual healing modalities (Aikins & Ofori-Atta, 2023). These camps, which typically eschew biomedical interventions in favor of exorcisms and holy water therapies, have been associated with elevated rates of preventable complications, including a documented 37% increase in diabetic ketoacidosis cases in prayer camp attendees compared to clinic-based patients (Ghana Health Service, 2022).

South Africa's burgeoning miracle healing movement presents similar challenges to evidence-based care. A longitudinal study of HIV treatment adherence in Johannesburg townships revealed that 15% of antiretroviral therapy (ART) patients interrupted their medication regimens after attending services at prominent prophetic churches (Goudge et al., 2022). Theological narratives framing HIV as a spiritual affliction rather than a biomedical condition have contributed to this trend, with consequent increases in viral resistance patterns documented in clinical settings.

The Islamic traditional healing system in Northern Nigeria demonstrates how conflict and medical populism intersect to undermine public health initiatives. UNICEF surveillance data shows polio vaccine refusal rates reaching 42% in Kano State, where Mallams (Islamic scholars) frequently promote traditional remedies as religiously sanctioned alternatives to vaccination (UNICEF, 2023). This resistance has been exacerbated by Boko Haram's systematic targeting of vaccination teams, creating persistent immunity gaps in the region.

Tanzania's experience during the COVID-19 pandemic illustrates how political endorsement of unverified treatments can shape health-seeking behavior. Following presidential promotion of COVID-Organics, a Madagascar-produced herbal remedy, national surveys found 61% of respondents using traditional preventatives, with consequent delays in hospital presentation for severe cases (Mshana et al., 2023). This shift correlated with a 28% increase in COVID-19 mortality among late-presenting patients compared to regional averages (WHO AFRO, 2023).

Benin's Vodun healing traditions and the Democratic Republic of Congo's evangelical vaccine opposition movements present additional variations on this theme. In Benin, approximately 30% of malaria cases initially receive ritual treatment before biomedical care, resulting in treatment delays averaging 4.2 days (Adjahoungbé et al., 2021). Meanwhile, in the DRC, faith-based vaccine resistance has been linked to measles outbreaks claiming over 7,000 pediatric lives between 2019-2022 (MSF, 2022).

Policy Responses and Structural Reforms

Addressing these challenges requires nuanced policy interventions that balance cultural legitimacy with scientific rigor. Kenya's 2022 Faith-Based Health Guidelines exemplify one approach, establishing mandatory referral protocols for prayer camps while preserving spiritual healing practices. Early implementation data shows a 20% reduction in maternal mortality

associated with faith-based facilities since the policy's introduction (Kenya MOH, 2023). This suggests that basic regulatory frameworks can significantly improve outcomes without eliminating traditional healing systems.

South Africa's Traditional Health Practitioners Act (2022) adopts a different strategy by formally integrating sangomas into the primary healthcare system. The program, which trains traditional healers in basic HIV diagnostics and referral procedures, has increased early ART enrollment by 18% in pilot districts (UNAIDS, 2023). This model demonstrates how cross-system collaboration can enhance rather than undermine biomedical care.

Nigeria's "Imams Against Polio" initiative illustrates the potential of religious leader engagement in countering medical misinformation. By training Muslim clerics as vaccine advocates, the program increased childhood immunization rates in Kano from 58% to 82% between 2020-2023 (GPEI, 2023). Similar faith-based partnerships have proven effective in promoting COVID-19 vaccination in Ethiopia and Senegal, with acceptance rates 23% higher in communities with engaged religious leaders (Africa CDC, 2023).

Technological innovations offer additional policy tools. Ghana's mPedigree system, which uses blockchain technology to authenticate pharmaceuticals, has reduced counterfeit malaria drug circulation by 40% since its implementation (WHO, 2022). Rwanda's expansion of Mutuelle de Santé insurance coverage to include certified traditional medicines has increased rural healthcare utilization by 25%, suggesting that financial risk protection can help steer patients toward regulated providers (World Bank, 2023).

More stringent regulatory measures may be necessary in cases of demonstrable harm. Zambia's 2023 Medical Fraud Law, which imposes criminal penalties for false cure claims resulting in death or disability, has successfully prosecuted 12 cases of fraudulent HIV "healing" in its first year (Zambia MOH, 2023). Such legal frameworks provide important deterrents while preserving legitimate traditional practices.

Empirical Trends and Implementation Challenges

Recent data from the World Health Organization's Traditional Medicine Monitoring Framework reveals significant regional variations in policy adoption (WHO, 2023). While 65% of African nations now have some form of traditional healer regulation, only 28% enforce mandatory referral requirements. Implementation gaps are particularly pronounced in Francophone countries, where regulatory frameworks remain weak despite high traditional medicine utilization rates.

The economic dimensions of medical pluralism further complicate policy responses. A 2023 Lancet Global Health analysis estimated that Africans spend approximately $7.4 billion annually on traditional and faith-based healing services - comparable to 22% of total government health expenditure across the continent (Marten et al., 2023). This substantial informal health economy resists top-down regulation, necessitating incentive-based approaches.

Longitudinal studies of integrated care models suggest gradual but meaningful improvements in health outcomes. In districts implementing South Africa's traditional healer training program, all-cause mortality decreased by 12% over five years, with particularly strong reductions in HIV-related deaths (UNAIDS, 2023). Similarly, Kenya's faith-based facility

regulations have reduced maternal mortality ratios in registered prayer camps from 342 to 274 per 100,000 live births since 2020 (KNBS, 2023).

The current healthcare landscape necessitates the application of medical anthropology frameworks to critically examine emergent health cultures shaped by political, economic, and social forces. Janes and Corbett's (2021) concept of *structural medical pluralism* provides a valuable lens for analyzing how health systems evolve in contexts of instability, particularly where donor withdrawal, religious extremism, and digitalization intersect. Structural medical pluralism highlights how healthcare access is stratified by power dynamics, where the retreat of state and international health actors creates *therapeutic vacuums* increasingly filled by non-state entities, including faith-based organizations, traditional healers, and private providers (Janes & Corbett, 2021). This phenomenon is evident in settings such as post-Ebola West Africa, where reductions in foreign aid led to fragmented care ecosystems, with informal and religious actors stepping in to meet unmet needs (Abramowitz, 2017).

Religious extremism further complicates healthcare delivery by weaponizing medical access as ideological leverage. In conflict zones such as Northern Nigeria and Somalia, militant groups have manipulated health services to enforce compliance, restrict women's healthcare, and marginalize secular providers (Pfeiffer, 2022). Such dynamics underscore the need for policy frameworks that address health systems not merely as technical structures but as contested sociopolitical spaces. The African Union's (2023) *Guidelines on Governing Religious Health Providers* represent a critical step toward regulating faith-based healthcare actors, though implementation remains inconsistent across member states due to varying institutional capacities and political will (AU Health Directorate, 2023).

Digitalization introduces another layer of complexity, simultaneously enabling the rapid spread of health misinformation while also facilitating innovative care delivery. In regions with weak health infrastructure, mobile health (mHealth) platforms have expanded access to remote consultations and disease surveillance (Livingston, 2020). However, the same digital ecosystems propagate vaccine hesitancy and unverified treatments, as seen during the COVID-19 pandemic (Ratzan et al., 2021). Effective policy responses must therefore integrate anthropological insights into community health behaviors, moving beyond conventional health system strengthening to engage with these multidimensional determinants. A holistic approach—combining regulatory oversight, community engagement, and adaptive digital governance—is essential to mitigate structural vulnerabilities in global health systems.

FINDINGS & DISCUSSION

The global rise of populist conservatism, particularly within major donor nations, has precipitated significant shifts in international trade policies, foreign aid allocations, and healthcare financing mechanisms, with profound implications for Africa's healthcare systems. The Trump administration's imposition of tariffs and its subsequent trade war with China disrupted global supply chains, compelling China to strengthen its economic engagements with Africa as an alternative market. This shift has led to increased Chinese investments in African infrastructure and healthcare, particularly through initiatives such as the Belt and Road Initiative (Sun, 2019;

Brautigam, 2020). However, while these investments have provided short-term relief in terms of medical equipment and pharmaceutical imports, they have also reinforced Africa's dependency on foreign-manufactured healthcare products rather than fostering local industrial capacity (Mohan, 2022).

Concurrently, the retrenchment of U.S. foreign aid under populist conservative leadership has further strained African healthcare systems. Proposed cuts to critical programs such as the President's Emergency Plan for AIDS Relief (PEPFAR) and the Global Fund have left many African nations grappling with funding shortfalls in HIV/AIDS, malaria, and maternal health programs (Kates et al., 2018; Youde, 2020). These reductions have necessitated a search for alternative financing mechanisms, including increased engagement with Chinese development aid, private sector investments, and regional financial institutions such as the African Export-Import Bank (Afreximbank, 2021).

The ideological emphasis on deregulation and privatization, hallmarks of populist conservatism, has also influenced healthcare policy reforms across Africa. Some governments have adopted market-driven healthcare models in an effort to attract private investment and improve efficiency. While this has led to the expansion of private hospital networks and diagnostic services—exemplified by entities such as Mediclinic and Lancet Labs—it has also exacerbated healthcare inequities by reducing public oversight and making essential services less affordable for low-income populations (Marten et al., 2021; McPake & Hanson, 2021). Furthermore, the erosion of public sector healthcare has accelerated the brain drain of medical professionals, as underfunded public systems fail to offer competitive wages, pushing skilled workers to seek employment abroad (WHO, 2022).

Infrastructure deficiencies, particularly in electricity and digital connectivity, continue to impede the modernization of healthcare delivery in Africa. Only 28% of sub-Saharan hospitals have reliable electricity, severely limiting the adoption of advanced medical technologies and telemedicine solutions (IEA, 2021). Internet penetration remains low at 36%, compared to a global average of 65%, further restricting the potential of digital health innovations (ITU, 2022). The decline in international aid for infrastructure development, exacerbated by populist policies in donor nations, has compounded these challenges, leaving African governments to seek alternative financing through public-private partnerships and domestic resource mobilization (GSMA, 2021).

Security concerns, including the rise of religious extremism and regional conflicts, further destabilize healthcare systems in vulnerable regions. The reduction of U.S. security assistance, such as budget cuts to AFRICOM, has weakened counterterrorism efforts in the Sahel and the Horn of Africa, exacerbating healthcare disruptions in conflict zones (Parker, 2020). Groups such as Boko Haram and Al-Shabaab have directly targeted medical facilities, further straining already fragile health systems (ACSS, 2022).

The research by Ehiobuche and Nkem (2024) presents a rigorous examination of the impact of populist conservatism on Africa's healthcare systems, revealing significant structural vulnerabilities and adaptive strategies necessary for sustainable development. The study's critical findings can be distilled into four key thematic areas:

1. Geopolitical Shifts and the Erosion of Traditional Aid Structures

The retrenchment of Western aid under populist conservative regimes—marked by nationalist policies and economic deregulation—has led to a 12% decline in global health funding to Africa since 2016 (IHME, 2023). This reduction mirrors structural adjustment-era austerity but differs in its coupling with disruptive trade policies, particularly the U.S.-China trade war, which paradoxically strengthened China's dominance in African medical supply chains (UNCTAD, 2023). The study highlights that 78% of Africa's PPE imports now originate from China, creating new dependencies even as traditional aid diminishes. This shift underscores the fragility of Africa's healthcare financing, which remains heavily reliant on external actors, leaving nations vulnerable to geopolitical realignments.

2. Market-Driven Reforms and the Privatization Paradox

Populist conservatism's ideological emphasis on deregulation has accelerated healthcare privatization across Africa, with mixed consequences. While private-sector investments (e.g., Mediclinic, Lancet Labs) have expanded diagnostic and tertiary care access, they have also exacerbated health inequities, pricing out low-income populations (Marten et al., 2021). The study notes that sudden aid withdrawals correlate with a 23% increase in maternal mortality in aid-dependent nations (GBD Collaborators, 2022), illustrating the dangers of unmitigated privatization. Furthermore, brain drain remains a critical issue, with Africa losing $2 billion annually due to medical emigration (WHO AFRO, 2023). These findings suggest that market-driven reforms, while potentially improving efficiency, risk deepening disparities without robust public safeguards.

3. The Rise of Medical Populism and Faith-Based Healthcare

A striking finding is the proliferation of faith-based and traditional healing systems in response to public healthcare erosion. In Ghana, 23% of chronic disease patients rely exclusively on Pentecostal prayer camps, leading to a 37% increase in diabetic complications (Aikins & Ofori-Atta, 2023). Similarly, 15% of South African HIV patients interrupt antiretroviral therapy (ART) after attending prophetic healing services (Goudge et al., 2022). These trends reflect a broader "structural medical pluralism" (Janes & Corbett, 2021), where the retreat of state healthcare creates therapeutic vacuums filled by unregulated providers. The study highlights policy responses, such as Kenya's Faith-Based Health Guidelines, which reduced maternal mortality in registered prayer camps by 20% (Kenya MOH, 2023), demonstrating that regulated integration—rather than suppression—of alternative systems may improve outcomes.

4. Strategic Pathways for Resilience and Self-Sufficiency

The study proposes four resilience strategies to mitigate external shocks:

- South-South health diplomacy: Strengthening partnerships with China and regional blocs to diversify funding and supply chains.

- Local pharmaceutical production: Initiatives like Rwanda's mRNA vaccine partnership with BioNTech (AfDB, 2022) and AfCFTA's potential to boost intra-African medical trade.
- Digital health leapfrogging: Expanding telemedicine and IoT-enabled diagnostics to compensate for infrastructure gaps (only 28% of sub-Saharan hospitals have reliable electricity, IEA, 2021).
- Diaspora engagement and retention policies: Competitive wages and medical tourism incentives to curb brain drain.

POLICY IMPLICATIONS AND FUTURE DIRECTIONS

The research underscores the need for decolonial global health governance, where African nations assert agency in health financing and regulation. While populist conservatism disrupts traditional aid, it also compels self-reliance, presenting opportunities for local manufacturing, digital innovation, and regional collaboration. However, without equity-centered policies, privatization and deregulation risk entrenching a two-tiered healthcare system—one for the affluent and another for the marginalized.

STRATEGIC MODELS FOR MITIGATING RISKS AND LEVERAGING OPPORTUNITIES

In response to these challenges, African healthcare systems must adopt innovative strategies to ensure sustainability and resilience. One critical area of focus is the expansion of local pharmaceutical and medical device manufacturing. The COVID-19 pandemic exposed Africa's over-reliance on imported medicines, with approximately 90% of pharmaceuticals sourced externally (AU, 2021). However, recent initiatives in Rwanda, South Africa, and Nigeria—such as the partnership between Rwanda and BioNTech for mRNA vaccine production—demonstrate the potential for regional self-sufficiency (AfDB, 2022). The African Continental Free Trade Area (AfCFTA) presents a significant opportunity to facilitate intra-African trade in medical supplies, reducing dependency on foreign markets (UNECA, 2023).

Addressing the brain drain of healthcare professionals requires comprehensive retention strategies. Competitive wage structures, performance-based financing models—such as those implemented in Rwanda—and the integration of telemedicine to alleviate clinical burdens are essential measures (WHO, 2023). Additionally, the development of medical tourism hubs in countries such as South Africa and Tunisia could incentivize specialists to remain on the continent by creating high-value clinical opportunities (PwC, 2022).

Alternative financing mechanisms, including venture capital and public-private partnerships (PPPs), are increasingly critical in bridging funding gaps. The African healthtech sector attracted $1.3 billion in venture capital in 2022, signaling growing investor confidence in digital health solutions (Briter Bridges, 2023). PPPs in healthcare infrastructure, such as Nigeria's Lagos University Teaching Hospital modernization project, demonstrate how collaborative financing can enhance service delivery (World Bank, 2022).

STRATEGIC FRAMEWORK FOR AFRICAN HEALTHCARE LEADERS

To navigate the evolving healthcare landscape shaped by populist conservatism, African policymakers and healthcare leaders must implement a multi-pronged strategic framework. First, diversification of funding sources is imperative. Overreliance on any single donor nation or bloc increases vulnerability to geopolitical shifts. Engaging a broader array of partners, including China, the European Union, and private investors, can mitigate risks associated with fluctuating aid flows.

Challenge	Strategic Response	Example
Declining U.S. aid	Diversify funding (China, AfCFTA, VC)	Afreximbank health investments
Brain drain	Improve wages, telemedicine	Rwanda's health worker retention
Poor infrastructure	PPPs for electricity/IoT	Nigeria's solar-powered hospitals
Local drug manufacturing	Incentivize pharma startups	Rwanda-BioNTech vaccine deal

Second, accelerating local pharmaceutical and medical device production through policy incentives and regional trade agreements under AfCFTA will reduce import dependency and enhance pandemic preparedness. Third, investments in digital health infrastructure, including telemedicine and IoT-enabled diagnostics, can compensate for gaps in physical healthcare access, particularly in rural and underserved regions.

Lastly, talent retention must be prioritized through competitive remuneration, continuous professional development, and the strategic positioning of Africa as a destination for medical tourism. Finally, alternative financing models, including venture capital, blended finance, and PPPs, should be scaled to ensure sustainable healthcare financing in an era of declining traditional aid.

CONCLUSION

The ideological and policy shifts driven by populist conservatism in donor nations present both challenges and opportunities for Africa's healthcare sector. While reductions in foreign aid and the push toward privatization threaten healthcare equity and accessibility, they also compel African nations to pursue greater self-reliance through local manufacturing, digital innovation, and intra-regional collaboration. By adopting a strategic, adaptive framework, African healthcare leaders can mitigate systemic risks while capitalizing on emerging opportunities to build resilient, equitable, and sustainable health systems. This analysis underscores the necessity for proactive policy formulation and strategic investments to safeguard Africa's healthcare future amid shifting global dynamics.

The rise of populist conservatism, particularly under Trump-era policies, has undeniably destabilized Africa's healthcare systems through aid cuts, trade disruptions, and ideological privatization. Yet, this crisis has also catalyzed an unprecedented opportunity for African nations to redefine their healthcare futures with bold self-reliance. The erosion of U.S. leadership in global health—marked by PEPFAR cuts and a dismissive stance toward African partnerships—has accelerated a strategic pivot toward the BRICS bloc, with China, India, and Russia filling critical gaps in infrastructure and medical supply chains. While this shift mitigates immediate shortfalls, it demands caution: Africa must avoid exchanging one dependency for another by prioritizing local manufacturing, digital leapfrogging, and intracontinental collaboration under AfCFTA**.**

The study's findings reveal a paradox: market-driven reforms have expanded private healthcare access but deepened inequities, while the retreat of public health aid has fueled the rise of unregulated faith-based healing, with dire consequences for evidence-based care. However, innovative policy responses—such as Kenya's regulated integration of prayer camps and Nigeria's "Imams Against Polio" campaign—demonstrate that culturally adaptive governance can bridge gaps without sacrificing scientific rigor. The path forward must balance privatization with robust public safeguards, ensuring that efficiency gains do not come at the cost of universal health coverage.

Critically, the U.S.'s retreat from multilateralism under populist conservatism has eroded trust and ceded influence in Africa, pushing nations toward alternative alliances. Yet Africa's resilience is evident in homegrown solutions: Rwanda's mRNA vaccine production, Nigeria's solar-powered hospitals, and South Africa's medical tourism hubs exemplify the continent's capacity for innovation. To sustain this momentum, African leaders must leverage diaspora expertise, attract venture capital for health-tech, and enforce equity-centered policies to prevent a two-tiered system.

The lesson is clear: while external ideological shifts pose challenges, they also compel Africa to reclaim agency in global health governance**.** By diversifying partnerships, investing in local capacity, and regulating emergent healthcare ecosystems, the continent can transform vulnerability into sustainable resilience. However, the U.S. must recognize that its current trajectory—marked by neglect and transactional diplomacy—risks permanent alienation. Without course correction, the next decade may see Africa's strategic alliances firmly anchored in the Global South, leaving Western powers on the sidelines of the continent's healthcare transformation. The time for proactive, collaborative engagement is now—before the door closes.

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