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AI INTEGRATION IN BUSINESS ANALYTICS: A REVIEW OF USA AND AFRICAN TRENDS

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ABSTRACT

The relentless evolution of Artificial Intelligence (AI) has significantly transformed the landscape of business analytics, offering unparalleled opportunities for organizations to enhance decision-making processes and gain a competitive edge. This study provides a comprehensive review of AI integration in business analytics, focusing on the distinctive trends observed in both the United States (USA) and African business ecosystems. In the United States, a technologically advanced market, the adoption of AI in business analytics has witnessed remarkable strides. Corporations across various sectors leverage AI-driven tools and algorithms to analyze vast datasets, extract

meaningful insights, and optimize strategic decision-making. The USA's emphasis on innovation and robust technological infrastructure has propelled AI integration as a cornerstone of modern business strategies. Contrastingly, the African continent is experiencing a unique trajectory in AI adoption within the realm of business analytics. Despite facing challenges related to infrastructure and resource limitations, African businesses are increasingly recognizing the transformative potential of AI. Initiatives promoting AI education and collaboration with global tech partners have contributed to a growing awareness and implementation of AI in business analytics across various African industries. This review explores commonalities and divergences in the trends observed between the USA and Africa, highlighting the factors influencing AI integration in each region. Factors such as regulatory frameworks, cultural nuances, and economic landscapes play a pivotal role in shaping the AI landscape in both contexts. By understanding these trends, businesses can tailor their AI strategies to align with regional dynamics, fostering sustainable growth and innovation. This study provides valuable insights into the evolving landscape of AI integration in business analytics, offering a comparative analysis of trends in the USA and Africa. As organizations navigate the complexities of adopting AI, acknowledging regional variations becomes crucial for developing effective and context-specific strategies.

Keywords: AI, Business Analytics, USA, Africa, Business, Innovation.

INTRODUCTION

The integration of Artificial Intelligence (AI) into business analytics has indeed become a transformative force, impacting global productivity, healthcare, retail, and climate change adaptation (Vinueza et al., 2020; Mbonyinshuti et al., 2021). AI technologies, such as machine learning and predictive modeling, have evolved from novelties to strategic imperatives, enabling organizations to leverage vast datasets for actionable insights (Mbonyinshuti et al., 2021; Anamu et al., 2023; Sanni et al., 2024). In the retail sector, AI applications have led to value creation through automation, hyper-personalization, complementarity, and innovation (Cao, 2021). Furthermore, AI has influenced the global market, shaping business contexts and strategic objectives (Soni et al., 2020). Small and medium-sized enterprises are also implementing AI-based business models to enhance their competitiveness in the global market (Garrel & Jahn, 2021). In the context of Africa, AI deployments present both benefits and challenges, necessitating comprehensive policy dimensions to harness its potential effectively (Rutenberg et al., 2021; Gwagwa et al., 2020). Additionally, AI is playing a crucial role in climate change adaptation in Africa, where its impact is anticipated to be significant (Rutenberg et al., 2021). The impact of AI extends beyond business analytics, encompassing healthcare, retail, climate change adaptation, and the global market, thereby shaping strategic imperatives and policy dimensions.

The United States stands at the forefront of technological innovation, with its business landscape witnessing a rapid and widespread adoption of AI in various sectors. Understanding the dynamics of AI adoption in this technologically advanced market is crucial for discerning the trajectory of global business analytics. Contrasting the USA, the African continent presents a distinctive landscape marked by diversity in economic development, infrastructure, and cultural contexts.

Examining the African context is paramount for fostering inclusive and sustainable AI strategies globally.

By juxtaposing the trends in AI integration between the USA and African business landscapes, this review aims to identify commonalities and disparities. Factors such as regulatory environments, economic landscapes, and cultural influences play a pivotal role in shaping the trajectory of AI adoption. Recognizing these nuances will contribute to a holistic understanding of the global dynamics of AI integration in business analytics.

AI Integration Trends in the United States

The United States has played a pioneering role in the development and adoption of Artificial Intelligence (AI) technologies, with a rich historical context dating back to the mid-20th century. Key milestones include the establishment of AI research labs, such as the Stanford Artificial Intelligence Lab (SAIL) in the 1960s. The evolution of AI continued through various stages, marked by breakthroughs in machine learning, natural language processing, and neural networks.

The 21st century has indeed seen a remarkable surge in AI research and development, leading to the deployment of practical applications across various industries (Smolensky et al., 2022). The United States has emerged as a global leader in AI adoption, with widespread integration into business operations, driven by the need for enhanced efficiency, innovation, and competitiveness (Smolensky et al., 2022). Notably, the finance and banking sector has witnessed a profound impact from AI integration, with AI algorithms being employed for fraud detection, risk assessment, and personalized customer experiences (Hamamoto, 2021). Similarly, the healthcare sector has experienced transformative changes through AI, improving patient outcomes and operational efficiency (Hamamoto, 2021). AI-powered diagnostic tools, predictive analytics, and personalized medicine have become integral components of modern healthcare (Hamamoto, 2021). The COVID-19 pandemic further accelerated the adoption of AI in healthcare for tasks like contact tracing, vaccine development, and predicting disease spread (Hamamoto, 2021).

In the context of education, the development of 21st-century skills has become a focal point, with a need to enhance teaching skills to effectively nurture 21st-century learners (Alzahrani & Nor, 2022). Furthermore, the integration of AI into education has been highlighted as a means to develop 21st-century skills among students (Farisi, 2016). The role of AI in fostering critical thinking and problem-solving skills has been emphasized as essential for handling challenging situations and obstacles in careers (Szabo et al., 2020).

In the financial sector, AI has been instrumental in driving innovation, with research identifying the key drivers of adoption and the moderating effect of personal and sociodemographic variables (Belanche et al., 2019). Additionally, AI has been recognized as a catalyst for the innovative financial process in the banking sector, transforming traditional processes to accelerate market share (Rabbani et al., 2023). The adoption of AI in the financial sector has been associated with opportunities and challenges, particularly during the COVID-19 outbreak, where AI has the potential to mitigate the harmful effects of the pandemic (Farahani & Esfahani, 2022). Overall, the 21st century has witnessed the pervasive integration of AI across industries, revolutionizing

business processes, education, healthcare, and finance, and presenting both opportunities and challenges for various sectors.

The manufacturing industry in the United States has embraced AI to streamline production processes, reduce downtime, and enhance overall efficiency. AI-driven predictive maintenance helps prevent equipment failures, while robotic process automation (RPA) is employed for repetitive tasks. Smart factories leverage AI for quality control, supply chain optimization, and demand forecasting. The integration of AI in manufacturing not only improves operational efficiency but also facilitates the transition towards Industry 4.0. Unsurprisingly, the technology sector itself has been at the forefront of AI integration. Companies in Silicon Valley and beyond leverage AI to enhance their products and services. From virtual assistants and recommendation systems to autonomous vehicles and smart devices, AI is deeply embedded in technological innovations. The development of advanced AI models, open-source frameworks, and cloud-based AI services further propels the technological landscape forward.

The regulatory environment in the United States has played a pivotal role in shaping AI integration. While there is no comprehensive federal AI regulation, certain sectors, such as finance and healthcare, are subject to industry-specific regulations. Ongoing discussions on AI ethics, bias mitigation, and responsible AI practices are influencing the regulatory landscape. The evolving nature of regulations poses both opportunities and challenges for businesses navigating the AI space. The advanced technological infrastructure in the United States has been a catalyst for AI adoption. High-speed internet connectivity, cloud computing services, and the availability of massive computing power have created an ecosystem conducive to the development and deployment of AI applications. The integration of AI is facilitated by the seamless connectivity and accessibility of resources in the digital landscape. The robust investment landscape in the U.S. has fueled the growth of AI startups and research initiatives. Venture capital funding for AI-focused companies has seen substantial increases, fostering innovation and driving the development of cutting-edge technologies. Established corporations are also allocating significant budgets to AI research and development, signaling a commitment to staying at the forefront of technological advancements.

The demand for AI talent has led to a surge in educational initiatives aimed at developing skilled professionals. Universities and online platforms offer specialized AI courses and programs, catering to the growing need for AI expertise. Tech companies collaborate with academic institutions to bridge the skill gap and promote diversity in AI. These initiatives contribute to the cultivation of a workforce equipped to drive AI innovation across sectors.

In conclusion, the United States exemplifies a dynamic landscape where AI integration has become deeply ingrained in various sectors. From historical milestones to the current state of implementation, AI continues to reshape business processes, drive innovation, and redefine the future of work across industries. The intersection of regulatory dynamics, technological infrastructure, investments, and educational initiatives creates an environment conducive to sustained growth and evolution in AI integration within the U.S. business landscape.

Success Stories and Case Studies

The practical implementation of artificial intelligence (AI) technologies in medicine has been a focus in the United States, particularly in oncology and precision medicine. Over 60 AI-equipped medical devices have been approved by the Food and Drug Administration (FDA) in the United States, indicating the active introduction of AI technology in the medical field. Additionally, AI and machine learning have been applied at the point of care, showing promise in improving healthcare delivery and patient outcomes. The nursing profession has also recognized the priorities and opportunities presented by AI, with a focus on integrating AI into nursing practice to enhance patient care and operational efficiency.

Quality improvement of clinical AI is another area of focus, emphasizing the continual monitoring and updating of AI algorithms in healthcare to ensure long-term safety and effectiveness of AI-driven interventions, aligning with the goal of improving patient safety outcomes through AI integration. Furthermore, a systematic literature review has highlighted the role of AI in patient safety outcomes, emphasizing the need for AI technologies to contribute to improved patient safety in healthcare settings (Choudhury & Asan, 2020).

These success stories and case studies demonstrate the diverse applications of AI in the United States, ranging from precision medicine to point-of-care interventions and nursing practice. The integration of AI has shown potential in addressing clinical-level patient safety outcomes, enhancing operational workflows, and contributing to the continual improvement of healthcare delivery. As AI technologies continue to evolve, their integration into various domains presents opportunities for further advancements and positive outcomes in the United States.

Artificial Intelligence (AI) integration in the United States has yielded remarkable success stories across diverse industries, showcasing the transformative impact of cutting-edge technologies on business performance and decision-making processes. From optimizing operational efficiency to enhancing customer experiences, the following examples underscore the tangible benefits derived from successful AI implementation. JPMorgan Chase, a global financial institution, has successfully implemented AI in fraud detection, revolutionizing its security protocols. The bank employs machine learning algorithms that continuously analyze transaction patterns, identify anomalies, and detect potential fraudulent activities in real-time. This AI-driven approach not only enhances security but also significantly reduces false positives, minimizing disruptions for legitimate transactions. The implementation of AI in fraud detection has resulted in substantial cost savings for JPMorgan Chase by preventing fraudulent transactions and reducing the need for manual intervention. The real-time analysis allows the bank to respond swiftly to potential threats, safeguarding customer assets and maintaining the trust of its clientele. Additionally, the accuracy of AI models has improved decision-making, providing the bank with a competitive edge in risk management.

IBM Watson Health has made significant strides in AI integration within the healthcare sector, particularly in the field of oncology. Watson for Oncology is an AI-powered platform that assists oncologists in making evidence-based treatment decisions. By analyzing vast datasets of medical literature, clinical trial data, and patient records, Watson for Oncology provides personalized

treatment recommendations, taking into account individual patient profiles. The implementation of AI in oncology has not only improved the speed and accuracy of treatment decisions but has also contributed to more effective patient outcomes. Healthcare providers leveraging Watson for Oncology report enhanced decision support, resulting in more targeted therapies and improved patient care. The platform's ability to process and analyze vast amounts of medical information allows oncologists to stay abreast of the latest research and treatment options, thereby influencing positive patient outcomes.

General Electric (GE) has successfully integrated AI into its manufacturing processes, particularly in the realm of predictive maintenance. Through the use of machine learning algorithms, GE's industrial equipment, such as turbines and generators, can predict potential failures before they occur. By analyzing historical performance data and real-time sensor information, AI models can identify patterns indicative of impending equipment issues, allowing for proactive maintenance. The adoption of AI-driven predictive maintenance has led to significant cost savings for General Electric by minimizing unplanned downtime and reducing maintenance costs. The ability to predict equipment failures in advance allows for more strategic scheduling of maintenance activities, optimizing operational efficiency. This not only improves the reliability of industrial equipment but also contributes to increased overall productivity and a positive impact on the bottom line.

Google's AI-powered language translation in Google Translate represents a widely used and successful application of AI in the technology sector. Leveraging neural machine translation, Google Translate has achieved remarkable accuracy in translating text between languages. The system continuously learns from vast multilingual datasets, refining its language understanding and translation capabilities over time.

The success of Google's AI-powered language translation has had a profound impact on business performance, particularly in the global technology and communication sectors. Businesses and individuals alike benefit from more accurate and contextually relevant translations, facilitating cross-cultural communication and collaboration. This technology has not only improved user experiences but has also opened up new markets for businesses seeking to communicate effectively with a diverse global audience.

The success stories and case studies illustrate the tangible benefits and transformative impact of AI integration in the United States. From enhancing security in finance to improving patient outcomes in healthcare, these examples underscore the versatility and effectiveness of AI across various industries. The impact on business performance and decision-making is evident, showcasing how AI has become a cornerstone for innovation and competitive advantage in the dynamic landscape of the U.S. business ecosystem.

The successful integration of AI in various healthcare domains in the United States underscores the potential of AI to drive innovation, improve patient care, and contribute to the advancement of healthcare practices.

AI Integration Trends in African Business Ecosystems

The adoption of Artificial Intelligence (AI) in African business ecosystems is influenced by various factors and exhibits regional variations. In North Africa, government initiatives and policies play a significant role in promoting AI integration, while in Sub-Saharan Africa, economic considerations and infrastructure limitations are key influencers. The key industries where AI integration is prominent include agriculture, telecommunications, and healthcare. However, challenges such as knowledge and financial resource constraints for small and medium-sized enterprises (SMEs) impact AI adoption. Additionally, cultural factors and societal acceptance influence the integration of AI in African business ecosystems.

In North Africa, government initiatives and policies have been pivotal in promoting AI integration. These initiatives have aimed to optimize the use of AI for the benefit of the population (Thaldar & Naidoo, 2021). Conversely, in Sub-Saharan Africa, economic considerations and infrastructure limitations have been influential factors. Foreign ownership predominates in Sub-Saharan African economies that have sound political stability and embrace effective regulations (Appiah-Kubi et al., 2020). The agriculture industry in Africa has seen AI adoption influenced by factors such as the farmer's experience, influence of neighbors, and management practices (Mwanga et al., 2018). In the telecommunications industry, the deployment of AI is less local economy-focused and more service efficiency and quality-centered (Yigitcanlar et al., 2022). In healthcare, AI integration faces challenges such as unequal performance in different population groups due to underrepresentation in the training data (Dias & Torkamani, 2019).

The challenges of AI integration in African business ecosystems are further compounded by factors such as the digital divide, which primarily concentrates AI applications in high-income countries, undermining collective security and exacerbating health inequities (Gulumbe et al., 2023). Additionally, the lack of capacity, absence of regulatory frameworks, and climate change pose significant challenges to the management of alien invasive species in Africa (Sileshi et al., 2019). Furthermore, the involvement of governmental and intergovernmental organizations, the business community, technological organizations, scientists, engineers, civil society, and trade unions is crucial in actively participating in discussions on how to put AI and devices based on it at the service of the entire society (Merenkov et al., 2021).

In conclusion, the adoption of AI in African business ecosystems is influenced by a multitude of factors including government initiatives, economic considerations, infrastructure limitations, and cultural factors. While government policies play a significant role in North Africa, economic considerations and infrastructure limitations are more prominent in Sub-Saharan Africa. The agriculture, telecommunications, and healthcare industries are key sectors where AI integration is observed, with each facing its own set of challenges. The challenges and opportunities of AI integration in African business ecosystems are complex and multifaceted, requiring a comprehensive understanding of the regional variations and industry-specific dynamics.

Case Studies and Initiatives

Artificial Intelligence (AI) projects in African countries have been gaining momentum, particularly in the healthcare sector. Initiatives integrating AI into health informatics for enhanced public

health in Africa have been extensively reviewed, emphasizing the opportunities and challenges associated with this integration (Balogun, 2023). Furthermore, the role of AI in health and pandemic preparedness in the African context has been highlighted, emphasizing the need for data protection, privacy protocols, and ethical guidelines for AI deployment (Ibeneme et al., 2021). Additionally, AI has been leveraged for cancer-related outcome prediction and refining healthcare delivery in rural Africa through digital integrative frameworks and telehealth (Adeoye et al., 2022).

Moreover, AI's role extends beyond healthcare, with initiatives focusing on the electrification of Africa, aiming to address the challenges associated with electrification initiatives across the continent (C.M, 2023). Furthermore, AI-based solutions have been explored to combat malaria fatalities in Africa, with a focus on personalized interventions to improve malaria control outcomes and advance public health in the region (Ogbaga, 2023). Additionally, AI integration has been proposed to advance studies on infectious diseases such as Chikungunya virus in Africa, aiming to enhance epidemiological surveillance, vector control, clinical management, and drug discovery within a One Health framework (Abdulsalam, 2023).

In the context of education, efforts have been made to promote the ethics of AI in Africa through the introduction of ethics courses and capacity building for AI development actors, aiming to integrate African ethical values and foster responsible AI development (Kiemde & Kora, 2021). These initiatives collectively demonstrate the diverse applications of AI across various sectors in African countries, emphasizing the potential for AI to address critical challenges and contribute to sustainable development in the region.

Collaborations with international organizations and tech partners have played a crucial role in advancing AI initiatives in African countries. For instance, a fully-automated AI/ML virtual screening cascade has been implemented at a drug discovery center in Africa, highlighting collaboration with the Ersilia Open Source Initiative (EOSI) to disseminate AI/ML methodologies for urgent biomedical needs in low- and middle-income countries (LMICs) (Turon et al., 2022). Such collaborations underscore the importance of international partnerships in leveraging AI for addressing healthcare and biomedical challenges specific to African populations.

In conclusion, AI projects in African countries have demonstrated significant potential in addressing various societal challenges, particularly in healthcare, electrification, and infectious disease management. These initiatives have been supported by collaborations with international organizations and tech partners, emphasizing the collective effort to harness AI for sustainable development in Africa.

Comparative Analysis

In the adoption of artificial intelligence (AI), commonalities and disparities exist across different industries and regions. Shared challenges in AI adoption, such as regulatory differences, cultural influences, and economic variations, are evident (Kar et al., 2021; Misra et al., 2020; Sun & Medaglia, 2019). For instance, Misra et al. (2020) highlighted the regulatory challenges of AI adoption, emphasizing differences in policy priorities among countries like Germany, India, Japan, and Canada (Misra et al., 2020). Similarly, Sun & Medaglia (2019) discussed challenges in the

public healthcare sector, indicating the need for addressing perceived challenges in e-government areas (Sun & Medaglia, 2019). These challenges are not limited to a specific industry or region, indicating common hurdles in AI adoption.

Moreover, similarities in industry-specific trends are observed, such as the need for trust in AI systems and the value creation logics in retail (Beduè & Fritzsche, 2021; Cao, 2021; . Cao, 2021; identified various AI applications and value creation logics in the retail sector, emphasizing the importance of trust and innovation in AI adoption (Cao, 2021). Additionally, Kanti et al. (2022) focused on AI adoption in supply chain risk management, indicating the relevance of scale development and validation, which is a common trend in industry-specific AI adoption (Kanti et al., 2022).

On the other hand, disparities and unique factors in AI adoption are evident, including regulatory differences, cultural influences, and economic variations (Kar et al., 2021; Misra et al., 2020; Gualdi & Cordella, 2021; . Gualdi & Cordella, 2021; emphasized the question of accountability in AI decision-making, highlighting the disparities in public sector AI adoption and the need for a new approach to accountability (Gualdi & Cordella, 2021). Furthermore, Regona et al. (2022) discussed the opportunities and challenges of AI adoption in the construction industry, emphasizing the fragmented nature of the industry as a unique factor influencing AI adoption (Regona et al., 2022).

In conclusion, the comparative analysis of AI adoption reveals commonalities in challenges and industry-specific trends, while disparities exist in regulatory, cultural, and economic factors. Businesses can learn transferable insights from addressing trust, regulatory differences, and industry-specific challenges, while strategies for overcoming region-specific challenges should consider the unique factors influencing AI adoption.

Future Outlook

Predictions for AI integration trends in both the USA and Africa are influenced by various factors such as socio-cultural peculiarities, structural reforms, and governance policies (Wakunuma et al., 2022). In Africa, responsible AI governance is crucial for the continent to fully tap into the benefits of AI, particularly in contributing to the attainment of Sustainable Development Goals (SDGs) (Wakunuma et al., 2022). However, this requires structural reforms that recognize the socio-cultural peculiarities of the continent. Additionally, the deployment of AI in Africa needs to consider gender equity, cultural and linguistic diversity, and labor market shifts to build socio-economic inclusion (Gwagwa et al., 2020). In the USA, the future trends in AI integration are expected to focus on machine learning based on data obtained from the latest diagnostic modalities, including genomics and state-of-the-art imaging methods to predict treatment responses, especially in areas where there is a shortage of pathologists (Tran et al., 2019; Wang et al., 2021).

Potential areas for collaboration and knowledge exchange in AI integration include the introduction of ethics courses in academic training and capacity building of AI development actors through research on responsible artificial intelligence in Africa (Kiemde & Kora, 2021). This would facilitate the integration of African ethical values and the development of responsible

artificial intelligence through the diversification of artificial intelligence teams. Furthermore, it is important to examine the roles of international communities in bridging the technological gaps in Africa by adopting a problem-driven approach where local needs and problems are contextualized into AI policy formulation (Arakpogun et al., 2021). In the USA, collaboration and knowledge exchange in AI integration can be enhanced through interdisciplinary project-driven courses that integrate different AI capabilities into cohesive systems (Eaton, 2017).

Anticipated challenges and opportunities in AI integration include the need for sensitivity to how the concept of individual rights is interpreted in Africa and how AI ethics regulations are formulated (Ruttkamp-Bloem, 2023). This highlights the importance of considering the socio-cultural context in the development of AI ethics regulations. Additionally, challenges facing the development of AI in Africa include workforce development and the need for structural reforms to fully tap into the benefits of AI (Wakunuma et al., 2022; Kiemde & Kora, 2020). In the USA, challenges such as the shortage of pathologists and the increasing demands of insurance companies and regulatory demands impact the efficiency of AI integration in healthcare (Borgstadt et al., 2022; Ahmad et al., 2021).

RECOMMENDATION AND CONCLUSION

In this comprehensive review of AI integration trends in business analytics, we explored the contrasting landscapes of the United States and African business ecosystems. In the USA, we observed a mature and thriving AI adoption across sectors, with success stories in finance, healthcare, manufacturing, and technology. The evolution of AI in the U.S. is characterized by a robust regulatory environment, advanced technological infrastructure, substantial investments, and a focused approach to skill development.

On the African continent, AI adoption is in its nascent stages, marked by emerging trends, governmental initiatives, and unique challenges. North African nations showcase more advanced adoption compared to Sub-Saharan Africa, with a focus on addressing socio-economic challenges. Key industries like agriculture, telecommunications, and healthcare are witnessing transformative changes through AI integration, propelled by economic considerations, infrastructure limitations, and cultural factors.

For businesses, the implications of these findings are profound. In the USA, the mature AI landscape necessitates a continuous commitment to innovation and agility. Companies should prioritize investments in AI technologies, foster a culture of data-driven decision-making, and collaborate with industry peers and educational institutions to address the growing demand for AI talent.

In African business ecosystems, the findings underscore the need for strategic investments and collaborative efforts. Policymakers should focus on creating an enabling environment by formulating and implementing supportive regulations, fostering infrastructure development, and promoting AI education. Businesses should seize the opportunity to leverage AI for sustainable growth, addressing local challenges and contributing to global innovation.

The juxtaposition of AI trends in the USA and Africa reveals not only differences but also opportunities for collaboration. Global collaboration is essential for creating a harmonized AI

landscape that benefits businesses, societies, and economies worldwide. Policymakers, businesses, and international organizations are encouraged to take the following actions; Facilitate knowledge exchange programs between technologically advanced regions and emerging markets. This can include partnerships between universities, research institutions, and businesses to share best practices, research findings, and promote collaborative projects. Launch comprehensive skill development initiatives to bridge the AI talent gap globally. This involves designing educational programs, apprenticeships, and certifications that cater to the specific needs of different regions, ensuring a diverse and skilled workforce capable of driving AI innovation. Encourage cross-border research collaborations to address global challenges. This involves fostering partnerships between research institutions and businesses to work on AI solutions that can transcend geographical boundaries and have a positive impact on diverse communities. Establish funding mechanisms and support structures for AI startups and innovators in both developed and developing regions. This will enable a more inclusive AI ecosystem, fostering innovation and addressing local challenges with globally scalable solutions. Develop and promote ethical and responsible AI guidelines that consider diverse cultural perspectives. Policymakers and industry leaders should collaborate to establish a framework that ensures the ethical use of AI technologies, protects user privacy, and promotes fairness and transparency.

In conclusion, the review of AI integration trends in the USA and African business ecosystems underscores the transformative potential of AI on a global scale. Businesses and policymakers must recognize the unique challenges and opportunities in each region, working collaboratively to build a sustainable, inclusive, and ethically sound AI landscape. By fostering global collaboration and knowledge-sharing, we can collectively harness the power of AI to address complex challenges, drive economic growth, and improve the quality of life for people around the world.

Reference

- Abdulsalam, M. (2023). Closing the gap: ai integration for advancing chikungunya virus studies in Africa. *Biosciences*, 03(04). <https://doi.org/10.55006/biolsciences.2023.3404>
- Adeoye, J., Akinshipo, A., Thomson, P., & Su, Y. (2022). Artificial intelligence-based prediction for cancer-related outcomes in africa: status and potential refinements. *Journal of Global Health*, 12. <https://doi.org/10.7189/jogh.12.03017>
- Ahmad, Z., Rahim, S., Zubair, M., & Abdul-Ghafar, J. (2021). Artificial intelligence (ai) in medicine, current applications and future role with special emphasis on its potential and promise in pathology: present and future impact, obstacles including costs and acceptance among pathologists, practical and philosophical considerations. a comprehensive review. *Diagnostic Pathology*, 16(1). <https://doi.org/10.1186/s13000-021-01085-4>
- Alzahrani, M., & Nor, F. (2022). Professional development and EFL teachers' practices in activating learners' acquisition of 21st century skills. *Problems of Education in the 21st Century*, 80(5), 652-678. <https://doi.org/10.33225/pec/22.80.652>
- Anamu, U.S., Ayodele, O.O., Olorundaisi, E., Babalola, B.J., Odetola, P.I., Ogunmefun, A., Ukoba, K., Jen, T.C., & Olubambi, P.A., 2023. Fundamental design strategies for

- advancing the development of high entropy alloys for thermo-mechanical application: A critical review. *Journal of Materials Research and Technology*.
- Angehrn, Z., Haldna, L., Zandvliet, A., Berglund, E., Zeeuw, J., Amzal, B., ... & Heckman, N. (2020). Artificial intelligence and machine learning applied at the point of care. *Frontiers in Pharmacology*, 11. <https://doi.org/10.3389/fphar.2020.00759>
- Appiah-Kubi, S., Kutin, S., Maitah, M., Chiseni, M., Phiri, J., Gebeltová, Z., ... & Malec, K. (2020). Foreign ownership in sub-saharan africa: do governance structures matter?. *Sustainability*, 12(18), 7698. <https://doi.org/10.3390/su12187698>
- Arakpogun, E., Elsahn, Z., Olan, F., & Elsahn, F. (2021). Artificial intelligence in Africa: challenges and opportunities. https://doi.org/10.1007/978-3-030-62796-6_22
- Balogun, O. (2023). Integrating ai into health informatics for enhanced public health in Africa: a comprehensive review. *International Medical Science Research Journal*, 3(3), 127-144. <https://doi.org/10.51594/imsrj.v3i3.643>
- Beduè, P., & Fritzsche, A. (2021). Can we trust AI? an empirical investigation of trust requirements and guide to successful ai adoption. *Journal of Enterprise Information Management*, 35(2), 530-549. <https://doi.org/10.1108/jeim-06-2020-0233>
- Belanche, D., Casaló, L., & Flavián, C. (2019). Artificial intelligence in fintech: understanding robo-advisors adoption among customers. *Industrial Management & Data Systems*, 119(7), 1411-1430. <https://doi.org/10.1108/imds-08-2018-0368>
- Borgstadt, J., Kalpas, E., & Pond, H. (2022). A qualitative thematic analysis of addressing the why: an artificial intelligence (ai) in healthcare symposium. *Cureus*. <https://doi.org/10.7759/cureus.23704>
- C.M, I. (2023). Role of artificial intelligence in electrification of Africa. *Engineering Science & Technology Journal*, 4(6), 456-472. <https://doi.org/10.51594/estj.v4i6.667>
- Can, Ü., & Alatas, B. (2017). Big social network data and sustainable economic development. *Sustainability*, 9(11), 2027. <https://doi.org/10.3390/su9112027>
- Cao, L. (2021). Artificial intelligence in retail: applications and value creation logics. *International Journal of Retail & Distribution Management*, 49(7), 958-976. <https://doi.org/10.1108/ijrdm-09-2020-0350>
- Choudhury, A., & Asan, O. (2020). Role of artificial intelligence in patient safety outcomes: systematic literature review. *JMIR Medical Informatics*, 8(7), e18599. <https://doi.org/10.2196/18599>
- Dias, R., & Torkamani, A. (2019). Artificial intelligence in clinical and genomic diagnostics. *Genome Medicine*, 11(1). <https://doi.org/10.1186/s13073-019-0689-8>
- Eaton, E. (2017). Teaching integrated ai through interdisciplinary project-driven courses. *AI Magazine*, 38(2), 13-21. <https://doi.org/10.1609/aimag.v38i2.2730>
- Farahani, M., & Esfahani, A. (2022). Opportunities and challenges of applying artificial intelligence in the financial sectors and startups during the coronavirus outbreak. *International Journal of Innovation in Management Economics and Social Sciences*, 2(4), 33-55. <https://doi.org/10.52547/ijimes.2.4.33>

- Farisi, M. (2016). Developing the 21st-century social studies skills through technology integration. *Turkish Online Journal of Distance Education*, 0(0). <https://doi.org/10.17718/tojde.47374>
- Feng, J., Phillips, R., Malenica, I., Bishara, A., Hubbard, A., Celi, L., ... & Pirracchio, R. (2022). Clinical artificial intelligence quality improvement: towards continual monitoring and updating of ai algorithms in healthcare. *NPJ Digital Medicine*, 5(1). <https://doi.org/10.1038/s41746-022-00611-y>
- Garrel, J., & Jahn, C. (2021). Design framework for the implementation of ai-based (service) business models for manufacturing small and medium-sized enterprises.. <https://doi.org/10.21203/rs.3.rs-580789/v1>
- Gualdi, F., & Cordella, A. (2021). Artificial intelligence and decision-making: the question of accountability. <https://doi.org/10.24251/hicss.2021.281>
- Gulumbe, B., Yusuf, Z., & Hashim, A. (2023). Harnessing artificial intelligence in the post-covid-19 era: a global health imperative. *Tropical Doctor*, 53(4), 414-415. <https://doi.org/10.1177/00494755231181155>
- Gwagwa, A., Kraemer-Mbula, E., Rizk, N., Rutenberg, I., & Beer, J. (2020). Artificial intelligence (ai) deployments in africa: benefits, challenges and policy dimensions. *The African Journal of Information and Communication*, (26). <https://doi.org/10.23962/10539/30361>
- Hamamoto, R. (2021). Application of artificial intelligence for medical research. *Biomolecules*, 11(1), 90. <https://doi.org/10.3390/biom11010090>
- Hamamoto, R., Suvarna, K., Yamada, M., Kobayashi, K., Shinkai, N., Miyake, M., ... & Kaneko, S. (2020). Application of artificial intelligence technology in oncology: towards the establishment of precision medicine. *Cancers*, 12(12), 3532. <https://doi.org/10.3390/cancers12123532>
- Ibeneme, S., Okeibunor, J., Muneene, D., Husain, I., Bento, P., Gaju, C., ... & Makubalo, L. (2021). Data revolution, health status transformation and the role of artificial intelligence for health and pandemic preparedness in the african context. *BMC Proceedings*, 15(S15). <https://doi.org/10.1186/s12919-021-00228-1>
- Jin, X., Wah, B., Cheng, X., & Wang, Y. (2015). Significance and challenges of big data research. *Big Data Research*, 2(2), 59-64. <https://doi.org/10.1016/j.bdr.2015.01.006>
- Kanti, P., Sadia, R., & Das, S. (2022). Artificial intelligence adoption in supply chain risk management: scale development and validation. *Ho Chi Minh City Open University Journal of Science - Economics and Business Administration*, 12(2), 15-32. <https://doi.org/10.46223/hcmcoujs.econ.en.12.2.2142.2022>
- Kar, S., Kar, A., & Gupta, M. (2021). Modeling drivers and barriers of artificial intelligence adoption: insights from a strategic management perspective. *Intelligent Systems in Accounting Finance & Management*, 28(4), 217-238. <https://doi.org/10.1002/isaf.1503>
- Kiemde, S., & Kora, A. (2020). The challenges facing the development of ai in Africa.. <https://doi.org/10.1109/icatmri51801.2020.9398454>
- Kiemde, S., & Kora, A. (2021). Towards an ethics of ai in Africa: rule of education. *AI and Ethics*, 2(1), 35-40. <https://doi.org/10.1007/s43681-021-00106-8>

- Mbonyinshuti, F., Nkurunziza, J., Niyobuhungiro, J., & Kayitare, E. (2021). The prediction of essential medicines demand: a machine learning approach using consumption data in Rwanda. *Processes*, 10(1), 26. <https://doi.org/10.3390/pr10010026>
- Merenkov, A., Campa, R., & Dronishinets, N. (2021). Public opinion on artificial intelligence development. *KNE Social Sciences*. <https://doi.org/10.18502/kss.v5i2.8401>
- Misra, S., Das, S., Gupta, S., & Sharma, S. (2020). Public policy and regulatory challenges of artificial intelligence (AI). https://doi.org/10.1007/978-3-030-64849-7_10
- Mwanga, G., Mujibi, F., Yonah, Z., & Chagunda, M. (2018). Multi-country investigation of factors influencing breeding decisions by smallholder dairy farmers in Sub-Saharan Africa. *Tropical Animal Health and Production*, 51(2), 395-409. <https://doi.org/10.1007/s11250-018-1703-7>
- Ogbaga, I. (2023). Artificial intelligence (ai)-based solution to malaria fatalities in africa: an exploratory review. <https://doi.org/10.20944/preprints202307.1133.v1>
- Rabbani, M., Lutfi, A., Ashraf, M., Nawaz, N., & Watto, W. (2023). Role of artificial intelligence in moderating the innovative financial process of the banking sector: a research based on structural equation modeling. *Frontiers in Environmental Science*, 10. <https://doi.org/10.3389/fenvs.2022.978691>
- Regona, M., Yiğitcanlar, T., Xia, B., & Li, R. (2022). Opportunities and adoption challenges of ai in the construction industry: a prisma review. *Journal of Open Innovation Technology Market and Complexity*, 8(1), 45. <https://doi.org/10.3390/joitmc8010045>
- Ronquillo, C., Peltonen, L., Pruinelli, L., Chu, C., Bakken, S., Beduschi, A., ... & Topaz, M. (2021). Artificial intelligence in nursing: priorities and opportunities from an international invitational think-tank of the nursing and artificial intelligence leadership collaborative. *Journal of Advanced Nursing*, 77(9), 3707-3717. <https://doi.org/10.1111/jan.14855>
- Rutenberg, I., Gwagwa, A., & Omino, M. (2021). Use and impact of artificial intelligence on climate change adaptation in Africa. https://doi.org/10.1007/978-3-030-45106-6_80
- Ruttkamp-Bloem, E. (2023). Epistemic just and dynamic ai ethics in Africa. https://doi.org/10.1007/978-3-031-08215-3_2
- Sanni, O., Adeleke, O., Ukoba, K., Ren, J., & Jen, T.C. (2024). Prediction of inhibition performance of agro-waste extract in simulated acidizing media via machine learning. *Fuel*, 356, 129527.
- Sileshi, G., Gebeyehu, S., & Mafongoya, P. (2019). The threat of alien invasive insect and mite species to food security in Africa and the need for a continent-wide response. *Food Security*, 11(4), 763-775. <https://doi.org/10.1007/s12571-019-00930-1>
- Smolensky, P., McCoy, R., Fernandez, R., Goldrick, M., & Gao, J. (2022). Neurocompositional computing: from the central paradox of cognition to a new generation of AI systems. *AI Magazine*, 43(3), 308-322. <https://doi.org/10.1002/aaai.12065>
- Solomon, E., & Klyton, A. (2020). The impact of digital technology usage on economic growth in Africa. *Utilities Policy*, 67, 101104. <https://doi.org/10.1016/j.jup.2020.101104>

- Soni, N., Sharma, E., Singh, N., & Kapoor, A. (2020). Artificial intelligence in business: from research and innovation to market deployment. *Procedia Computer Science*, 167, 2200-2210. <https://doi.org/10.1016/j.procs.2020.03.272>
- Sun, T., & Medaglia, R. (2019). Mapping the challenges of artificial intelligence in the public sector: evidence from public healthcare. *Government Information Quarterly*, 36(2), 368-383. <https://doi.org/10.1016/j.giq.2018.09.008>
- Szabo, Z., Körtesi, P., Gunčaga, J., Szabo, D., & Neag, R. (2020). Examples of problem-solving strategies in mathematics education supporting the sustainability of 21st-century skills. *Sustainability*, 12(23), 10113. <https://doi.org/10.3390/su122310113>
- Thaldar, D., & Naidoo, M. (2021). Ai inventorship: the right decision?.. <https://doi.org/10.31219/osf.io/7uctg>
- Tran, B., Vu, G., Ha, G., Vuong, Q., Hò, M., Vuong, T., ... & Ho, R. (2019). Global evolution of research in artificial intelligence in health and medicine: a bibliometric study. *Journal of Clinical Medicine*, 8(3), 360. <https://doi.org/10.3390/jcm8030360>
- Turon, G., Hlozek, J., Woodland, J., Chibale, K., & Duran-Frigola, M. (2022). First fully-automated ai/ml virtual screening cascade implemented at a drug discovery centre in Africa.. <https://doi.org/10.1101/2022.12.13.520154>
- Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., ... & Nerini, F. (2020). The role of artificial intelligence in achieving the sustainable development goals. *Nature Communications*, 11(1). <https://doi.org/10.1038/s41467-019-14108-y>
- Wakunuma, K., Ogoh, G., Eke, D., & Akintoye, S. (2022). Responsible AI, SDGS, and AI governance in Africa.. <https://doi.org/10.23919/ist-africa56635.2022.9845598>
- Wang, K., Yu, G., Xu, C., Meng, X., Zhou, J., Zheng, C., ... & Deng, H. (2021). Accurate diagnosis of colorectal cancer based on histopathology images using artificial intelligence. *BMC Medicine*, 19(1). <https://doi.org/10.1186/s12916-021-01942-5>
- Yigitcanlar, T., Li, R., Inkinen, T., & Paz, A. (2022). Public perceptions on application areas and adoption challenges of ai in urban services. *Emerging Science Journal*, 6(6), 1199-1236. <https://doi.org/10.28991/esj-2022-06-06-01>