

How Artificial Intelligence is Rewriting the Rules of Entrepreneurship in Africa and the MENA Region.

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Abstract:

This article discusses how Artificial Intelligence (Artificial Intelligence) is revolutionizing entrepreneurship in Africa and the Middle East and North Africa (MENA) region. We discuss Artificial Intelligence as a driver of new business models, new access to markets, and the potential to improve financial inclusion. Although Artificial Intelligence presents massive opportunities to create jobs and stimulate the economy, various regional imbalances, including in digital infrastructure, governance, human capital, and cultural practices will continue to influence the idiosyncratic and uneven responses to Artificial Intelligence entrepreneurship. This article also discusses the obstacles presented by ethical dilemmas; limitations in infrastructure; and issues of skills that all lead to outcomes that entrench inequality rather than mitigate it. By leveraging the latest qualitative, case study data, this article highlights the critical policy interventions and ecosystem developments that are needed to maximize the inclusive and sustainable potential of Artificial Intelligence-driven and empowered entrepreneurship across various African and MENA contexts.

Keywords: Artificial Intelligence, Entrepreneurship, Africa, MENA Region, Economic Development

Introduction

Artificial intelligence (AI) is quickly changing the global economy, and the impact on entrepreneurship across Africa and the Middle East and North Africa (MENA) region is now becoming apparent. Artificial Intelligence in both regions is not just incremental technology; it is a paradigm-shifting technology that is changing the way companies are conceived, financed and scaled. According to Digital Defynd (2024), The Artificial Intelligence ecosystem in Africa consists of approximately 2,400 companies, of which about 40%¹, with companies located primarily in South Africa, Nigeria, Kenya, and Egypt. As reported by Statista (2025), "this growing sector is expected to increase from an estimated market value of US \$4.5 billion in 2025 to more than US \$18 billion by 2031², reflecting a compound annual growth rate (CAGR) of 26%". Furthermore, the Economist Impact (2023) has stated that the MENA region could contribute US \$320 billion³ of economic value from AI, equivalent to approximately 11% of the expected GDP by 2030, with United Arab Emirates/Nationality and Saudi Arabia leading regional adoption.

These trends are developing in the context of a socioeconomic reality where the prevalence of entrepreneurship is being recognized as an important driver of employment and innovation. According to PwC's Future Ready MENA Report (2025), almost 46%⁴ of respondent's workers in the MENA region would like to start their own business. (Zoltan J. Acs, 2017), combining human capital investments with innovative ecosystems leads to the best outcomes in entrepreneurship. Artificial Intelligence can respond to all those needs: from supporting underbanked entrepreneurs accessing credit through AI-based risk evaluation (GwagwaI, et al., 2020) and using analytics to boost operational productivity (Makridakis, 2017) to expanding reach to new markets with localized language and culturally adapted digital services (Vukosi Marivate, 2020).

The intersection of AI capabilities and Africa and MENA's entrepreneurial vibrancy provides unparalleled prospects in support of inclusive growth. At the same time, AI's transformational power poses challenges in the region, such as: infrastructure issues (Oughton,

¹ <https://digitaldefynd.com/IQ/artificial-intelligence-statistics-about-africa/>

² <https://dataphyte.com/topic/technology/regulating-ai-beyond-data-protection-the-need-for-ai-accountability-in-africa>

³ <https://www.pwc.com/m1/en/publications/documents/economic-potential-ai-middle-east.pdf?>

⁴ <https://www.pwc.com/m1/en/media-centre/2025/pwc-middle-east-future-ready-mena-report-calls-for-investment-in-entrepreneurial-skills-to-unlock-youth-potential.html?>

2021), digital skill challenges in 2022 Only 36%⁵ of Africa's population had broadband access (World Bank, 2022), ethical considerations (Jobin & Marcello Ienca, 2019), and the prospect of inequality deepening if adoption has inequities.

Problematic

How is AI transforming the entrepreneurial landscape in Africa and the MENA region, and to what degree can it promote inclusive and sustainable economic development while minimizing the risk of technological inequality?

Side Questions

- What are the main ways AI is facilitating new business models and providing market access to entrepreneurs in Africa and the MENA region?
- How do regional differences in digital infrastructure, governance, and capabilities influence the adoption and impact of AI in entrepreneurship?
- What interventions to policy and ecosystem look most effective for securing equal access to the benefits of AI for marginalized entrepreneurs, specifically women and rural areas?
- How can local innovation ecosystems leverage AI while reducing dependency on external technology providers?

We will develop a descriptive article that will provide a neat and organized picture of the changes due to artificial intelligence across Africa and the MENA region of the entrepreneurial ecosystem. This descriptive article will summarize developments, challenges and opportunities to do with the adoption artificial intelligence in Africa and the MENA region.

In addition, we will place this descriptive article alongside a qualitative study to understand the dynamics of this space more explicitly. We will look for case studies from media sources, semi-structured interviews with local experts, entrepreneurs, and decision makers, and consult a selection of recent reports and strategic documents. This dual method will allow for a detailed analysis capable of illuminating socio-economic consequences and policy issues associated with the adoption of artificial intelligence in regional entrepreneurship.

⁵ <https://www.worldbank.org/en/results/2023/06/26/from-connectivity-to-services-digital-transformation-in-africa?>

1. Theoretical Framework

1.1. The Concept of the Term

Artificial Intelligence (AI) is a collection of theories and methods to enable machines to imitate human intelligence (Sarker, 2022), including - machine learning, deep learning, natural language processing, computer vision, and robotics. AI is defined as the ability to learn from data, to reason and solve problems, and to interact with the environment autonomously.

According to the definition given by the European Commission (2018)⁶, AI corresponds to “systems that display intelligent behavior by analyzing their environment and taking measures with a certain degree of autonomy – to achieve specific objectives”.

1.2. The main theoretical currents

Examining the effect of Artificial Intelligence (AI) on future jobs can utilize several different theoretical streams from economics, the sociology of work, and innovation theory. These streams provide a better picture of how the labor market is changing and the dynamics involved.

1.2.1. The theory of creative destruction

Creative destruction; coined as a term by (Schumpeter, 1942), meaning that innovation can eliminate a job or an entire business model but also create new jobs. In Africa and the Middle east and North Africa (MENA), jobs characterized by repetitiveness and routine, such as data entry or inventory records are repeatable tasks for which AI is automating these tasks, thus optimizing efficiencies, taking away lower level jobs, but creating opportunities for skilled jobs in data science, cybersecurity, and software engineering. As (Arthur M, 2006), wrote in his review of Schumpeter it is important to have this understanding of creative destruction because, this understanding is the key to understanding economic growth, especially if technology is defined in social terms as the application scope of innovation to improve lives. Inadequate supporting infrastructure or lack of skills-based training will impair learning for this transition, so it is vital for governments and other groups to invest in education and resources to replace workers causing displacements from jobs with the new improvements. As Diamond

⁶Un plan coordonné dans le domaine de l'intelligence artificielle : <https://eur-lex.europa.eu/legal-content/FR/TXT/HTML/?uri=CELEX:52018DC0795>

notes, creating a supportive environment for innovation is the key to fully benefiting from the creative destruction possibilities in these regions.

1.2.2. Human Capital Theory

(Becker, 1964) demonstrated that investments in education and training improve the productivity and flexibility of labor. In the age of AI, this requires developing both specialized technical skills such as those used by data scientists and AI developers, and building the technological competence starting from the primary school level. It is critical for all stakeholders, such as governments, businesses and educational institutions, to work closely together to develop people-hour capacity that reflects needs in the job market. Perspectives of the future workplace as being effectively transformed by digitalization is endorsed by (Schwab K. , 2017) , who argues on educating the workforce to overcome the new challenges of the digital age. Schwab makes the argument that education must be further evolved, to embed critical skills such as critical thinking, problem solving the increasingly societal necessary teamwork, so that individual output is effective where there is rapid change.

1.2.3. Theory of Technological Leapfrogging

The theory of technological leapfrogging, or capability leapfrogging, refers to a leapfrog development that develops countries can bypass the traditional incremental stages of technological development (Lee, 2021). Developing jobs, and with it the ability to build sophisticated tools, means entrepreneurs in Africa, and the MENA region, can use those tools without being constrained by legacy systems. For example, mobile banking means that many can access financial services without the traditional banking infrastructure. (Aker & Mbiti, 2010) observed that mobile phones provided better access to new information, reduced search costs, and improved market efficiency in the agriculture and labor markets. While mobile technology creates development opportunities, it should not be regarded as a 'silver bullet' or simply be used in isolation. It must coexist with other forms of public goods and the necessary investment to drive or deliver opportunities.

2. AI as a Catalyst for New Business Models and Market Access

Artificial Intelligence (AI) is changing the business context in Africa and the MENA region by enabling new entrepreneurial models and improving market access. Startups and small-medium enterprises (SMEs) are using AI to respond to problems in finance, health care, agriculture, logistics and education (Mugisha, Justin, & Ocan, 2025) . SMEs have begun to use machine learning and predictive analytics to optimize resources and access new market opportunities that were previously inaccessible (Mugisha, Justin, & Ocan, 2025). The adoption of AI is complicated by many factors, such as implementation costs and skilled workforce (Razavi & Habibnia, 2024).

2.1. AI in Agriculture and Food Security

Agriculture is a key driver of employment and GDP in Africa and MENA but farmers have had their productivity constrained by continued climate variability, limited inputs, and inefficient markets. AI-driven applications are changing the traditional means of farming to allow for increased use of real-time decision-making, predictive analytics, and intelligent farming systems.

(Gikunda, 2024) states that AI applications, including drone-assisted imaging, sensor-driven irrigation, and satellite-supported crop diagnostics, are enhancing smallholder productivity. AI platforms also enable real-time pest and disease detection, which allows for early intervention. (Hannah Kerner, 2024), emphasize this through their exploration of the reliability of satellite-generated land cover maps, which are valuable products for AI-supported decision-making in agriculture.

2.2. AI in E-commerce and Market Expansion

AI is driving faster growth of e-commerce across Africa and the MENA region, with the use of machine learning providing firms access to important pricing algorithms to understand purchasing behaviors, customize content, and vary pricing in real-time. These opportunities are vital for startups and SMEs, entering markets with limited physical infrastructure and significant competition.

(Kebashnee Moodley, 2025) outline how AI-driven personalization enhances customer engagement, customer loyalty, and sales conversion rates. Natural Language Processing (NLP) also provides platforms with the ability to translate content into local languages, allowing e-commerce in regions with linguistic diversity to be more inclusive.

Examples of this market transformation include Jumia, currently applying AI engines of recommendation to adjust their offerings by regionally influenced tastes and Souq.com, which goes a step further by applying dynamic pricing algorithms to determine the price of each product in real-time. Both players allow small businesses to scale operations, thereby reaching more customers in the market while reducing traditional high operation costs.

2.3. AI in Financial Inclusion and Access to Capital

In Africa and the MENA region, one of the most significant areas of AI application is financial inclusion. However, traditional credit scoring models legitimately exclude a large portion of the population, particularly women, rural entrepreneurs, and informal sector workers. AI offers alternatives, as it utilizes non-traditional data sources to assess creditworthiness: mobile money usage, utility payments, and digital/behavioral data. Recent research illustrates this point.

(Chemseddine Tidjani, 2024) show that AI-powered FinTech solutions are effectively improving access to capital and finance, especially for low-income and underserved communities in Sub-Saharan Africa. Moreover, (Makore, 2024) emphasizes the need for regulatory frameworks that govern ethical AI ensuring these technologies have the effect of improving financial access and equity instead of re-urging barriers to access.

Table 1: Key AI Applications Driving Entrepreneurship in Africa and the MENA Region

Sector	AI Application	Notable Examples	Entrepreneurial Impact
Financial Inclusion	AI-based analysis of mobile money, utility bills, and behavioral data to provide alternative credit scoring	M-KOPA (Kenya) ⁷ , Paymob ⁸ (Egypt)	Expands access to finance to underserved entrepreneurs without traditional credit history

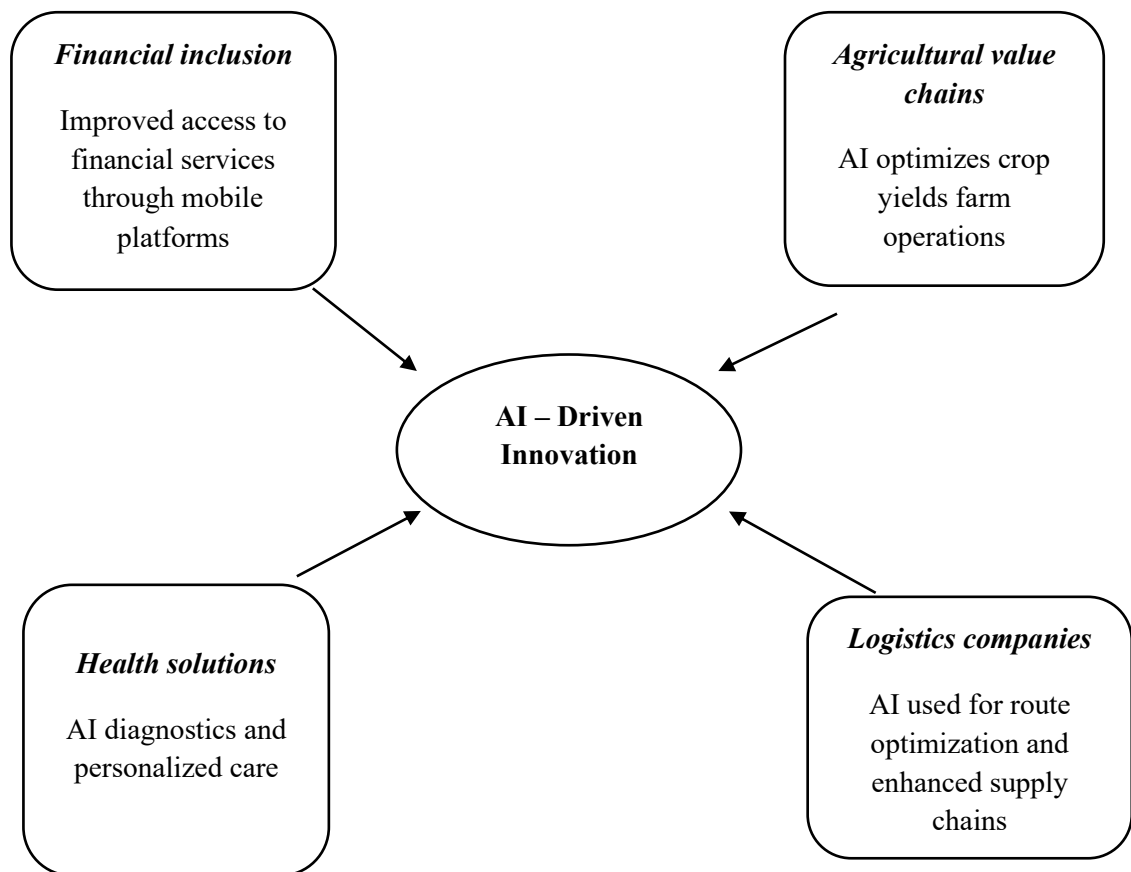
⁷ use AI and machine learning to build personalized credit profiles, enabling access to loans, insurance, and digital services based on repayment ability. <https://www.m-kopa.com/>

⁸ **Paymob** is a leading Egyptian fintech enabling merchants to accept digital payments <https://paymob.com/ar/>

Agriculture	Precision farming through satellite imagery, drone monitoring, and machine learning	Hello Tractor ⁹ (Nigeria)	Provide higher productivity, reduced crop loss, and stronger market linkages for smallholders
E-commerce	NLP for multi-lingual interfaces, AI-based product recommendations, and dynamic pricing strategies	Jumia ¹⁰	Expands market reach, strengthens consumer engagement, reduces need to physically expand

Source: Table created by the authors

Figure 1: AI-Driven Innovation: Unlocking New Markets and Business Models in Africa and MENA



Source: the authors

⁹ **Hello Tractor** leverages AI-driven predictive modeling and IoT to transform agriculture

¹⁰ **Jumia** has adopted AI-driven chatbots and recommendation systems to enhance customer experience and operational efficiency

AI-driven financial technologies are reshaping access to capital across Africa and the MENA region by reducing information asymmetries and expanding credit assessment beyond traditional banking metrics. By leveraging alternative data and machine learning models, AI enables financial institutions and FinTech startups to serve previously excluded populations, particularly micro-entrepreneurs, women, and informal workers. However, the long-term sustainability and inclusiveness of these innovations depend on robust regulatory oversight, data protection standards, and transparent algorithmic practices. When supported by sound governance and responsible innovation, AI has the potential not only to deepen financial inclusion but also to catalyze entrepreneurship, stimulate local economic growth, and foster more equitable financial systems.

3. Regional Drivers and Barriers to AI Adoption

The development of artificial intelligence (AI) across Africa and the MENA region is shaped by a mix of technological, institutional, and social forces. Whereas some countries have made dramatic progress, others are hindered by structural limitations. The next key areas illustrate how regional factors can either enable or constrain AI in entrepreneurial ecosystems.

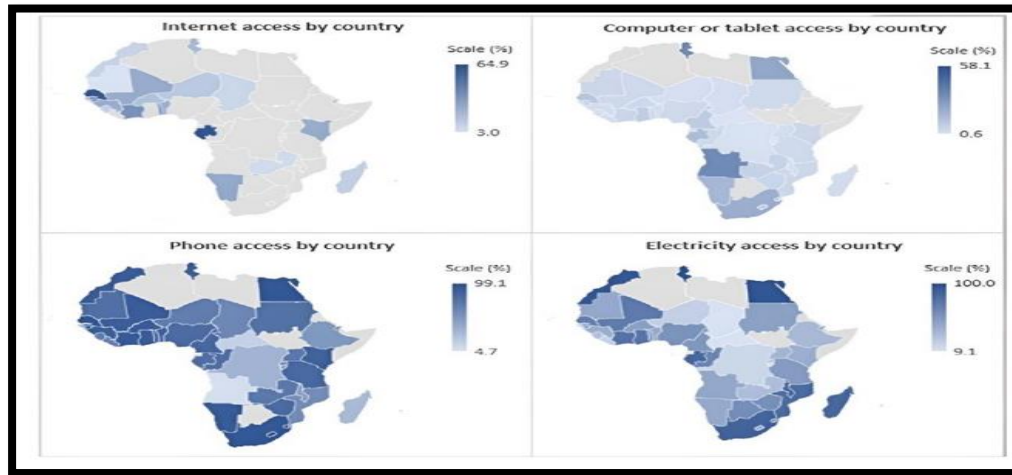
3.1. Digital Infrastructure and Connectivity

Access to strong digital infrastructure is critical for AI innovation. In MENA, especially in the Gulf Cooperation Council (GCC) states of the United Arab Emirates, Saudi Arabia, and Qatar, governments have invested heavily in high-speed broadband, 5G roll-out, and advanced cloud computing (World Bank, 2023)¹¹. This access to infrastructure provides a strong context for experimentation and deployment of AI-based solutions in health, finance, and transport among many others.

¹¹ **Broadband Networks in the Middle East and North Africa: Accelerating High-Speed Internet Access**

<https://www.worldbank.org/>

Figure 2: Digital Connectivity in Africa



Source : World Bank 2023

On the other hand, Africa provides a challenging digital environment, with significant regional imbalances. Mobile broadband leaders such as Kenya, Nigeria, and South Africa lead on innovation in the financial technology (fintech) and mobile broadband space. Yet poor connectivity remains a major barrier to growth in most remote and rural areas, and other low-income regions¹². Given these disparities, the importance of mobile-first and offline-compatible AI applications will be significant.

3.2. Governance and Regulatory Frameworks

The regulatory environment is a critical factor influencing the scale and direction of AI uptake. Some countries in the MENA region have already adopted AI, notably through national policy frameworks. For example, the Kingdom of Saudi Arabia's National Strategy for Data and AI (NSDAI) and the UAE's AI Strategy 2031 present lofty ambitions, highlights for public-private partnerships, and ambitions for dedicated AI research centers (OECD,2024)¹³.

¹² **Internet use remains lowest globally at 38% in 2024, vs. 68% global average**

¹³ The **OECD AI Principles**, updated in 2024 to reflect challenges in privacy, safety, and generative AI, set global benchmarks for developing trustworthy AI systems. <https://www.oecd.org/en/about/news/press-releases/2024/05/oecd-updates-ai-principles-to-stay-abreast-of-rapid-technological-developments.html>

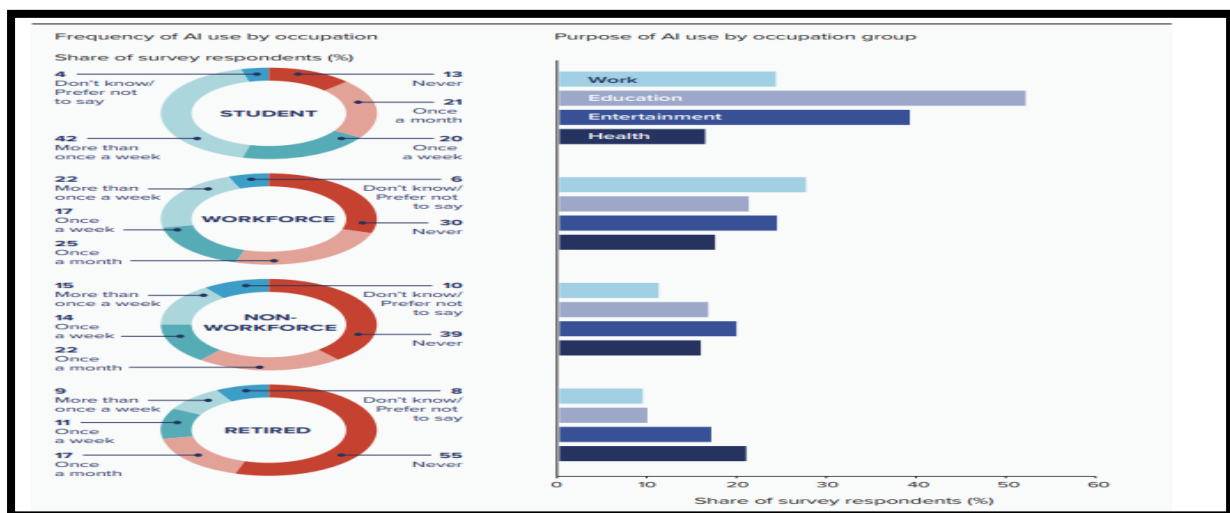
In the African context, countries are at different stages of policy development. Rwanda and Egypt, for instance, have both published national AI strategies talking about ethics, education and innovation. Most other countries are still developing the regulatory frameworks to underpin AI, often leaving entrepreneurs uncertain and potential investors dissuaded (UNESCO, 2023)¹⁴.

3.3. Skills and Human Capital

A talented workforce continues to be the key to successful AI adaption. Both regions have uneven access to digital literacy and technical competencies. The World Bank (2022)¹⁵ noted gaps in skill levels and competencies in general use of information technology particularly in countries in Sub-Saharan Africa and rural MENA engagement that serve as barriers to the wide spread of AI technology.

In order to address such divides, there are new talent development initiatives. Andela¹⁶ is training thousands of software developers from Africa, for example, and the UAE’s AI Summer Camp intends to embed an interest in AI with students, with hopes of cultivating student contemporaneously to their studies. Yet, without penetration into education and upskilling through scale, AI is certainly set to increase socio-economic related divides through skill-biased technological change (Acemoglu & Restrepo, 2019)

Figure 3 : People at each life stage use artificial intelligence (AI) with varying frequency and for different purposes



Source: Human Development Report 2025

Figure 3 reinforces the argument presented above by illustrating how disparities in digital literacy and technical competencies translate into unequal patterns of AI usage across life stages. The uneven distribution of skills observed in Sub-Saharan Africa and parts of rural MENA is reflected in lower engagement with AI tools among certain demographic groups. This confirms that workforce readiness remains a structural constraint to AI diffusion, and that expanding access to education and large-scale upskilling initiatives is essential to prevent technology-driven inequality.

3.4. Access to Capital and Ecosystem Maturity

Access to capital and development of a rich startup ecosystem is essential for entrepreneurship in the AI field. Major MENA-based cities - Dubai, Riyadh, and Abu Dhabi - have robust startup ecosystems with developed venture capital markets, enabled regulations, and state-backed accelerator programs (Startup Genome,2025)¹⁷.

The African continent's upcoming tech-hub cities - Lagos, Nairobi, Cape Town, and Cairo - show promise for local tech ecosystems, but there remains a challenge in providing early-stage funding to entrepreneurs in informal areas, hindering economic development. Many applications have strong software/AI components that require considerable funding and development, growth, and access to the cloud. The data-driven nature of AI applications makes it challenging for investors to yield returns with long-term investment strategies.

3.5. Cultural and Market Factors

Cultural attitudes and market behaviors have the potential to increase or limit the success of AI products and solutions. In some communities; for example, the trust in AI is low, especially in areas such as finance and health care that were guided by interpersonal relationships; this skepticism can act as a brake on AI implementation and uptake.

Cultural and language localization are also key to AI tools being adopted. Applications that successfully adopt local dialects and cultural aspects, for example, AI chat bots that spoke

¹⁴ <https://www.unesco.org/en/articles/unesco-launches-findings-artificial-intelligence-needs-assessment-survey-africa>

¹⁵ <https://documents1.worldbank.org/curated/en/099704510062226476/pdf/IDU0c2ee3e0400c310458c0a1f10d68cd992aac6.pdf>

¹⁶ Andela is a company that trains software developers in Africa and connects them with global opportunities

¹⁷ The [Global Startup Ecosystem Report 2025](#) (GSER 2025) reveals a year of rapid progress for startup ecosystems across the Middle East and North Africa (MENA)

Arabic, Amharic or Swahili, have garnered increased user acceptance and utility. Cultural fluency in this case is not a 'nice to have', but part of a strategy to scale AI in diverse markets.

Table 2: AI Adoption in Africa and MENA: A Regional Comparison of Infrastructure, Policy, Talent, and Innovation

Dimension	Africa	Examples	MENA	Examples
Digital Infrastructure and Connectivity	Uneven development. Urban centers like Nairobi, Lagos, Cape Town, and Casablanca are improving; rural areas remain underserved. Mobile-first and offline AI are key.	M-Pesa ¹⁸ in Kenya uses AI to prevent fraud. ATLAN Space ¹⁹ in Morocco uses AI for environmental monitoring. Kobo360 ²⁰ (Nigeria) for AI-based logistics.	Highly advanced in GCC countries with 5G, broadband, and cloud ecosystems. AI is embedded in national smart city initiatives.	Dubai Smart City ²¹ uses AI in transportation and energy. NEOM ²² (Saudi Arabia) is a planned AI-powered city AI-enhanced traffic ²³ control in Qatar.
Governance and Regulation	Few countries have AI policies. Rwanda, Egypt and Morocco show promise, while most countries lack legal clarification on data and ethics.	Rwanda 's ²⁴ National AI Policy (2021). Morocco ²⁵ includes AI in Digital Morocco 2030.	GCC countries have comprehensive AI policies, institutional support and regulatory environments.	UAE AI Strategy 2031 ²⁶ with AI Ministry. Saudi Arabia's NSDAI ²⁷ (National Strategy for Data & AI).
Skills and Human Capital	There is a large skills gap; limited AI experts;	Andela ²⁸ trains AI engineers in Africa.	Formal education pathways;	AI programs at KAUST ³¹

¹⁸ Fraud Detection: M-Pesa uses AI algorithms to analyze transaction patterns and [detect potential fraudulent activities](#), enhancing security for its users. <https://kenyaaai.ke/does-m-pesa-currently-use-ai>

¹⁹ <https://medias24.com/2020/11/04/qui-est-atlan-space-la-startup-qui-a-realise-la-plus-grosse-levee-aupres-de-maroc-numeric-fund-ii-8700/>

²⁰ Kobo's mission is to simplify Africa's logistics and supply chain by making it more efficient through technology <https://www.kobo360.com/>

²¹ <https://www.ierek.com/news/ai-powered-smart-city-initiatives-in-dubai>

²² <https://www.neom.com/en-us/regions/theline>

²³ In Qatar, digital infrastructure is central to the country's National Vision 2030 and Smart Qatar Program (TASMU). AI-driven traffic analytics directly support these strategies by feeding live data into digital road maintenance systems. <https://www.roadvision.ai>

²⁴ The National AI Policy To leverage AI to power economic growth, improve quality of life and position Rwanda as a global innovator for responsible and inclusive AI <https://africadataprotection.org/>

²⁵ <https://www.mmsp.gov.ma/>

²⁶ <https://ai.gov.ae/>

²⁷ <https://sdaia.gov.sa/>

²⁸ <https://www.andela.com/>

³¹ <https://academy.kaust.edu.sa/>

	increasing investments in training programs; especially in urban hubs.	AI Movement ²⁹ (Morocco) supports AI education and inclusion. AI Saturdays ³⁰ in Lagos.	partnerships with universities and regional/global tech firms.	(Saudi Arabia) and MBZUAI ³² (UAE).
Access to Capital and Ecosystem Maturity	There are successful building ecosystems in Lagos, Nairobi, Cape Town, Cairo and Casablanca while outside of the advanced urban centers most remain relatively stagnant with limited funding.	DataProphet ³³ (South Africa) secured international investment. 54gene ³⁴ (Nigeria) uses AI in genomics.	The Gulf Cooperation Council (GCC) countries have developed VC ³⁵ networks and support programs for startups.	Sarwa ³⁶ (UAE) AI wealth management. Mozn ³⁷ (Saudi) – AI in finance.
Cultural and Market Fit	AI will need to adapt to languages, trust norms and behaviors. Uptake of AI will largely depend on localization activities and levels of literacy in the target societies' participants.	Ubenwa ³⁸ (Nigeria) – AI detects newborn illness via cries.	Arabic localization is improving. Trust in AI varies between sectors especially finance and health.	Arabot ³⁹ (Jordan) Arabic NLP chatbot.

Source: Table created by the authors

²⁹ <https://aim.um6p.ma/en/home/>

³⁰ <https://www.aisaturdayslagos.com/>

³² <https://mbzuai.ac.ae/>

³³ South African startup DataProphet, which uses artificial intelligence (AI) to help manufacturers autonomise their operations, is to focus on expansion in the European Union (EU) and the United States (US). <https://www.weforum.org/>

³⁴ The startup uses AI algorithms to analyze genetic data, enabling early identification of genetic predispositions to various diseases. <https://zocto.in/>

³⁵ A venture capital (VC) network is a system of interconnected individuals and firms involved in the venture capital industry. These networks facilitate the flow of information, resources, and investment opportunities among VCs, startups, and other related professionals.

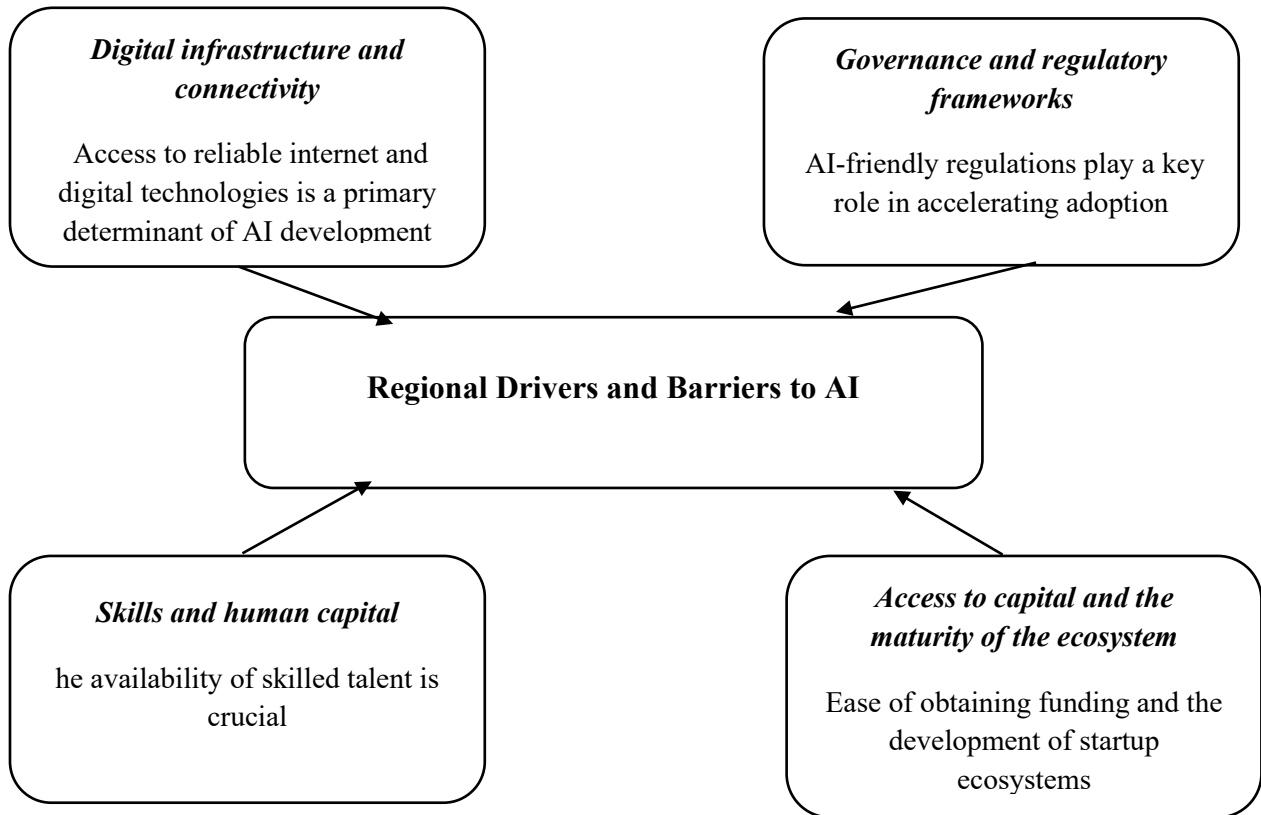
³⁶ Sarwa is a financial platform and app that lets you easily trade stocks and ETFs, save and invest your money passively all in one place. <https://www.sarwa.co/en>

³⁷ At Mozn, blend deep insights and understanding of the MENA market with world-class AI technologies – building products and solutions tailored to the region's unique needs and challenges <https://www.mozn.sa/blog>

³⁸ <https://www.ubenwa.ai/>

³⁹ Arabic NLP chatbot is a computer program that uses Natural Language Processing (NLP) to understand and respond to users in Arabic <https://arabot.io/en/products/chatbots>

Figure 4: Key Factors for AI Development



Source: the authors

Overall, cultural and market factors play a decisive role in shaping the trajectory of AI adoption across Africa and the MENA region. Beyond infrastructure and policy readiness, the success of AI solutions depends on their ability to align with local languages, social norms, trust dynamics, and consumer behaviors. Markets that combine strong digital ecosystems with culturally adapted applications are more likely to experience sustainable AI integration. Conversely, where trust deficits, regulatory uncertainty, and limited localization persist, adoption may remain fragmented or slow. Therefore, embedding cultural intelligence and market awareness into AI strategy is not peripheral but central to unlocking inclusive and scalable AI-driven growth.

4. Empirical Findings

The empirical findings from the survey (32 respondents) reveal a complex and asymmetrical landscape of AI adoption within entrepreneurial ecosystems across Africa and the MENA region. The results highlight a strong strategic awareness of artificial intelligence, yet uneven institutional readiness and persistent structural constraints that may limit its inclusive potential.

4.1. Demographic Structure and Knowledge Positioning

The sample shows a moderately young demographic profile. Individuals aged 26–35 represent the largest group (40.6%), followed by those aged 36–45 (34.4%) and 18–25 (21.9%). Altogether, approximately 62.5% of respondents are under 35, indicating that engagement is still driven largely by younger and early mid-career individuals. Participation drops significantly among older groups, with only one respondent aged 46–55 (3.1%) and none above 56, suggesting limited representation of more senior populations.

In terms of gender distribution, the sample is relatively balanced but slightly female-dominated, with 56.3% female and 43.8% male respondents. This is noteworthy, as it contrasts with traditional patterns where male participation often dominates in technology-related contexts. The near parity suggests a more inclusive engagement across genders within this sample.

4.2. AI Awareness and Operational Integration

AI adoption remains limited but emerging within the surveyed organizations. Only 28.1% currently use AI technologies, while 18.8% plan to adopt them within the next 12 months. However, a majority (53.1%) report no current use of AI, indicating that the ecosystem is still in an early stage of technological integration. Nevertheless, the fact that 46.9% are either users or near adopters suggests a gradual transition toward wider AI adoption.

Among organizations that are using AI, the technology is applied primarily in data analytics and forecasting (57.7%), making it the most common use case. This highlights the growing importance of AI in supporting data-driven decision-making and strategic planning.

Other applications appear at similar levels: customer engagement and chatbots (34.6%), process automation (34.6%), product personalization (30.8%), and financial risk assessment (30.8%). The relatively balanced distribution of these uses suggests that AI is being deployed across multiple operational functions rather than concentrated in a single area.

Overall, these results indicate that AI is currently leveraged mainly for analytical and customer-oriented functions, while operational automation and financial applications are

developing gradually. This pattern reflects a progressive integration of AI aimed at enhancing decision-making, customer interaction, and business efficiency.

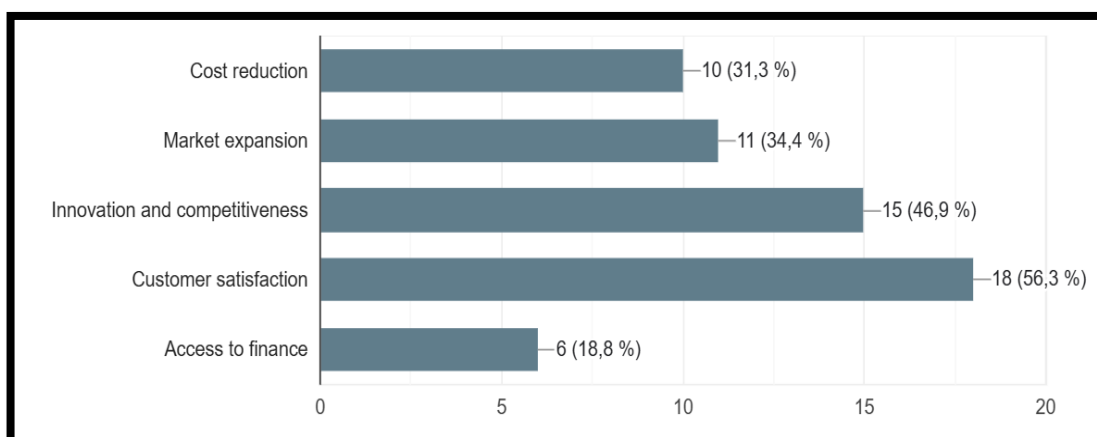
4.3. Strategic Drivers

The results indicate that innovation and competitiveness are the strongest motivations for adopting AI, cited by 18 respondents (56.3%). This suggests that businesses primarily view AI as a strategic tool to strengthen their market position and enhance their capacity to innovate.

The second most important motivation is customer satisfaction, reported by 15 respondents (46.9%), highlighting the role of AI in improving service quality, personalization, and responsiveness to customer needs. Market expansion and cost reduction follow at the same level, each mentioned by 10 respondents (31.3%). These results suggest that while operational efficiency and reaching new markets are relevant factors, they are not the primary drivers of AI adoption in this sample.

Finally, access to finance ranks lowest, with 6 respondents (18.8%) selecting it as a motivation. This indicates that AI is rarely perceived as a direct mechanism for improving funding opportunities. Overall, the findings suggest that AI adoption is mainly driven by strategic growth and competitive differentiation, rather than purely by financial or cost-saving considerations.

Figure 5 : Strategic Drivers of AI Adoption



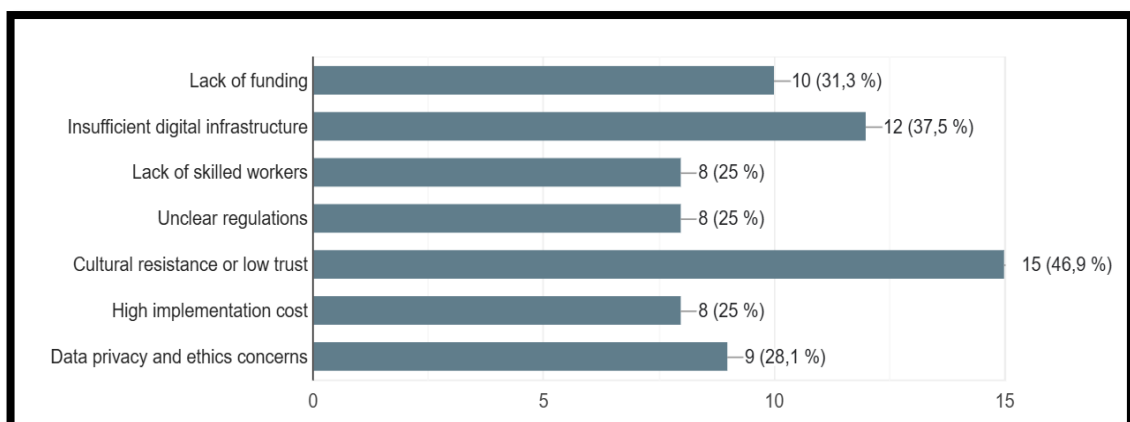
4.4. Structural Barriers

The results show that the lack of skilled workers is the most significant barrier to AI adoption, cited by 15 respondents (46.9%). This highlights a major skills gap, suggesting that many organizations struggle to find qualified professionals capable of developing, implementing, or managing AI solutions.

The second most frequently mentioned challenge is insufficient digital infrastructure, reported by 12 respondents (37.5%). This indicates that technical limitations such as inadequate connectivity, computing resources, or digital systems still hinder the effective deployment of AI technologies. Lack of funding follows closely, identified by 10 respondents (31.3%), reflecting financial constraints that can limit investments in AI tools, training, and infrastructure. Several challenges appear at similar levels. Data privacy and ethics concerns were mentioned by 9 respondents (28.1%), showing growing awareness of responsible AI use. Meanwhile, unclear regulations, cultural resistance or low trust, and high implementation costs were each cited by 8 respondents (25%), suggesting that regulatory uncertainty, organizational culture, and financial barriers also play a role.

Overall, the findings indicate that human capital and infrastructure limitations represent the most critical barriers to AI adoption, while financial, regulatory, and cultural factors form secondary but still significant challenges. This suggests that successful AI integration requires not only technological investment but also skills development and institutional support.

Figure 6 : Structural Barriers to AI Adoption



4.5. Ecosystem Readiness

Access to finance for supporting AI entrepreneurship appears moderate but constrained. A significant share of respondents (40.6%) give low ratings (1–2), including 12.5% rating it 1 and 28.1% rating it 2, indicating that many perceive financial resources and venture capital opportunities as limited.

A further 21.9% select the neutral rating (3), suggesting uncertainty or uneven access depending on the sector or entrepreneurial network. Positive evaluations remain relatively limited, with 37.5% rating access to finance at 4 or 5, including 15.6% at 4 and 21.9% at the highest level (5).

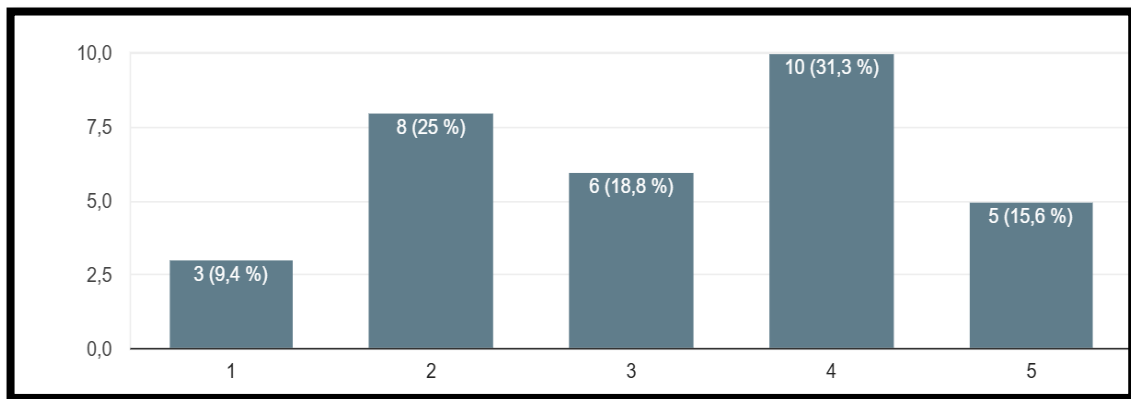
Overall, these results suggest that funding remains a structural challenge for AI entrepreneurship. While some financing channels appear to exist, a substantial proportion of respondents still perceive limited venture capital availability and restricted investment opportunities, which may slow the growth and scalability of AI-driven startups.

4.6. The Inclusion Paradox

Regarding AI skills and human capital, perceptions are moderately positive but uneven. The largest share of respondents (31.3%) rates national capacity at 4 out of 5, suggesting a generally favorable view of the country's ability to support AI entrepreneurship. However, 25% rate it at 2 and 18.8% at 3, indicating that many respondents perceive important gaps in technical expertise and talent availability. Only 15.6% give the highest rating (5), while 9.4% consider the situation very weak (1).

these results suggest that while a foundation of AI-related skills exists, the ecosystem is not yet fully mature. The distribution of responses reflects a transitional stage, where growing awareness and capacity coexist with persistent shortages in advanced AI talent and specialized training needed to fully support entrepreneurial innovation.

Figure7: Perceptions of AI Inclusivity and Benefit Distribution



4.7. Outlook

Despite existing constraints, respondents show strong optimism about AI transforming entrepreneurship in the region within the next five years. A clear majority (71.9%) express positive expectations, with 53.1% rating their optimism at 4 and 18.8% at the highest level of 5. Meanwhile, 15.6% remain neutral, selecting the midpoint rating of 3.

Only a small minority (12.6%) express pessimism, with 6.3% choosing 1 and 6.3% choosing 2. Overall, these results indicate a generally optimistic outlook toward AI-driven entrepreneurial transformation, suggesting that stakeholders believe AI will play an important role in shaping future innovation and business development in the region.

5. Discussion and Interpretation

The findings reveal that AI adoption in Africa and the MENA region is characterized by strong strategic interest but structural limitations. Nearly half of respondents (46.9%) report that their organizations are either currently using AI or planning to adopt it within the next 12 months. In addition, innovation and competitiveness (56.3%) and customer satisfaction (46.9%) emerge as the most important motivations for AI adoption. These results suggest that AI is increasingly perceived not as a technological luxury but as a strategic tool for enhancing market positioning, improving decision-making, and strengthening business competitiveness.

However, AI adoption is occurring within ecosystems marked by significant structural constraints. The most frequently cited barriers include a lack of skilled workers (46.9%), insufficient digital infrastructure (37.5%), and limited access to funding (31.3%). These

findings indicate that AI diffusion is hindered not only by technological gaps but also by human capital shortages and financial limitations. While many organizations recognize the strategic value of AI, the availability of qualified professionals and adequate digital systems remains uneven, slowing the transition from interest to full operational deployment.

The survey also highlights financial constraints as a structural bottleneck. A substantial proportion of respondents (40.6%) rate access to finance and venture capital as weak (scores of 1–2), while only 37.5% provide positive evaluations (scores of 4–5). This suggests that although AI-related skills and awareness are gradually developing, the financial ecosystem supporting AI entrepreneurship remains relatively shallow. Without sufficient venture capital and investment mechanisms, many AI-driven initiatives may struggle to scale beyond early experimentation or pilot projects.

Perceptions of the AI skills ecosystem further illustrate this transitional stage. While 46.9% of respondents rate national AI skills and human capital positively (scores of 4–5), a considerable share still assigns moderate or low ratings. This indicates that the region possesses a growing foundation of digital talent, but not yet the depth of specialized expertise required to sustain a robust AI entrepreneurial ecosystem.

Trust and cultural acceptance also play a role in shaping AI diffusion. Ratings regarding societal trust in AI are relatively mixed, with the largest group of respondents selecting the neutral midpoint (28.1%). This suggests that while AI is gradually gaining legitimacy, uncertainty and skepticism remain present, potentially slowing adoption among more risk-averse organizations.

A key insight emerging from the results concerns the distribution of AI benefits. Although respondents show optimism about AI's capacity to support inclusive development with half rating its potential positively there is also a perception that the benefits may be unevenly distributed. Large enterprises (43.8%) and women- and youth-led ventures (37.5%) are viewed as major beneficiaries, followed by urban entrepreneurs (28.1%). In contrast, rural entrepreneurs receive far less recognition (12.5%). This pattern suggests that while AI may open new opportunities for certain groups, structural inequalities in access to resources, infrastructure, and digital capabilities may limit its inclusiveness.

Despite these constraints, respondents remain highly optimistic about the future role of AI in entrepreneurship. A clear majority (71.9%) express positive expectations regarding AI's impact on entrepreneurial transformation over the next five years. This optimism reflects a widespread belief that AI technologies will play a significant role in shaping future business models, productivity improvements, and innovation ecosystems across the region.

From a broader perspective, these results align with theories of uneven technological diffusion in emerging markets. Advanced technologies such as AI often spread first among actors with greater access to capital, skills, and infrastructure. Without targeted policy interventions, this dynamic can reinforce existing economic and geographic disparities.

Overall, the findings suggest that the transformative potential of AI in Africa and the MENA region will depend less on technological availability and more on institutional and ecosystem development. Strengthening digital infrastructure, expanding AI education and training, improving regulatory clarity, and facilitating access to venture capital will be essential steps. These measures will determine whether AI becomes primarily a driver of concentrated technological advantage or a broader catalyst for inclusive entrepreneurial development.

6. The Need for Targeted Policy Interventions

The empirical findings underscore that the transformative potential of AI in Africa and the MENA region is conditioned by systemic and structural factors. Uneven digital infrastructure, limited access to finance, skill gaps, and cultural resistance highlight the urgency of comprehensive and context-specific policy interventions. Governments and regulatory bodies must not only promote technology adoption but also ensure that AI development occurs inclusively and sustainably (Acemoglu, Daron, & Restrepo., 2019). Policy measures should prioritize **three main areas**:

1. ***Infrastructure and Connectivity***: Investments in broadband, cloud services, and digital public goods are essential to enable startups and SMEs to leverage AI effectively (World Bank, 2023) Mobile-first and offline-compatible AI applications should be incentivized to overcome rural and regional disparities.

2. ***Human Capital Development***: Education and vocational training programs must equip the workforce with AI-related technical skills and digital literacy (Schwab K. ,

2017) (Andela, 2025)⁴⁰. Early-stage integration of AI concepts into primary and secondary education, alongside upskilling initiatives for entrepreneurs and employees, will be critical to prevent skill-biased technological exclusion.

3. *Inclusive Finance and Ecosystem Support:* Targeted access to venture capital, credit, and innovation grants can reduce the current concentration of benefits among large enterprises and urban actors (Chemseddine & MADOURI, 2024). Regulatory frameworks should also encourage ethical AI practices while supporting financial inclusion for women, youth, and rural entrepreneurs.

By implementing coordinated policies that address these dimensions, governments can reduce structural bottlenecks, build trust in AI systems, and ensure that entrepreneurial benefits are equitably distributed. Such proactive policy design is vital for transforming AI from a driver of concentrated growth into a catalyst for inclusive and sustainable development.

⁴⁰ Andela is a bridge between global tech talent and companies seeking skilled remote engineers, helping both sides thrive in the digital economy.

Conclusion

Artificial Intelligence is increasingly reshaping entrepreneurial ecosystems across Africa and the MENA region. The findings of this study demonstrate that AI is perceived primarily as a strategic tool for innovation, competitiveness, and market expansion rather than merely a cost-reduction technology.

However, the adoption of AI remains uneven across the regions. Structural constraints such as insufficient digital infrastructure, limited access to finance, skill shortages, and cultural resistance continue to slow the diffusion of AI-driven entrepreneurship.

The study also highlights an important inclusion paradox. While many respondents believe that AI can support inclusive economic growth, the benefits currently appear to be concentrated among large firms and urban entrepreneurs. Without targeted policy interventions, AI adoption may reinforce existing socio-economic disparities.

To ensure that AI contributes to inclusive and sustainable development, policymakers must prioritize investments in digital infrastructure, education and skills development, and inclusive financing mechanisms for startups and SMEs.

Future research should expand the empirical scope by including larger samples and cross-country comparisons in order to better understand how AI adoption evolves within different institutional and economic contexts.

References

- Acemoglu, D., & Restrepo, P. (2019). Automation and New Tasks: How Technology Displaces and Reinstates Labor. *Journal of Economic Perspectives* 33 (2): 3–30. DOI: 10.1257/jep.33.2.3.
- Aker, J. C., & Mbiti, I. M. (2010). Mobile Phones and Economic Development in Africa. *Journal of Economic Perspectives*, 24(3), 207–232 <https://doi.org/10.1257/jep.24.3.207>.
- Arthur M, D. J. (2006). Schumpeter Schumpeter's Creative Destruction: A Re e Destruction: A Review of the E view of the Evidence vidence. *Journal of Private Enterprise*, 22(1): 120-146.
- Becker, G. (1964). *Human capital, A theoretical and empirical analysis with special reference to education*.
- Chemseddine Tidjani, A. M. (2024). Fintech, financial inclusion, and sustainable development in the African region. *Frontiers in Applied Mathematics and Statistics*, 10, Article 1276218. <https://doi.org/10.3389/fams.2024.1276218>.
- Gikunda, K. (2024). Harnessing Artificial Intelligence for Sustainable Agricultural Development in Africa: Opportunities, Challenges, and Impact. *arXiv*. <https://arxiv.org/abs/2401.06171>.
- GwagwaI, Arthur, Kraemer-MbulaII, E., RizkIII, N., RutenbergI, I., & Beer, J. d. (2020). Artificial Intelligence (AI) Deployments in Africa: Benefits, Challenges and Policy Dimensions. . *The African Journal of Information and Communication (AJIC)*, 26, 1-28.
- Hannah Kerner, C. N.-R. (2024). How accurate are existing land cover maps for agriculture in Sub-Saharan Africa? *Scientific Data*, 11(486). <https://doi.org/10.1038/s41597-024-03306-z>.
- Jobin, A., & Marcello Ienca, E. V. (2019). Artificial Intelligence: the global landscape of ethics guidelines. *Nature Machine Intelligence* DOI: 10.1038/s42256-019-0088-2.
- Kebashnee Moodley, L. S. (2025). The role of artificial intelligence personalisation in e-commerce: Customer purchase decisions in the retail sector. *South African Journal of Information Management*, 27(1), Article a1926. <https://doi.org/10.4102/sajim.v27i1.1926>.
- Lee, K. (2021). Economics of Technological Leapfrogging. *Lee, Keun, Economics of Technological Leapfrogging (2019). UNIDO Department of Policy, Research and Statistics Working* <http://dx.doi.org/10.2139/ssrn.3549420>.

- Makore, S. T. (2024). Regulating Artificial Intelligence to Advance Financial Inclusion in South Africa. *Potchefstroom Electronic Law Journal*, 27, pp 1-35. <https://doi.org/10.17159/1727-3781/2024/v27i0a17488>.
- Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures*, 90, 46–60 <https://doi.org/10.1016/j.futures.2017.03.006>.
- Mugisha, Justin, A. A., & Ocan. (2025). The Role of Artificial Intelligence (AI) in Transforming Small and Medium Enterprises (SMEs): A Narrative Review. *Applied Data Science and Analysis*, 2025, 112-117. <https://doi.org/10.58496/ADSA/2025/007>.
- Oughton, E. (2021). Policy options for digital infrastructure strategies: A simulation model for broadband universal service in Africa. *Elsevier Ltd*, <https://doi.org/10.1016/j.tele.2022.101908>.
- Razavi, H., & Habibnia, A. (2024). The Rise of AI in Middle Eastern Fintech With the Case Studies From the UAE and Turkey.
- Sarker, I. H. (2022). AI-Based Modeling: Techniques, Applications and Research Issues Towards Automation, Intelligent and Smart Systems. *SN Computer Science*, 3(2), Article 158 DOI: 10.1007/s42979-022-01043-x.
- Schumpeter, J. (1942). *Capitalisme, Socialisme et Démocratie*.
- Schwab, K. (2017). *The Fourth Industrial Revolution*.
- Vukosi Marivate, T. S. (2020). Investigating an Approach for Low Resource Language Dataset Creation, Curation and Classification: Setswana and Sepedi. In *Proceedings of the first workshop on Resources for African Indigenous Languages*, pages 15–20, <https://aclanthology.org/2020.rail-1.3/>.
- Zoltan J. Acs, E. S. (2017). The lineages of the entrepreneurial ecosystem approach. *Small Business Economics Volume 49*, pages 1–10 <https://doi.org/10.1007/s11187-017-9864-8>.