

**AI Preparedness in North Africa , what position for
Algeria ?:
From National to Organizational Level with insights
from the Agrifood Sector**

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Abstract

Artificial Intelligence (AI) is transforming economies, yet readiness to adopt it remains uneven. This study compute and compares AI readiness across six North African countries; Algeria, Egypt, Tunisia, Morocco, Libya, and Mauritania, through a contextualized AI Readiness Index with short term prediction (to 2030). Findings show three tiers: Egypt and Algeria as regional leaders, Tunisia and Morocco as emerging performers, and Mauritania and Libya requiring foundational progress. Evidence from Algeria's agrifood sector shows SMEs face major barriers including cost, low awareness, and limited organizational capacity. Managers express a

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clear uncertainty about AI's impact on jobs, while employees show potential to adapt although the lack of structured training and communication. The study highlights a fragmented adoption landscape and the risk of widening divides without targeted policies.

Keywords : Artificial Intelligence (AI), AI Readiness, Algeria, Maghreb, Agrifood Sector, Comparative Index, Emerging Economies, Policy and Strategy

Jel Classification Codes : O33, O38, O55, L25, C43

1. INTRODUCTION

AI is transforming industries, workplaces, and global competitiveness. It fosters innovation while posing challenges in skills, governance, and societal adaptation. Advanced countries are leveraging AI for productivity and growth, whereas lagging nations risk deeper technological dependence in the future. North African countries (Algeria, Egypt, Morocco, Tunisia, Libya, and Mauritania), share structural constraints including resource dependence, unemployment, and weak innovation ecosystems. Despite the global race, these countries rank low in known international AI readiness indices, which often fail to reflect regional and socio-economic specificities, underscoring the need for context-sensitive frameworks. Within this setting, north African countries AI preparedness remains insufficiently studied, with limited evidence at both national and sectoral levels. This research addresses the question:

What is Algeria's level of AI readiness compared to its North African peers?

Based on the study's objectives, we propose three hypotheses:

- **H1. Macro Level:** Algeria ranks among the stronger North African countries in AI readiness, though notable gaps persist across key dimensions.
- **H2. Organizational Level:** In Algerian agrifood firms, AI adoption is driven mainly by resources, training, and infrastructure adequacy, rather than by policy or managerial support.

- **H3. Forecasting:** By 2030, Algeria's AI readiness is projected to converge toward regional leadership under a normal (non-optimistic) reform scenario.

The Objective of the study:

Our Objective is to evaluate AI readiness for Algeria compared to its North African peers, identify strengths and weaknesses across key dimensions, and generate evidence-based insights; at both national and organizational levels , to inform policy design and strategic decision-making.

The importance of the study:

This study is significant for several reasons. First, it addresses a major knowledge gap: while global AI readiness indices exist, they rarely capture the specific realities of Maghreb and north African countries or link macro-level readiness with firm-level practices. By situating Algeria in both regional and global contexts, this research provides policymakers with a clearer understanding of where the country stands relative to its peers and competitors. Second, by combining macro benchmarking with micro-level insights from the agrifood sector; a critical industry for Algeria's economy and similar economies , the study highlights not only structural opportunities and barriers but also the lived realities of AI adoption within organizations. Finally, the forward-looking orientation of the study,

projecting Algeria's potential AI readiness trajectory to 2030, ensures that recommendations are not only diagnostic but also preventive and strategic. This makes the study relevant not only to Algerian decision-makers but also to other emerging economies facing similar challenges of technological adoption.

Methodology:

A tailored AI readiness index was developed for North Africa, drawing on international benchmarks and covering four pillars: governance, infrastructure, human capital, and innovation. The index was used to benchmark Algeria against regional peers and to project its AI trajectory toward 2030 through scenario analysis.

At the micro level, a structured survey of Algerian agrifood firms ; covering both managers and employees, examined adoption drivers, barriers, and impacts. Results show that AI adoption is primarily shaped by resources, training, and infrastructure adequacy, with policy awareness and managerial support playing a lesser role. By integrating macro- and micro-level findings, the study offers evidence-based recommendations for strengthening Algeria's AI readiness.

2. Overview on AI readiness

AI readiness is a multidimensional concept used to evaluate the level of preparedness of governments, organizations, sectors, and individuals to adopt, implement, and benefit from artificial intelligence technologies (Naheed, Pinto, & Pirola, 2025). It

measure the extent to which an entity is equipped to successfully adopt and leverage AI technologies. Key dimensions include (Thakur, 2025):

1. **Technological/infrastructural readiness:** Availability and quality of digital and AI-specific infrastructure
2. **Human capital and skills:** Workforce competencies, education, and training in AI
3. **Data and information readiness:** Access to quality data and data management capabilities
4. **Organizational/strategic alignment:** Leadership vision, strategy, and governance structures.
5. **Ethics and governance:** Regulatory frameworks, ethical guidelines, and responsible AI practices.
6. **Environmental and external factors:** Market conditions, policy environment, and societal attitudes.

2.1. Governmental AI readiness

Governmental AI readiness is often assessed at the national level using composite indices. It combine quantitative and qualitative data, often using weighted scoring and benchmarking. Key similarities include focus on infrastructure, human capital, and governance; differences arise in indicator selection and weighting to reflect local priorities (Baguma, et al., 2022), (Pramanik, Jana, & Ghosh, 2024). Major frameworks include:

- **Oxford Insights Government AI Readiness Index:** Measures countries on dimensions such as government strategy, data and

infrastructure, technology sector, human capital, and ethics. Data sources include public policy documents, international datasets (e.g., World Bank, UN), and expert assessments. Calculation typically involves normalization and aggregation of indicator scores ([Insights, 2024](#)).

- **Global AI Index (Tortoise Media):** Focuses on innovation, investment, implementation, and infrastructure, using data from patents, research output, startup activity, and education statistics ([Mostrous, Cesareo, & White, 2024](#)).

While global indices provide a valuable foundation, their applicability varies significantly across different regional and socio-economic contexts, particularly in Africa, prompting calls for context-specific frameworks.

- **Custom regional indices:** For example, ([Baguma, et al., 2022](#)) proposed the African AI Readiness Index, which adapts global frameworks to the regional context by emphasizing national AI vision, governance, digital infrastructure, R&D capacity, and employment in AI-related roles. Despite its relevance, implementing this index can be challenging due to the limited availability of comprehensive data across all dimensions.

2.2. Organizational AI Readiness

Organizational AI readiness refers to an organization's ability to successfully deploy, integrate, and leverage AI technologies to achieve business objectives and drive digital transformation. It encompasses the alignment of strategy, resources, culture, and processes to support AI adoption and value creation. Key dimensions typically include (Jöhnk, Weißert, & Wyrski, 2021), (Tehrani, Ray, Roy, Gruner, & Appio, 2024) :

- **Strategy and leadership:** Alignment of AI initiatives with business goals and leadership commitment;
- **Technology and infrastructure:** Availability and maturity of IT systems, data infrastructure, and AI tools;
- **Human capital and skills:** Workforce competencies, training, and openness to AI-driven change ;
- **Organizational culture:** Readiness for innovation, risk tolerance, and change management ;
- **Processes and governance:** Established workflows, ethical guidelines, and risk management for AI;
- **Data readiness:** Quality, accessibility, and governance of data for AI applications.

Assessment frameworks include general AI readiness models, AI maturity models (Uren & Edwards, 2023), the Technology-Organization-Environment (TOE) framework (Felemban, Sohail, & Ruikar, 2024). Common methodologies involve interviews, self-

assessments, and maturity scales, with indicators such as leadership support, skills, data quality, infrastructure, and ethical governance .

2.3. AI Readiness Index for Africa

Although the existence of numerous global AI readiness indices, only a limited number of studies have focused specifically on the African context. Among these, ([Baguma, et al., 2022](#)) stands out as one of the few to propose a comprehensive framework tailored to the continent's unique socio-economic and infrastructural realities. Drawing on a systematic literature review, the study explains the importance of context-sensitive indicators and frameworks that reflect the specific challenges and opportunities faced by African nations, contrasting with many global indices that are often criticized for their lack of regional relevance.

The framework developed by ([Baguma, et al., 2022](#)) uses several Africa-specific dimensions, including: Vision, Governance and Ethics, Digital Capacity, Technology Sector Size, Research and Development, Education, Infrastructure, Data Availability, Employment, and GDP (PPP-adjusted). This approach highlights the necessity of adapting AI readiness assessment tools to local contexts, ensuring that indicators capture both the opportunities and constraints unique to African nations, rather than relying solely on global frameworks that may overlook these nuances.

3. METHODOLOGY

Our study builds on the conceptual framework proposed by (Baguma, et al., 2022) for assessing AI readiness in Africa. The framework originally includes ten dimensions and twenty-five variables. In this research, we adapt the framework using 15 measurable indicators across eight dimensions, based on data availability.

3.1. *Data collection and Variables selection*

The selected variables are :

Table 1:Dimensions, Variables, and Data Sources

Dimension	Variables (Indicators)	Source
Vision	- National AI Strategy; - Data Protection Laws	Custom research /
Digital Capacity	- Internet Users (% of population); - Fixed Broadband Subscriptions (per 100 inhabitants)	World Bank World Bank
Infrastructure	- Electricity Access (% of population); - Mobile 3G/4G Coverage (% of population)	World Bank ITU DataHub
Technology Sector	ICT Service Exports (% of total service exports)	World Bank
Research & Development	- Patents (resident applications per million inhabitants); - Total Patent Applications; - Number of Publications in Technology fields; - H-index in Technology fields	WIPO IP Statistics WIPO IP Statistics Scimago Ranking Scimago Ranking
Education	Number of Universities with AI Programs	EduRank
Data Environment	Open Data Index Score	Open Data Watch : ODIN
Economic & Employment	- GDP per Capita (PPP, USD); - Employment in Services (% of total employment)	World Bank World Bank

Source : Authors' compilation based on data availability.

The dataset was compiled for the six North African countries, namely the Arab Maghreb Union (Algeria, Morocco, Tunisia, Libya, and Mauritania), with the addition of Egypt. Egypt was included due to its role as a regional leader in AI and ICT development, making it an essential benchmark alongside Algeria.

The study period spans 2015 to 2023. This timeframe was selected because the global rise of artificial intelligence as a strategic priority began in the mid-2010s, with a clear emergence in Africa between after 2018, when many African countries initiated efforts to establish data infrastructures, regulatory frameworks, and educational programs to support AI development (Gwagwa, Kraemer-Mbula, Rizk, Rutenberg, & Beer, 2020). The cut-off point of 2023 was chosen as most publicly available datasets, particularly from the World Bank (World Bank, 2024), ITU (International Telecommunication Union (ITU), 2023), WIPO (World Intellectual Property Organization (WIPO), 2024), and (SCImago, 2023), are updated only up to that year. By focusing on this period, we capture the formative years of AI adoption and digital transformation in North Africa.

Framework Justification and Adaptation

While our framework is grounded in (Baguma, et al., 2022), several adjustments were necessary due to data availability constraints in the target countries. For instance, original dimensions such as *STEM graduates*, *R&D expenditure*, *ICT workforce size*, and *startups* could not be consistently measured for the selected countries. Instead, we adopted Employment in Services (% of total employment) as a proxy for labor market orientation toward knowledge-intensive sectors, and the number of universities with AI programs as a proxy for AI-related educational capacity. These modifications ensure that the framework remains empirically operational while still capturing the essential aspects of AI readiness. Importantly, the chosen indicators maintain the conceptual integrity of the original model, reflecting countries' digital capacity, research ecosystems, institutional readiness, and broader economic foundations for AI adoption.

3.2. Data Processing and Normalization

The construction of the AI Readiness Index followed a structured multi-step approach. Data for six North African countries were compiled for the period 2015–2023, covering the previous key dimensions: Vision, Digital Capacity, Infrastructure, Technology Sector, Research and Development, Education, Data Environment,

and Economic and Employment. To account for differences in measurement units and scales across indicators using both simple and pure Min–Max scaling (rescaling values into the [0,1] interval),

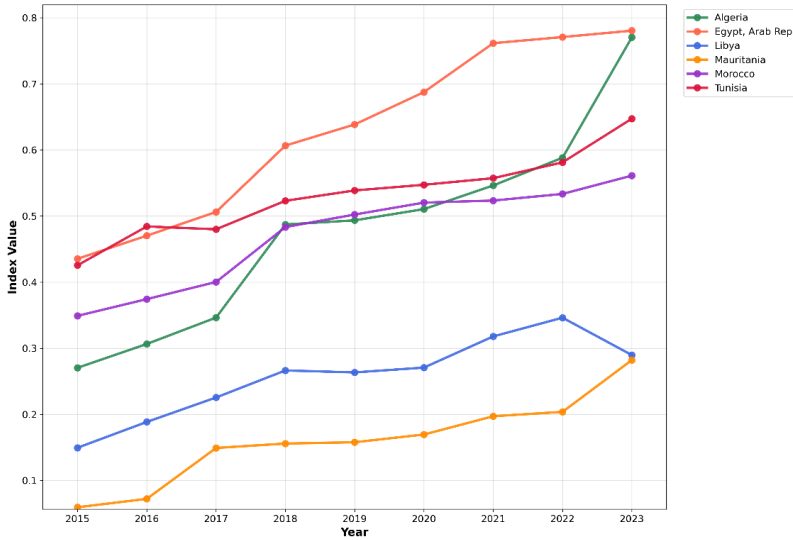
3.3. The AI index for north African countries

Normalized indicators were first aggregated within each dimension, and subsequently averaged across dimensions to obtain the overall AI Readiness Index as follow:

Year	Algeria	Egypt	Libya	Mauritania	Morocco	Tunisia
2015	0.27	0.44	0.15	0.06	0.35	0.43
2016	0.31	0.47	0.19	0.07	0.37	0.48
2017	0.35	0.51	0.23	0.15	0.40	0.48
2018	0.49	0.61	0.27	0.16	0.48	0.52
2019	0.49	0.64	0.26	0.16	0.50	0.54
2020	0.51	0.69	0.27	0.17	0.52	0.55
2021	0.55	0.76	0.32	0.20	0.52	0.56
2022	0.59	0.77	0.35	0.20	0.53	0.58
2023	0.77	0.78	0.29	0.28	0.56	0.65

Source: Compiled and processed by the authors using Python.

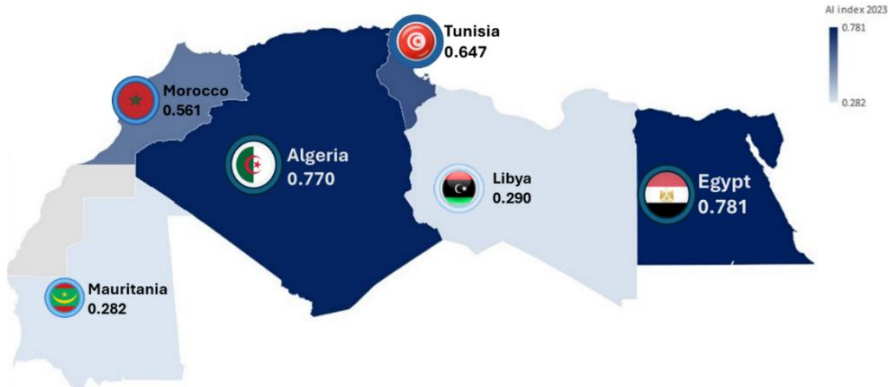
Figure 1: AI Readiness Index in North African Countries (2015–2023)



Source : Created by the author using Python

Fig. 1. AI Readiness Index in North African Countries (2015–2023)

Figure 2 : AI readiness Index scores across North African Countries, 2023

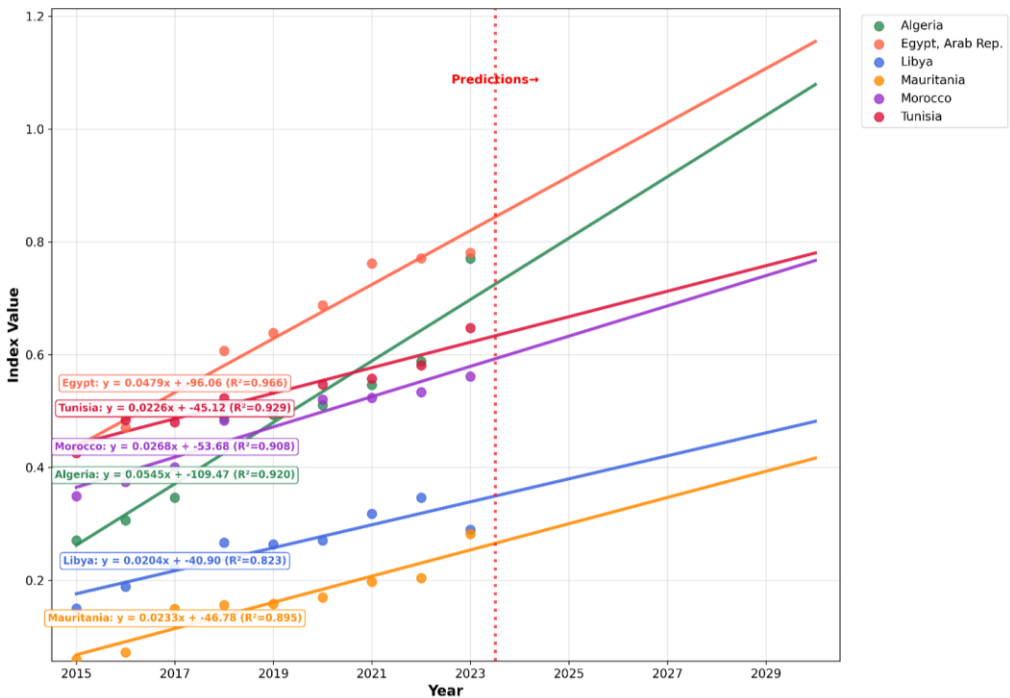


Source : Created by the author using MS Excel

3.4. Forecasting and scenario analysis (trend analysis + 2030 outlook)

To project future trends, linear regression models were fitted to historical index values for each country, generating forecasts up to 2030. The complete results were then visualized through the following comparative graphs .

Figure 3: Linear regression model for AI readiness indices and 2030 predictions



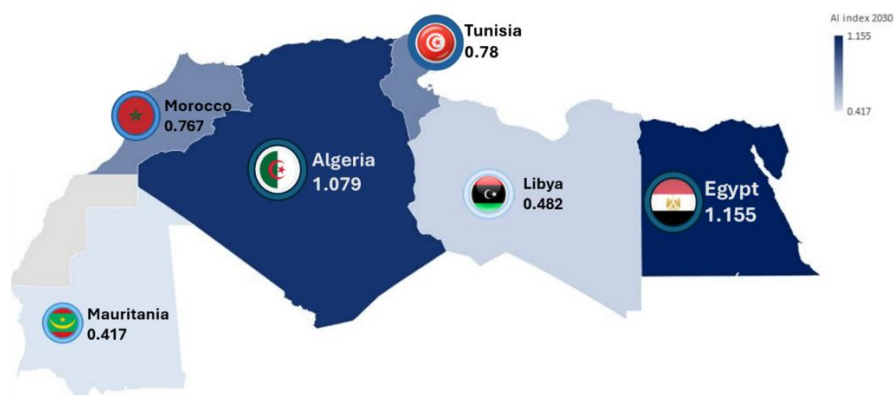
Source : Created by the author using Python

Table 2: AI readiness index forecasts for North Africa, 2030

Country	Simple_Average_Prediction_2030	R ²
Egypt	1.155	0.966
Algeria	1.079	0.920
Tunisia	0.780	0.929
Morocco	0.767	0.908
Libya	0.482	0.823
Mauritania	0.417	0.895

Source: Created by the author using Python.

Figure 4 : AI readiness Index scores across North African Countries, 2030



Source : Created by the author using MS Excel

The forecasts reveal a three-tier structure of AI readiness in North Africa by 2030.

- **Group 1 – North African Leaders (Egypt and Algeria):** Both countries are projected to lead the region, supported by robust policies and investments. Egypt has advanced a national AI strategy, invested in digital

infrastructure, and strengthened AI education. Algeria, while slightly behind in absolute terms, it shows the best growth as it shown with the value of regression trend. Decree 1275 “One Degree, One Startup”, fiscal incentives for innovation, and expanding tech incubators have created fertile ground for rapid scaling. If these policies are maintained, Algeria could surpass Egypt in the medium term.

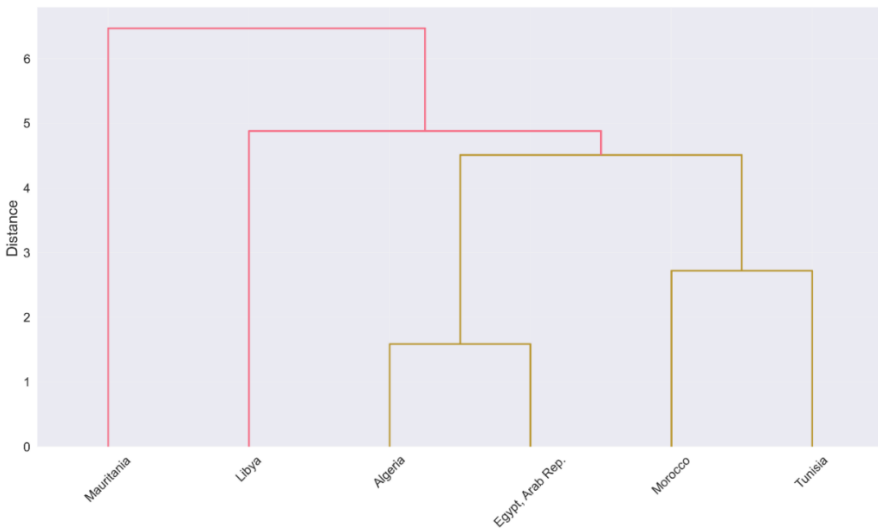
- **Group 2 – Mid-tier (Tunisia and Morocco):** These countries display moderate but reliable forecasts, reflecting steady progress in digital transformation. Tunisia’s national digital strategy and Morocco’s AI-related research and entrepreneurship ecosystems provide a strong base, yet both require greater scaling of human capital, funding, and private-sector adoption to avoid stagnation in the mid-tier.
- **Group 3 – Laggards (Mauritania and Libya):** Both face structural constraints, with Mauritania showing stable but low levels of readiness and Libya combining a weak forecast with low model reliability. For these countries, the priority lies in foundational reforms—expanding connectivity, building institutional capacity, and establishing legal frameworks—before advanced AI

strategies can take hold. This analysis could be clarified more using Comparative dimension Analysis and Clustering,

3.5. *Comparative dimension Analysis and Clustering*

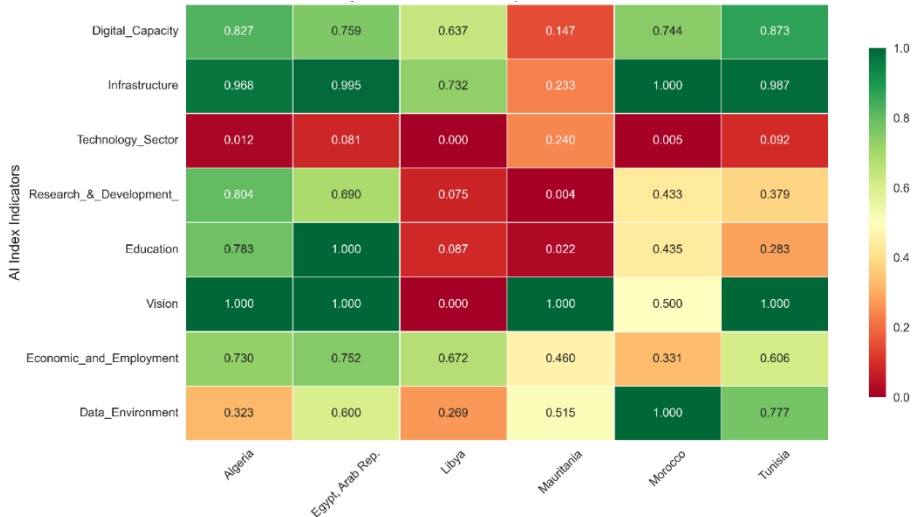
Once processed, dimension scores were compared across countries to identify relative strengths and weaknesses. hierarchical clustering was applied to classify countries into groups with similar AI readiness profiles. This classification allows for targeted policy recommendations and tailored strategic interventions.

Figure 5 : Hierarchical clustering dendrogram (Ward Linkage)



Source: Created by the author using Python.

Figure 6 : Country performance Heatmap across Ai index dimensions



Source: Created by the author using Python.

The hierarchical clustering and heatmap reveal distinct AI readiness profiles among North African countries:

- **Egypt and Algeria** share similar readiness patterns, with relatively good performance across most dimensions, except in the technology sector, where their contribution remains very low. Egypt shows a medium level in the data environment, while Algeria lags behind with a low level in this dimension. To address these gaps, both countries should adopt corrective policies to strengthen their data ecosystems and invest more heavily in technology-driven

industries, thereby diversifying their exports and building a solid platform for future AI-driven investment.

- **Tunisia and Morocco** perform at good to medium levels in digital capacity, infrastructure, and data environment, and show moderate performance in R&D, education, and employment. Tunisia benefits from having a clear national AI vision, whereas Morocco still lacks a well-defined strategy. However, both countries exhibit a low contribution from the technology sector, which remains a critical weakness that limits their ability to fully leverage AI opportunities.
- **Mauritania and Libya** generally display medium-to-low levels across most dimensions, highlighting significant structural and institutional barriers to AI readiness.

The analysis underscores that North African countries display varied levels of progress across different dimensions, but a commonly weak technology sector. This sector remains underdeveloped, leaving these countries largely dependent on imported technologies. While importing is necessary in the short term to bridge the digital divide, long-term sustainability requires targeted investments, robust innovation ecosystems, and proactive policies. Without such corrective measures, North African

countries risk falling further behind as the global acceleration of AI continues.

3.6. Organizational-Level Assessment - insights from the Agrifood Sector

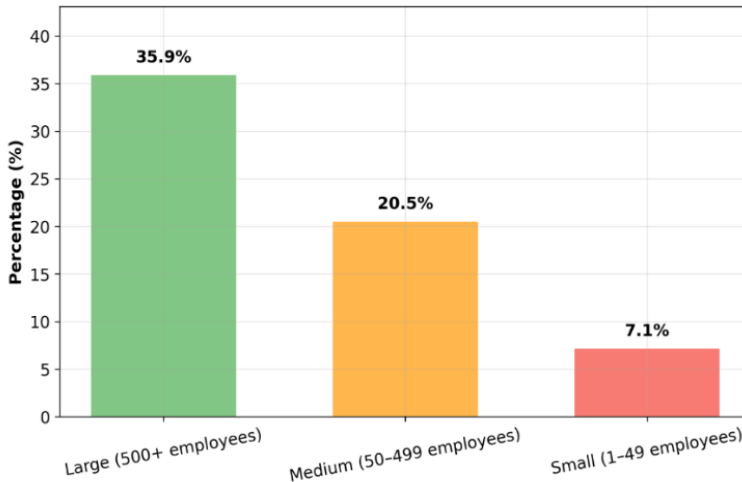
The second part of the study focuses on AI readiness at the organizational level in Algeria, specifically within the agrifood sector. To better understand these dynamics, we conducted a survey of 150 managers from agrifood companies in Algeria. This survey was conducted by the Center for Research in Applied Economics for Development (CREAD) as part of a research project examining the role of artificial intelligence in the Algerian economy, with particular attention to its potential opportunities and threats to the labor market. Data collection took place between February and June 2025. The questionnaire explored several dimensions, including the level of awareness about AI technologies, the extent and types of AI integration, key decision factors for adoption (such as costs, scalability, and ease of implementation), expected timelines for AI integration, and obstacles encountered during implementation. Results were analyzed by company size, with particular attention to the role of small and medium-sized enterprises (SMEs), which represent more

than 99% of Algerian companies (Mechaali, B., & Mahrez, S. (2020))

3.6.1. Manager part :

- **Question 01:** To what extent do you think your company is informed about AI-related technologies?

Figure 7: Hight Ai awareness rate by company size (Well and Extremely informed)



35% of managers in large firms are well informed about AI and related technologies, but this share falls sharply in smaller firms. Since over **99%** of Algerian enterprises are SMEs, this knowledge gap poses a major obstacle to AI adoption. A national strategy to raise managerial awareness and provide training in SMEs is

essential to prepare the backbone of Algeria's economy for upcoming technological transformations.

- **Question 02:** To what extent have you currently integrated and used AI-based tools or technologies in your daily tasks?

Figure 8 : AI integration level in daily tasks

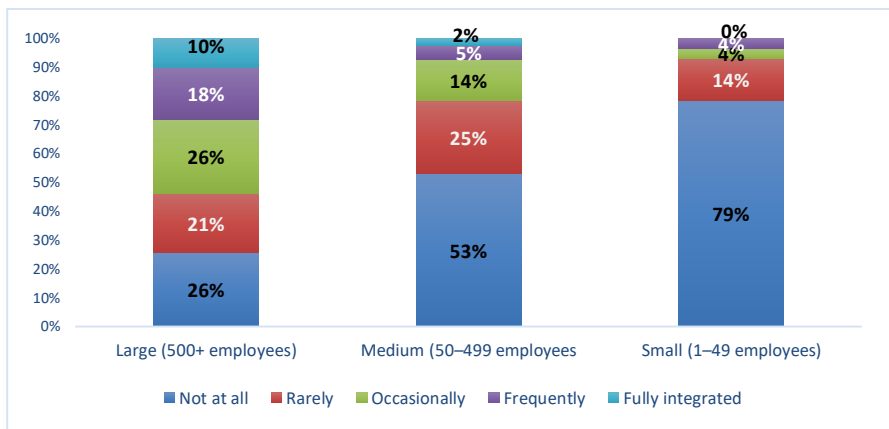
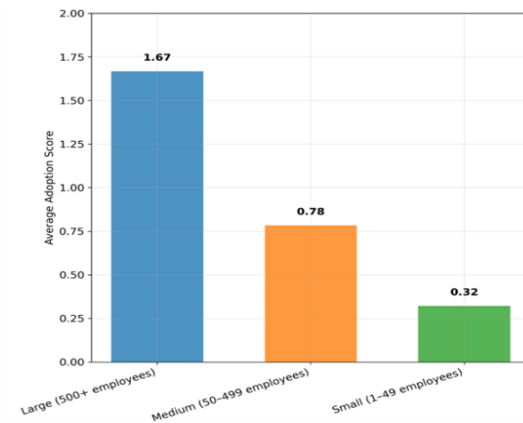


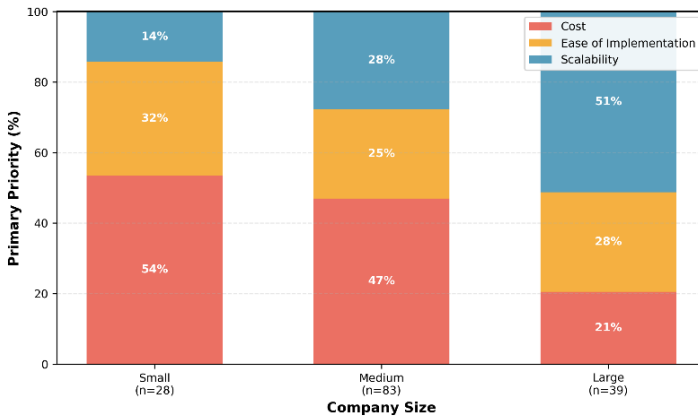
Figure 9 : AI adoption scores by company size (0: Not at all , 4 : Fully integrated)



AI adoption in Algerian agrifood companies remains very limited. On a five-point scale, the average adoption level is just 1.67 for large firms, 0.78 for medium firms, and 0.32 for small firms. Only 10% of large companies report having fully integrated AI tools, compared with just 2% of medium-sized firms. Where adoption does occur, it is largely confined to generative AI applications, with only a few cases involving AI-based solutions for energy management or predictive maintenance. Importantly, there is no evidence of AI being deployed for automation in production processes, highlighting that Algerian agrifood firms are still far from harnessing AI for core operational transformation.

- **Question 03:**What is the most important factor when deciding to implement AI?

Figure 10 : Decision factor distribution by company size

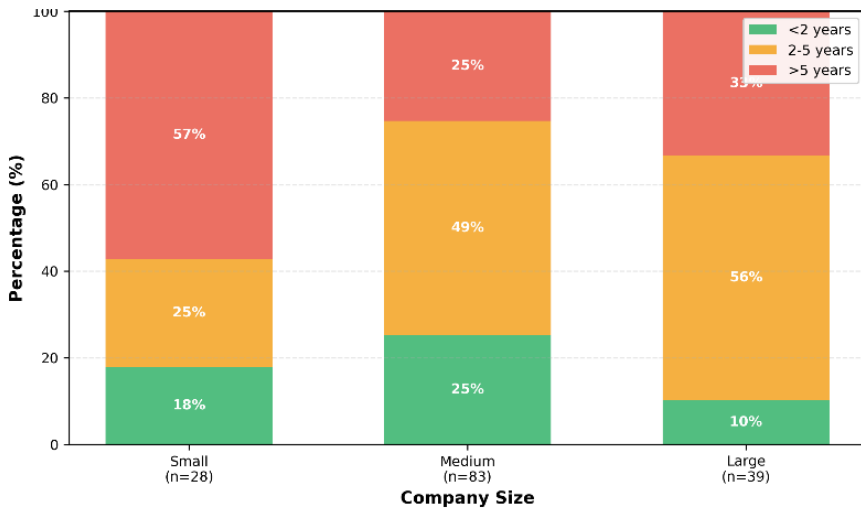


The results reveal distinct priorities across firm sizes. Small firms (1–49 employees) emphasize cost (53.6%) as the main barrier to AI adoption. Medium firms (50–499 employees) show a more balanced distribution, with cost remaining significant (47.0%), but scalability gaining importance (27.7%), alongside ease of implementation (25.3%). By contrast, large firms (500+ employees) overwhelmingly prioritize scalability (51.3%), while cost plays only a marginal role (20.5%). Across all sizes, ease of implementation consistently ranks as a secondary factor, underscoring the importance of organizational and technical readiness in shaping adoption decisions. The progression from cost-driven concerns in small firms to scalability-driven strategies in large firms illustrates divergent capacities to perceive AI as a

strategic growth enabler rather than merely a financial burden. However, given that over 99% of Algerian enterprises are SMEs, cost sensitivity remains the dominant structural constraint—helping to explain why adoption in the agrifood sector remains low and uneven, and why, without targeted support, many firms risk becoming locked into persistent low-uptake trajectories.

- **Question 04** :Over what period do you estimate it necessary to integrate all AI-based tools into your company?

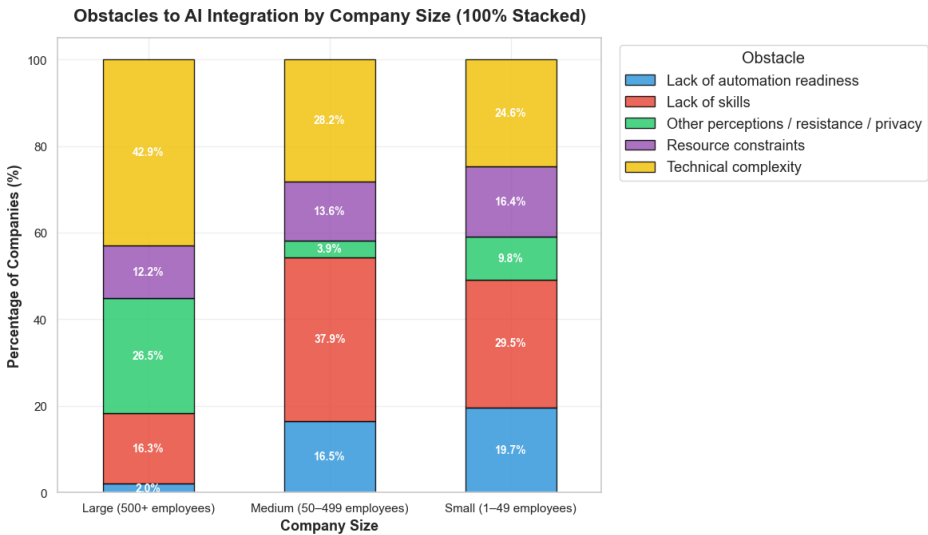
Figure 11:Timeline expectation for AI integration by company size



AI integration timeline expectations indicate that across all company sizes, most firms plan to adopt AI tools in the medium-

to long-term horizon. Among large companies, 33.3% of managers expect full integration in the long term (+5 years) and 56.4% in the medium term (2–5 years). For medium-sized firms, the distribution is similar, with 25.3% projecting long-term integration and 49.4% medium-term. In contrast, small firms managers are more cautious, with a majority (57.1%) deferring adoption to the long term and only 25% anticipating medium-term integration. These results reveal persistent uncertainty across firm sizes, reflecting the dependence of AI integration on multiple enabling factors such as resource availability, organizational readiness, and workforce skills.

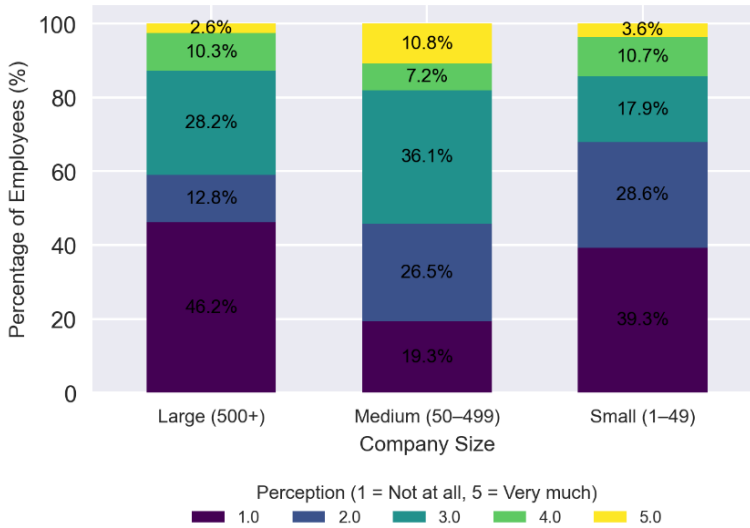
- **Question 05** :What challenges or obstacles have you encountered when implementing AI into your existing systems?



The results show that SMEs face structural barriers linked to limited skills, technical complexity, and weak automation readiness, while large firms struggle more with integration challenges such as system complexity and data security. This confirms earlier findings: smaller firms remain constrained by basic resource and capability gaps, whereas larger firms approach AI adoption from a perspective of scalability and governance. Together, these patterns highlight a fragmented adoption landscape where SMEs risk lagging behind unless targeted support is provided.

- **Question 06:** To what extent do you think AI integration in your company could lead to the elimination of human jobs?

Figure 12 : Perception of AI job elimination by company size

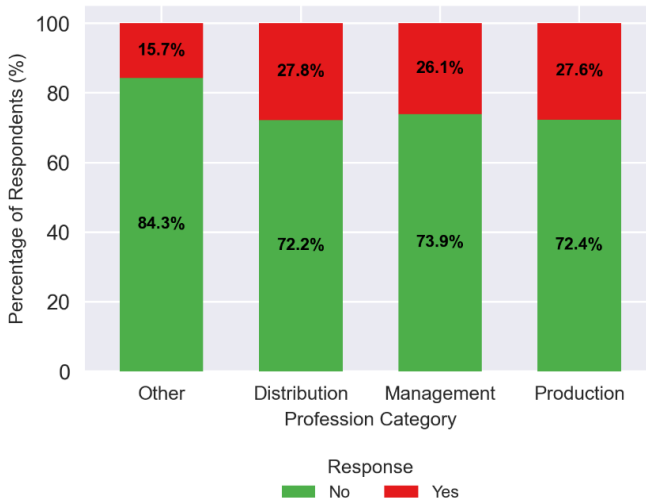


The result does not show a consistent, well-informed understanding of AI’s potential impact on jobs by employees . Instead, it reflects a mix of reassurance in large firms, uncertainty in medium firms, and limited awareness in small firms. This strongly suggests that companies lack a coordinated strategy to inform and prepare employees for AI-driven structural changes.

3.6.2. Employees part:

- **Question 07:** Are you afraid that AI could potentially replace some of your tasks?

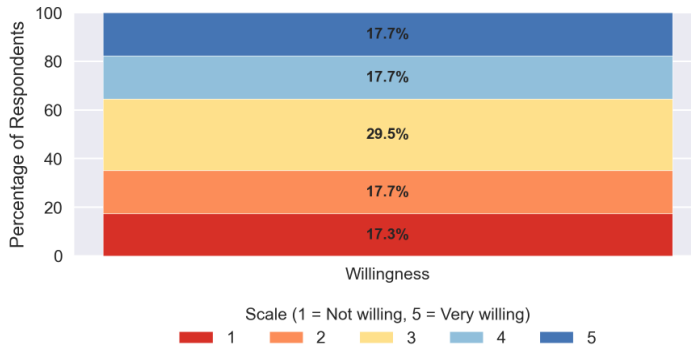
Figure 13: Fear of AI replacing tasks by profession



The results show that fear of AI replacing tasks varies by profession. Employees in production (27.6%), distribution (27.8%), and management (26.1%) express higher concern compared to those in other professions (15.7%). Overall, about 23% of respondents fear job replacement by AI, suggesting that perceptions are shaped more by the vulnerability of specific job functions than by a clear organizational strategy. This indicates a lack of systematic communication and training on AI's role, leaving employees to interpret potential risks individually.

- **Question 08:** How willing are you to acquire new skills to get a job that cannot be automated?

Figure 14 : Willingness to acquire new skills to avoid automation

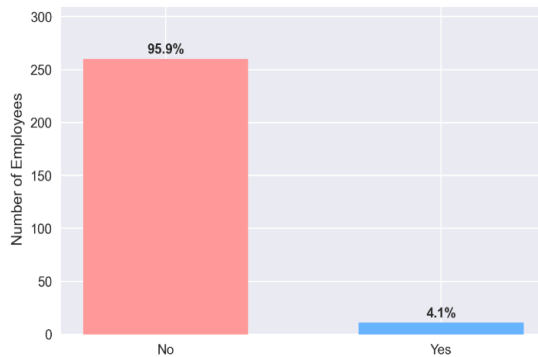


The findings show that over one-third of employees (35.4%) express strong willingness (levels 4–5) to acquire new skills in order to safeguard their jobs against automation. This reflects a proactive and adaptable mindset among a significant portion of the workforce. However, the majority remain neutral or hesitant, suggesting uncertainty about reskilling opportunities or their relevance.

At the same time, the distribution of responses highlights that not all employees are equally engaged, pointing to a gap in awareness and preparedness rather than a lack of interest. Thus companies need to strengthen communication, provide accessible programs, and offer clear incentives to expand this readiness across the workforce.

- **Question 09:** Have you received specific training to use AI-based tools or technologies in your work?

Figure 15 : Training to use Ai based tools



The results reveal an overwhelming lack of AI-related training among employees. Out of 271 respondents, 260 individuals (95.9%) reported not having received any training, while only 11 individuals (4.1%) confirmed they had been trained.

This stark imbalance shows that formal training on AI tools remains largely absent in the surveyed organizations. As AI adoption accelerates, the lack of training risks leaving employees unprepared, amplifying fears of job displacement and creating resistance to technological change.

To address this gap, companies should prioritize structured upskilling programs, awareness initiatives, and hands-on AI training to ensure that employees can actively adapt to and benefit from AI integration in their workplace.

CONCLUSION

This study assessed AI readiness in North Africa, focusing on Algeria at both national and organizational levels, using a contextualized adaptation of (Baguma, et al., 2022) framework with eight dimensions: vision, digital capacity, infrastructure, technology sector, R&D, education, data environment, and economic/employment indicators. Algeria emerges as a regional leader alongside Egypt, showing strong growth and positive forecasts toward 2030, supported by initiatives such as Ministerial Decree No. 1257 – “One Degree, One Start-up / One Degree, One Patent”, fiscal incentives, and expanding tech incubators. This decree encourages innovation by transforming university projects into start-ups and patents, reinforcing the ecosystem for AI-driven growth.

Comparatively, Egypt and Algeria lead the region, Tunisia and Morocco occupy a mid-tier position, and Mauritania and Libya face structural barriers. At the organizational level, qualitative findings from the agrifood sector confirm that AI adoption is largely constrained by resources, managerial awareness, and technical readiness in SMEs, while larger firms face integration and workforce preparedness challenges. Employees show a willingness

to reskill, yet formal AI training is rare, highlighting the importance of structured programs and clear communication.

The study contributes to the literature by bridging macro-level AI readiness assessment with micro-level organizational insights, providing evidence-based recommendations for policymakers, educators, and managers. Key policy implications include prioritizing AI education and training for SMEs, investing in technology-driven industries, strengthening data governance, and developing clear national strategies to accelerate adoption. Strategically, organizations should focus on aligning AI initiatives with business objectives, scaling infrastructure, and fostering a culture of innovation to maximize the benefits of AI integration.

Despite these contributions, the study has limitations, including reliance on available secondary data for some macro indicators and the focus on a single sector at the organizational level. Future research could extend the analysis to other strategic sectors, explore the effectiveness of targeted policy interventions, and assess AI readiness at the regional and continental levels to better inform sustainable AI development strategies in Africa.

Future research could expand this study in several directions. First, extending the Baguma-based framework to other sectors beyond agrifood—such as health, energy, or finance ; would provide a broader understanding of AI readiness in Algeria and the region.

Second, incorporating longitudinal analyses would allow the tracking of policy effects, such as the impact of Ministerial Decree No. 1257, over time. Third, more in-depth comparative studies across African regions could shed light on structural differences and shared challenges in AI adoption. Fourth, integrating mixed-method approaches—combining large-scale surveys with qualitative case studies—would deepen insights into organizational behavior, managerial decision-making, and workforce perceptions. Finally, future work could investigate the role of universities and research institutions in driving AI innovation, particularly in linking academic outputs to start-ups and patents.

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Any remaining errors or omissions are solely the responsibility of the authors.

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