



ARTIFICIAL INTELLIGENCE MANAGEMENT AND SMART UNIVERSITIES: ASSESSING READINESS, PROSPECTS IN ALGERIA

Rania Boudjebieur

Badji Mokhtar University, Annaba, Algeria
<https://orcid.org/0009-0001-4297-8459>

Abderrahmen Gueroui

Higher School of Management Sciences, Annaba, Algeria
<https://orcid.org/0009-0008-3765-3175>

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ABSTRACT

This study aims to examine the readiness of Algerian universities for the adoption of Artificial Intelligence Management and to explore its relationship with the prospects of transitioning toward smart universities. A quantitative descriptive-analytical approach was adopted using a questionnaire administered to a convenience sample of 100 academic and administrative staff members from various Algerian universities. Data were analyzed using SPSS software, employing descriptive statistics. The findings indicate that the level of AI readiness in Algerian universities remains relatively low to moderate across its main dimensions, including human resources, digital infrastructure, and strategic and administrative frameworks. The results also reveal a statistically significant positive correlation between AI readiness and the prospects of smart universities. Based on these findings, the study emphasizes the need to strengthen digital infrastructure, develop human competencies, and establish clear strategic, financial, and governance frameworks. It also highlights the importance of fostering innovation and inter-university collaboration to support the effective implementation of Artificial Intelligence Management in Algerian higher education institutions.

1 INTRODUCTION

The world has witnessed a profound digital transformation in recent decades, in which data-driven systems and smart technologies, particularly artificial intelligence (AI), have become key drivers of enhanced institutional performance

and improved decision-making processes. In this context, artificial intelligence is no longer merely a technical tool, but a strategic enabler that reshapes management practices and supports the development of more efficient, adaptive, and intelligent organizations.

Address of the corresponding author:
Rania Boudjebieur
rania.boudjebieur@univ-annaba.dz

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In the higher education sector, universities worldwide are increasingly striving to adapt to this transformation by integrating AI technologies into administrative and academic processes, improving the quality of education, and strengthening scientific research. This shift has facilitated the emergence of the “smart university” model, which relies on data, innovation, and digital ecosystems to enhance institutional effectiveness.

In the Algerian context, this transformation is of particular importance given the challenges faced by higher education institutions, including limited digital infrastructure, varying levels of human resource preparedness, and the need to further develop strategic and administrative frameworks. Despite ongoing efforts toward digitalization, the adoption of Artificial Intelligence Management in Algerian universities remains at an early stage, raising important questions regarding their actual readiness for such a transformation.

Despite the growing global body of literature on artificial intelligence in higher education, there remains a limited number of empirical studies examining AI readiness in developing countries, particularly in the Algerian context. Moreover, existing studies have rarely adopted a multidimensional framework that simultaneously integrates human, technological, and governance-related dimensions of readiness.

Accordingly, the main research problem of this study is formulated as follows: To what extent do Algerian universities possess the necessary readiness to adopt Artificial Intelligence Management, and how does this readiness relate to the prospects of developing smart universities?

Based on this main question, the study seeks to address several sub-questions aimed at analyzing the level of AI readiness in Algerian universities. These include examining the availability of digital infrastructure, assessing the preparedness of human resources, and evaluating the role of strategic and administrative frameworks in supporting the adoption of Artificial Intelligence Management within the university environment.

2 LITERATURE REVIEW

2.1 Artificial intelligence: Concept and definition

Khaleel and Jebrel (2024) defined artificial intelligence as the development of computer

systems that can perform tasks which typically require human intelligence, including learning from experience, understanding natural language, recognizing patterns, reasoning, problem solving, and adapting to new situations. In their view, AI systems are designed to emulate human cognitive functions so that they can accomplish complex tasks autonomously or with minimal human intervention (Khaleel & Jebrel, 2024). Further, AI is defined, in economic terms, as a “prediction machine,” arguing that it takes available data and uses it to generate missing information, thereby improving the quality of decisions under uncertainty (Agrawal et al., 2018). These definitions portray AI both as a broad field of computer-based intelligence and as a core capability for generating useful predictions that transform organizational processes

So, Artificial intelligence can be defined as a configurable capability of artificial systems to continuously transform raw data into context-sensitive judgments and actions, by autonomously discovering patterns, updating internal representations, and coordinating with humans or other machines, so that the overall socio-technical system behaves in an increasingly adaptive and goal-oriented way.

2.2 Artificial intelligence management

Management of artificial intelligence has emerged as a managerial approach that embeds AI technologies into core organizational functions to enhance knowledge creation, innovation, and decision-making. In this perspective, Raina et al. (2026) describe it as the systematic use of AI tools such as machine learning, predictive analytics, and natural language processing to redesign activities in areas like human resource management, operations, strategic leadership, and customer or service management to support sustainable business models.

Artificial intelligence-driven management is the coordinated set of managerial policies, processes, and practices through which an organization aligns data, algorithms, and human expertise to plan, deploy, and continuously supervise AI applications, with the aim of improving the effectiveness, efficiency, and responsibility of its decisions and operations.

2.3 Requirements and capabilities of ai management

Raina et al. (2026) argued that effective management of AI requires organizations to develop AI-specific resources that are valuable, rare, inimitable, and non-substitutable, such as high-quality data assets, advanced digital infrastructure, and strong analytics capabilities. Drawing on the resource-based view and dynamic capabilities theory, they defined AI management capabilities as the organizational processes that allow firms to sense AI opportunities, seize them through appropriate investments, and reconfigure structures and routines to integrate AI into everyday operations. (Kolbjørnsrud, 2024) added that intelligent organizations also need principles for human AI collaboration, emphasizing that requirements for AI management include building complementary human skills, transparent organizational architectures, and a learning-oriented culture so that human and digital actors can jointly solve problems and adapt over time.

2.4 Smart organizations: Concept and evolution

With the advancement of digital technologies, the concept of smart organizations has been further expanded. (Filos, 2005) Defined smart organizations as knowledge-driven and internetworked entities that can adapt dynamically to new organizational forms and practices enabled by the digital economy. This definition highlights the central role of information and communication technologies in enhancing organizational adaptability and learning.

More recently, Pissardini et al. (2024) emphasized that organizational intelligence should be understood as an evolutionary property that develops through the progressive integration of digital and smart technologies into organizational functions. They argued that intelligent organizations emerge as organizational functions acquire advanced, technology-enabled capabilities that support autonomous and data-driven decision-making.

Despite growing interest in intelligent organizations, the literature reveals a lack of consensus regarding a single, universally accepted definition. Early conceptualizations emphasized the role of knowledge and learning as

core organizational capabilities. Wiig (2000) described intelligent organizations as those that effectively leverage knowledge to manage present challenges while anticipating future uncertainties (El Haiba et al., 2017). Building on this view, Schwaninger (2001) emphasized that intelligent organizations are characterized by high levels of performance derived from their capacity to understand environmental complexity and respond to it in a purposeful and coordinated manner. Intelligence, therefore, is not limited to information processing alone but extends to the organization's systemic ability to align structures, processes, and human competencies with environmental demands.

Building on these perspectives, intelligent organizations can be conceptualized as organizations that possess the capacity to sense environmental changes, transform data and information into actionable knowledge, and dynamically adapt their structures and processes to sustain value creation. This synthesized understanding provides a suitable foundation for examining the role of artificial intelligence management in enabling and shaping intelligent organizations.

2.5 Dimensions of smart organizational capability

Smart organizational capability can be understood through several key dimensions that together capture how an organization intelligently adapts, learns, and innovates in an AI-driven environment. First, the knowledge and learning dimension (El Haiba et al., 2017; Razavi, 2013) reflects the organization's ability to continuously generate, store, share, and reuse knowledge through formal and informal mechanisms, supported by digital platforms and AI-driven analytics that transform dispersed data into actionable insights, which requires moving beyond traditional routines, encouraging critical reflection, and structuring idea management processes to ensure that high quality ideas are captured and developed. Second, the human capital and collaborative culture dimension (El Bassiti & Ajhoun, 2013) refers to the extent to which employees are empowered to initiate and develop ideas, work in cross-functional and interdisciplinary teams, and engage in open communication and trust-based relationships, where ethical conduct, shared responsibility, and psychological safety enable

constructive debate and collective problem solving that reinforce organizational intelligence. Third, the digital and technological smartness dimension (Abiodun et al., 2023; Cheng et al., 2018 ; Lopes Nunes et al., 2017) captures the strategic integration of advanced technologies such as the Internet of Things, cyber physical systems, cloud computing, big data analytics, and artificial intelligence into core processes and supply chains, enabling hyperconnectivity, real-time monitoring, predictive decision making, and the optimization of resources, quality, and responsiveness without compromising sustainability or safety. Finally, the networking and innovation dimension (El Haiba et al., 2017) denotes the organization’s capacity to operate as an internetworked node within broader ecosystems, leveraging virtual collaboration, knowledge hyperlinking, and recommendation-based systems to connect internal and external actors, combine heterogeneous ideas, and continuously generate innovative products, services, and solutions that match evolving environmental demands and stakeholder expectations.

AI management increasingly acts as a strategic engine for building smart organizations by orchestrating how data, technologies, people, and processes are aligned to create intelligent, adaptive systems. Effective AI management first enables data-driven learning by establishing governance structures, architectures, and analytical capabilities that transform large, heterogeneous data streams into organizational knowledge, thereby reinforcing the knowledge and learning dimension of smart organizations through systematic data acquisition, advanced analytics, and feedback loops embedded in daily operations (Abiodun et al., 2023; Kolbjørnsrud, 2024; Sposato & Dittmar, 2025). Second, AI management shapes human AI collaboration by defining roles, responsibilities, and interaction patterns in which algorithms augment, rather than replace, human judgment, supporting agile teams with decision support systems, intelligent recommendation engines, and adaptive workflows that enhance collaboration, creativity, and responsiveness (Kolbjørnsrud, 2024; Jarvenpaa & Välikangas, 2025). Third, by integrating AI into core Industry 4.0 technologies such as IoT, cyber physical systems, and smart factories AI management drives digital smartness across value chains, enabling real time monitoring,

predictive maintenance, autonomous coordination, and end to end optimization that materially improve productivity, sustainability, and customer experience (Abiodun et al., 2023; Cheng et al., 2018; Lopes Nunes et al., 2017). Finally, AI management provides a strategic and ethical compass for AI deployment, ensuring that algorithmic systems are aligned with organizational values, regulatory frameworks, and human-centric principles, which is essential for building trust, safeguarding fairness, transparency, and sustaining the long-term legitimacy of smart organizations in a rapidly evolving socio-technical environment (Nübler, 2023; Sarlak, 2010).

2.6 Smart universities

The concept of Smart University appeared because of the digital transformation in higher education. It refers to the universities that apply advanced technologies such as the Internet of Things (IoT), AI, cloud computing, big data, and smart systems in their academic and administrative processes to enhance efficiency and fulfil strategic goals. Smart universities are built on digital infrastructure and intelligent technologies to offer flexible learning environments, support data-driven decision making, and improve the quality of educational and administrative services via interconnected and automated systems (Mbombo & Cavus, 2021).

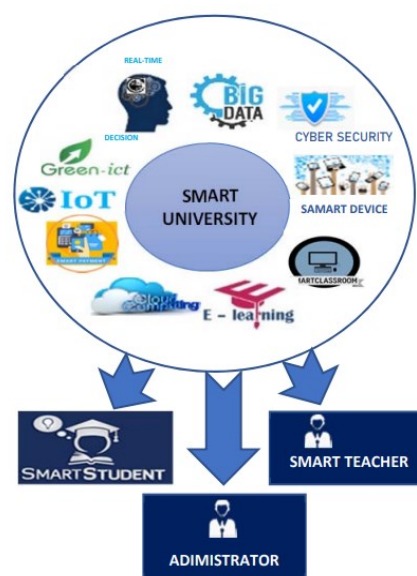


Figure 1. Main components of the Smart University
Source: (Mbombo & Cavus, 2021)

3 EMPIRICAL LITERATURE RELATED TO THE STUDY

3.1 Previous studies

Kassa and Worku (2025) conducted a quantitative study examining the impact of artificial intelligence on organizational performance in service firms. Using survey data from managers and employees, the study tested structural relationships between AI use, process efficiency, and innovation outcomes. The findings indicate that AI adoption significantly improves service quality, response speed, and cost efficiency, particularly when supported by employee training, clear ethical guidelines, and strong top management support. The study highlights that artificial intelligence management should be understood as a strategic capability that aligns technological investments with human skills and organizational processes.

Hyiamang and Liu (2025) adopted a multiple case study design involving organizations from the manufacturing, finance, and healthcare sectors to explore how AI strategies are formulated and implemented at the top management level. The results show that organizations with explicit AI strategies covering data infrastructure, governance, talent, and partnerships are more successful in scaling AI initiatives and generating measurable business value compared to those with fragmented approaches. The study concludes that AI management at the executive level requires cross-functional coordination and continuous monitoring of both performance outcomes and socio-ethical risks.

Abiodun et al. (2023) develop a conceptual and empirical model to explain how Industry 4.0 technologies drive “smartness” for organizational performance, using survey data from manufacturing companies combined with qualitative evidence. The study identifies dimensions of smart organizations, such as digital connectivity, real time data transparency, process optimization, and sustainable operations, and demonstrates that these dimensions mediate the relationship between Industry 4.0 adoption and performance indicators like productivity, quality, and flexibility. The authors argue that becoming a smart organization requires aligning technology, people, and processes rather than focusing on isolated tools.

Holmström and Hällgren (2022) conceptually examined AI management by emphasizing the mutual shaping between artificial intelligence systems and organizational contexts. Through conceptual analysis and illustrative cases, the authors propose a typology of AI use based on the co-constitution of technology and organizational arrangements. They further highlight three key principles for effective AI management: defining the purpose of AI use, determining appropriate levels of transparency and algorithmic control, and recognizing the contextual nature of AI outcomes. The study positions AI management as an ongoing socio-technical process involving organizational practices, power relations, and contextual dynamics.

Adamik and Sikora-Fernandez (2021) investigated smart organizations as drivers of competitiveness and sustainable development in the industry 4.0 context. Using a conceptual framework supported by empirical illustrations, the study shows that smart organizations characterized by networking, knowledge intensity, innovation, and adaptability contribute to regional and national development through enhanced competitiveness and resilience. The authors conclude that building smart organizations requires coordinated efforts at both the organizational level (strategies, structures, and capabilities) and the institutional level (supportive policies and ecosystems).

Lopes Nunes et al. (2017) examined smart digital organizations with a focus on smart products and lifecycle integration. Based on case studies from high-tech manufacturing, the study demonstrates that embedding sensors and connectivity in products enables continuous feedback loops that enhance predictive capabilities, customization, and adaptive design. The findings show that smart organizations extend their informational boundaries beyond internal systems to include product in use data, thereby strengthening organizational learning and innovation capacity.

Collectively, these perspectives highlight that Artificial Intelligence Management is not merely a technical function but a strategic organizational capability that shapes decision-making and institutional transformation. Moreover, the studies consistently demonstrate that successful AI implementation depends on the alignment between technological infrastructure, human

capabilities, and strategic governance frameworks.

3.2 Research gap and added value

Despite the growing literature on Artificial Intelligence Management and smart organizations, most studies have focused on organizational performance and strategic applications in business and industrial contexts, as evidenced by Kassa and Worku (2025) and Hyiamang and Liu (2025), as well as socio-technical perspectives highlighted by Holmström and Hällgren (2022). Other studies, such as Abiodun et al. (2023), Adamik and Sikora-Fernandez (2021), and Lopes Nunes et al. (2017), have primarily examined smart organizations within industrial environments.

However, limited attention has been given to higher education institutions, particularly in developing countries. Moreover, existing studies have not sufficiently explored Artificial Intelligence readiness as a multidimensional construct, nor its relationship with prospects from the perspective of university stakeholders.

Accordingly, this study addresses this gap by examining the readiness of Algerian universities using a multidimensional framework and analyzing its link with the prospects of smart universities. It contributes to the literature by providing empirical evidence from a developing country context and extending AI Management research into higher education.

3.3 Research hypotheses

H1: First main hypothesis: Algerian universities do not demonstrate sufficient readiness to implement artificial intelligence management.

The main hypothesis is divided into the following sub-hypotheses.

H1a: The necessary digital tools for implementing artificial intelligence management are not sufficiently available.

H1b: The necessary human resources for implementing artificial intelligence management are not sufficiently available

H1c: A supportive strategic and administrative framework for implementing artificial intelligence management is not sufficiently available.

H2: Second main hypothesis: There is no statistically significant positive relationship between university readiness and future AI adoption prospects.

4 RESEARCH METHODOLOGY

4.1 Sample

The study population consists of academic and administrative staff in Algerian universities. A total of 100 valid questionnaires were collected from professors and university administrators with diverse academic and managerial backgrounds, providing multiple perspectives on the readiness of Algerian universities to adopt Artificial Intelligence Management.

Although the questionnaire was distributed to more than 400 professors and administrators in various Algerian higher education institutions, only 100 valid questionnaires were retrieved for statistical analysis. This can be explained by the varying levels of participant engagement and response conditions; however, the sample size remains acceptable for the descriptive and exploratory analysis used in this study.

4.2 Data collection

Data were collected between December 2025 and March 2026 using a structured electronic questionnaire distributed to academic and administrative staff in various Algerian higher education institutions. The questionnaire was shared through professional academic communication channels, including email and online platforms, ensuring access to relevant institutional respondents.

4.3 Measures

Artificial Intelligence readiness was measured using a multi-item Likert scale covering three main dimensions: digital infrastructure and tools, human resource competencies, and strategic and organizational framework. Prospects of smart universities were assessed through items related to perceived impacts of AI on performance, innovation, competitiveness, and institutional transformation.

All items were measured on a five-point Likert scale. Internal consistency was assessed using

Cronbach's alpha, with all constructs exceeding the acceptable threshold of 0.70, indicating satisfactory reliability.

4.4 Analysis

Data was analyzed using SPSS software. The analysis began with descriptive statistics (mean and standard deviation) to summarize respondents' perceptions across the study variables. Reliability was confirmed using Cronbach's alpha.

For inferential analysis, the one-sample t-test was used to examine whether the mean values of the

study dimensions significantly differed from the neutral midpoint of the five-point Likert scale (test value = 3). Mean scores below the neutral value indicate relatively insufficient levels of readiness, whereas scores approaching or exceeding the midpoint reflect moderate to higher levels of readiness.

Pearson correlation analysis was also employed to investigate the relationship between Artificial Intelligence readiness and smart university prospects in Algerian universities.

Table 1. : Demographic Profile of the Sample (N = 100)

Variable	Categories	Frequency (n)	Percentage (%)
Gender	Male	44	44%
	Female	56	56%
	Total	100	100%
Age group	Less than 35 years	22	22%
	From 35 to 50 years	65	65%
	From 51 to 64 years	13	13%
	65 years and above	0	0%
	Total	100	100%
Affiliated institution	University (Faculty)	75	75%
	Higher School	22	22%
	Research Center	3	3%
	Total	100	100%
Current administrative position	Director	5	5%
	Vice Director	2	2%
	Dean	1	1%
	Vice Dean	4	4%
	Head of department	7	7%
	Lecturers	70	70%
	Other	11	11%
	Total	100	100%
Years of experience	Less than 5 years	45	45%
	From 5 years to 10 years	26	26%
	11 years and more	29	29%
	Total	100	100%

5 RESULTS

5.1 Study population, sample, and data collection

The table data indicate that the study sample (N=100) exhibits a relative balance in terms of gender, with a slight predominance of females (56%) compared to males (44%). The predominant age group ranges between 35 and 50 years at a rate of 65%, reflecting the dominance of an active and stable professional stage within the academic environment. In terms of institutional affiliation, most of the sample members belong to universities (75%), followed by those working in higher schools (22%), while research centers represent the lowest percentage (3%). In terms of current position, lecturers constitute the majority (70%), whereas the “other” category includes various academic and administrative roles such as field coordinators, specialization coordinators, business incubator directors, and AI hub managers, in addition to other administrative and academic functions. Finally, concerning professional experience, the largest proportion of respondents has less than 5 years of experience (45%), indicating a relatively young academic profile within the sample.

5.2 Reliability and validity of the study tool

The survey's reliability was assessed using Cronbach's alpha test, and the validity and reliability of its axes were assessed using correlation coefficients. If the survey is redistributed multiple times under the same conditions to the sample respondents, the same results would be recorded due to the study tool's reliability. This indicates the degree of stability of the results.

The validity coefficient is a measure of how accurately the scale measures what it is intended to assess. In mathematics, it is referred to as the dependability coefficient's square root.

The following tables display the measures of these tools.

Table 2. Alpha-Cronbach test results for the questionnaire

Number of statements	Stability coefficient
23	0.893

It is clear from the table above that the survey has a high reliability coefficient, reaching 0.893 for the total survey statements, which exceeds the acceptable threshold of 0.70. This indicates that the questionnaire has a very high degree of reliability and can be used in the applied field of study.

Table 3. Reliability and validity coefficients of the survey axes

Survey axes	Number of statements	Reliability coefficient	Validity coefficient
Digital tools	5	0.711	0.843
The human resources	5	0.785	0.886
The administrative and strategic framework	5	0.858	0.926
The first axis: University readiness to adopt artificial intelligence applications	15	0.883	0.939
The second axis: Prospects and challenges	8	0.836	0.914

Table 3, related to the validity and reliability of the questionnaire dimensions, shows that all dimensions exhibit good levels of reliability and validity. Cronbach's Alpha reliability coefficients ranged from 0.711 to 0.883, while the validity coefficients ranged from 0.843 to 0.939. It is noted that the administrative and strategic framework dimension recorded the highest reliability, 0.858,

and validity, 0.926, whereas the digital tools dimension recorded the lowest value, 0.711, although it remains within acceptable scientific limits.

Moreover, the overall dimensions, particularly the university readiness to adopt artificial intelligence applications dimension (0.883 for reliability and 0.939 for validity) and the prospects and

challenges dimension (0.836 and 0.914), show high levels, confirming that the scale is stable and does not contradict itself.

5.3 Analysis of the extent of agreement on the dimensions of the study

5.3.1 Analysis of the level of agreement on the dimension of Digital tools

Table 4, related to the digital tools dimension, shows that the availability and use of these tools in universities remain relatively limited, with an overall mean of 2.51 and a standard deviation of 0.67, reflecting a relatively low degree of agreement among the study participants.

In detail, the statement regarding the availability of digital infrastructure ranked first with a mean score of 2.80, indicating a moderate level of agreement, followed by management's reliance on information systems supported by smart technologies, 2.66, and the availability of artificial intelligence tools in administrative and academic activities, 2.60, both reflecting moderate levels of agreement. In contrast, the statements related to advanced applications of artificial intelligence, such as automated scheduling 2.32 and predictive data analysis 2.17, recorded the lowest scores, indicating limited implementation of advanced AI practices.

Table 4. The attitudes of the sample individuals toward the Digital tools

No.	The phrase	Number of statements	Standard deviation	Degree of agreement	Ranking
1)	The university provides sufficient digital infrastructure (high-speed internet, information systems, electronic devices...) Supports daily use.	2.80	1.08	Moderate	1
2)	The university administration relies on information systems supported by smart technologies to manage various administrative affairs and make decisions.	2.66	0.92	Moderate	2
3)	The university administration uses artificial intelligence systems for automatic scheduling and organization (such as room allocation, schedule planning, etc.)	2.32	0.99	low	4
4)	The university administration relies on predictive data analysis using artificial intelligence to forecast future needs.	2.17	0.88	low	5
5)	The university provides the opportunity to use artificial intelligence tools in administrative and academic aspects.	2.60	1.02	Moderate	3
Overall average		2.51	0.67	low	-

These results suggest that Algerian universities possess a relatively acceptable level of basic digital infrastructure; however, the integration of

advanced artificial intelligence applications remains limited, particularly in predictive analytics and smart decision-making processes.

Table 5. The attitudes of the sample individuals toward Human Resources

No.	The phrase	Number of statements	Standard deviation	Degree of agreement	Ranking
1)	Professors and administrators possess basic technical skills that enable them to use artificial intelligence applications in making administrative decisions.	2.92	0.98	Moderate	2
2)	The university administration organizes continuous training programs for various administrative and academic bodies on applications of administrative artificial intelligence.	2.48	0.91	Low	5

No.	The phrase	Number of statements	Standard deviation	Degree of agreement	Ranking
3)	There are enough specialized competencies in artificial intelligence (engineers, researchers) within the university.	2.78	1.05	Moderate	3
4)	The university administration adopts mechanisms to encourage employees to use smart solutions in daily operations.	2.71	0.93	Moderate	4
5)	Professors and staff are aware that artificial intelligence is a support tool for administrative management and not a substitute for them.	3.66	0.96	High	1
Overall average		2.91	0.71	Moderate	-

5.3.2 Analysis of the level of agreement on the Human Resources dimension

Table 5, related to the human resources dimension, shows that this dimension recorded a moderate overall level, with a mean score of 2.91 and a standard deviation of 0.71, reflecting a moderate degree of agreement among the respondents. In detail, the statement concerning the awareness of professors and staff regarding the role of artificial intelligence as a supportive administrative tool ranked first with a mean of 3.66 and a high level of agreement, indicating a positive perception of the importance of this technology. This was followed by the availability of basic technical skills among academic and

administrative staff 2.92, the presence of specialized competencies in artificial intelligence 2.78, and the administration's adoption of mechanisms encouraging the use of smart solutions 2.71, all reflecting moderate levels of agreement. In contrast, the statement related to continuous training programs recorded the lowest mean score, 2.48, indicating a relatively low level of agreement and highlighting limitations in training and professional development efforts.

Accordingly, the results reflect an acceptable level of awareness and basic competencies; however, institutional support through continuous training programs remains relatively insufficient.

Table 6. The attitudes of the sample individuals toward the administrative and strategic framework

The phrase	Number of statements	Standard deviation	Degree of agreement	Ranking
1) The senior management supports the integration of artificial intelligence to transform the university into a "smart organization."	3.26	1.02	Moderate	1
2) The university allocates a specific annual budget for the development of administrative AI projects.	2.59	0.88	Low	5
3) The university adopts testing and evaluation mechanisms for smart solutions before generalizing them to various administrative departments.	2.71	0.91	Moderate	4
4) There are partnerships with external entities (Ministry of Higher Education, technology companies, startups, etc); to support the implementation of artificial intelligence at the university.	2.78	0.88	Moderate	2
5) The university has a clear strategic plan that includes goals and timelines for integrating artificial intelligence into administrative processes over the coming years.	2.78	0.88	Moderate	3
Overall average	2.82	0.73	Moderate	-

5.3.3 Analysis of the level of agreement on the administrative and strategic framework dimension

Table 6, related to the strategic and administrative framework dimension, shows that this dimension recorded a moderate overall level, with a mean score of 2.82 and a standard deviation of 0.73, reflecting a moderate degree of agreement among the respondents. In detail, the statement concerning top management's support for integrating artificial intelligence ranked first with a mean of 3.26, indicating a positive orientation toward transforming universities into smart organizations. Other statements also recorded moderate scores, including partnerships with external entities 2.78, the existence of a clear strategic plan for AI integration 2.78, and the

adoption of mechanisms for testing and evaluating smart solutions 2.71. In contrast, the allocation of a dedicated annual budget for AI projects recorded the lowest mean score of 2.59, reflecting a relatively limited level of financial support for AI initiatives.

These findings reveal a gap between strategic intention and practical implementation. Although university leadership demonstrates a positive orientation toward smart transformation, this orientation is not yet fully translated into concrete financial and operational support. Therefore, the results suggest that Algerian universities possess an acceptable strategic direction toward adopting artificial intelligence, but still require stronger financial commitment and executive mechanisms to ensure effective implementation.

Table 7. The attitudes of the sample individuals toward the prospects and challenges dimension

No.	The phrase	Number of statements	Standard deviation	Degree of agreement	Ranking
1)	AI management can enhance the efficiency and quality of university services in the long term.	4.15	0.67	High	3
2)	The adoption of artificial intelligence will contribute to improving the university's competitiveness and ranking in the future.	4.15	0.75	High	4
3)	Continuous training on artificial intelligence is a priority to ensure future sustainability.	4.20	0.80	Very high	1
4)	Adopting an innovation culture is a key factor in the success of the transition to smart management in universities.	4.14	0.85	High	5
5)	Smart tools improve the speed of processing daily administrative tasks effectively.	4.20	0.86	Very high	2
6)	The university is facing difficulties in instilling a culture of change among many of its employees.	3.76	1.03	High	6
7)	There are clear policies within the university governing the use of artificial intelligence applications and the protection of administrative data privacy.	3.12	1.03	Moderate	8
8)	The limited financial resources and budget allocated for artificial intelligence projects may hinder the implementation of future initiatives.	3.74	1.05	High	7
Overall average		3.93	0.61	High	-

5.3.4 Analysis of the level of agreement on the prospects and challenges dimension

Table 7, related to the prospects and challenges dimension, shows that this dimension recorded a high overall level, with a mean score of 3.93 and a standard deviation of 0.61, reflecting a high

degree of agreement among the respondents. In particular, the statements concerning the importance of continuous training in artificial intelligence 4.20 and the role of smart tools in improving the speed of administrative task completion 4.20 achieved the highest mean

scores, indicating very high levels of agreement. This was followed by statements related to improving the efficiency and quality of university services 4.15, enhancing competitiveness and university ranking 4.15, and promoting a culture of innovation 4.14, all reflecting high levels of agreement.

The findings also demonstrate awareness of several challenges associated with AI implementation, particularly the difficulty of establishing a culture of change 3.76 and the limitation of financial resources allocated to AI projects 3.74. In contrast, the statement regarding the existence of clear policies regulating the use of artificial intelligence and the protection of administrative data privacy recorded the lowest mean score, 3.12, reflecting only a moderate level of agreement and indicating a relatively limited regulatory and ethical framework.

Overall, the results reflect strong optimism regarding the future role of artificial intelligence in universities. However, this optimism remains accompanied by persistent financial, organizational, and regulatory challenges that may affect the effectiveness of future implementation efforts.

5.4 Hypothesis testing

5.4.1 Testing the first main hypothesis (MH1)

MH1: Algerian universities do not demonstrate sufficient readiness to implement artificial intelligence management from the perspective of the study.

The main hypothesis is divided into three sub-hypotheses that must be tested independently first, before verifying the main hypothesis.

5.4.1.1 Testing the first sub-hypothesis

A one-sample t-test was conducted at the significance level of 0.05, which is shown in Table 8, to examine the level of availability of digital tools required for implementing Artificial Intelligence Management in Algerian universities

Table 8. *T-test for the digital tools dimension*

	Mean	Standard deviation	t	Sig
Digital tools	2.5100	0.672	37.400	0.000

The results show that the mean score for the digital tools dimension is 2.51 (SD = 0.67), which is below the neutral value of 3, indicating a relatively low level of digital infrastructure and AI-related technological readiness in Algerian universities.

Although the one-sample t-test indicates a statistically significant difference ($t = 37.400$, $Sig = 0.000$), the direction of the mean suggests insufficient availability of digital tools. Therefore, H1a is supported, confirming that digital tools necessary for Artificial Intelligence Management are not adequately available.

5.4.1.2 Testing the second sub-hypothesis

A one-sample t-test was conducted at the significance level of 0.05, which is shown in Table 9, to assess the level of availability of qualified human resources required for Artificial Intelligence Management in Algerian universities.

Table 9. *T-test for the human resources dimension*

	Mean	Standard deviation	t	Sig
Human resources	2.910	0.711	40.902	0.000

The results indicate that the mean score for the human resources dimension is 2.91 (SD = 0.71), which is slightly below the neutral value of 3, reflecting a moderate but still insufficient level of human capital readiness for Artificial Intelligence implementation.

Despite the statistically significant t-test results ($t = 40.902$, $Sig = 0.000$), the findings suggest that human resources are not fully prepared to support AI integration. Therefore, H1b is supported, indicating limited but developing human resource readiness.

5.4.1.3 Testing the third sub-hypothesis

A one-sample t-test was conducted at the significance level of 0.05, which is shown in Table 10, to evaluate the existence of a supportive strategic and administrative framework for Artificial Intelligence Management in Algerian universities.

Table 10. *T-test for the strategic and administrative framework dimension*

	Mean	Standard deviation	t	Sig
Strategic and administrative framework	2.824	0.734	38.458	0.000

The results show that the mean score for the strategic and administrative framework dimension is 2.82 (SD = 0.73), which is below the neutral midpoint of 3, indicating a moderate but insufficient level of strategic readiness.

Although the results of the one-sample t-test are statistically significant (t = 38.458, Sig = 0.000), the mean value suggests that strategic and administrative support for Artificial Intelligence implementation remains limited. Therefore, H1c is supported.

Based on the above, and after testing the sub-hypotheses, the main hypothesis must be tested for validity.

A one-sample t-test was conducted at the significance level of 0.05, which is shown in Table 11, to assess the overall readiness of Algerian universities to implement Artificial Intelligence Management.

Table 11. *T-test for the readiness of the Algerian universities' axis*

	Mean	Standard deviation	t	Sig
The readiness of Algerian universities	2.748	0.589	46.579	0.000

Through the above table, the results indicate that the overall mean score is 2.748 (SD = 0.589), which is below the neutral midpoint of 3, reflecting a generally low to moderate level of readiness for Artificial Intelligence implementation in Algerian universities.

Despite the statistically significant t-test result (t = 46.579, Sig = 0.000), the findings confirm that the overall readiness remains insufficient. Therefore, H1 is supported, indicating that Algerian universities do not yet demonstrate adequate readiness for Artificial Intelligence Management implementation.

5.4.2 Testing the second Main hypothesis

MH2: Second main hypothesis: There is no statistically significant positive relationship

between university readiness and future AI adoption prospects.

To test the validity of this hypothesis, we conducted a Pearson Correlation test at the significance level of 0.05, which is shown in Table 12, to examine the relationship between the readiness of Algerian universities and the prospects of Artificial Intelligence adoption.

Table 12. *Results of the correlation analysis between the readiness of Algerian universities to adopt AIM and prospects.*

	The readiness of Algerian universities	
Prospects	Pearson correlation coefficient	0.589
	Sig	0,000
	N	100

The results of the correlation analysis between the readiness of Algerian universities to adopt Artificial Intelligence Management and prospects indicate a moderate positive correlation, with a Pearson correlation coefficient (r = 0.589). This suggests that higher levels of institutional readiness are associated with more positive perceptions regarding the future adoption of Artificial Intelligence in Algerian universities.

The results also show that the level of statistical significance (Sig = 0.000) is lower than the level of significance adopted in the study 0.05, indicating that the relationship is statistically significant.

Therefore, **H2** is supported, confirming a statistically significant positive relationship between readiness and prospects.

6 DISCUSSION

The findings indicate that the readiness of Algerian universities to adopt Artificial Intelligence Management remains at a weak to moderate level across its three dimensions (digital tools, human resources, and strategic and administrative framework). This reflects a clear gap between the requirements of transitioning toward a smart university model and the current institutional reality. This situation can be attributed to relatively weak digital infrastructure, the need to further develop specialized human competencies, and the absence of a comprehensive strategic vision for the systematic and institutional adoption of Artificial Intelligence.

These findings are consistent with the existing literature emphasizing that the successful integration of Artificial Intelligence in institutions depends not only on technological availability but also on the integration of human resources and strategic governance. In this regard, Kassa and Worku (2025) highlight that the impact of Artificial Intelligence on organizational performance is achieved when adequate training and clear managerial support are in place, which further supports the present study's results indicating limited human and strategic readiness in Algerian universities.

Similarly, the findings of Hyiamang and Liu (2025) support this trend, demonstrating that institutions adopting clear AI strategies and effectively integrating data, governance, and human resources are better positioned to transform Artificial Intelligence into tangible organizational value. This further highlights the lack of such integration within the university context under study.

In the same vein, the results are consistent with the theoretical perspective of Holmström and Hällgren (2022), who conceptualize Artificial Intelligence as a socio-technical process rather than merely a technical tool. This perspective helps explain that the limited readiness observed in Algerian universities is not solely attributable to technical constraints, but also to organizational and cultural factors influencing the implementation of Artificial Intelligence in higher education institutions.

The findings of Adamik and Sikora-Fernandez (2021) and Abiodun et al. (2023) further support the notion that a "smart organization" is grounded in the integration of technology, human resources, and organizational processes. This level of integration has not been sufficiently achieved in Algerian universities, which helps explain the overall moderate level of readiness identified in this study.

The results related to the strategic and administrative dimension reveal the existence of inconsistency within the strategic framework of Algerian universities, where leadership demonstrates a clear willingness to adopt Artificial Intelligence and move toward a smart university model. However, this intention is not adequately matched by financial commitment, as reflected in

the limited allocation of dedicated budgets. This suggests that Algerian universities exhibit a form of declarative readiness, which has not yet been fully translated into operational and financial support.

Regarding the relationship between readiness and prospects, the results show a statistically significant moderately strong positive correlation ($r = 0.589$), which is consistent with previous research suggesting that improving infrastructure and organizational capabilities enhances the ability to adopt technological innovation. However, the moderate strength of the relationship suggests that professors' perceptions of prospects are not solely determined by technological readiness but are also influenced by other factors such as organizational culture, trust in technology, and digital transformation policies.

Thus, the results suggest that the transition toward a "smart university" in Algeria is still in an ongoing transition process, requiring stronger integration between technical, human, and strategic dimensions to ensure effective and sustainable adoption of Artificial Intelligence.

7 CONCLUSION

The study contributes to the literature by providing empirical evidence on Artificial Intelligence readiness in higher education within a developing country context. The findings also indicate a generally positive awareness among university staff regarding the prospects of using Artificial Intelligence in higher education. In addition, the study revealed a moderate positive relationship between readiness and prospects, highlighting the importance of strengthening institutional readiness as a key condition for a successful transition toward an AI-based smart university.

Based on these findings, it is recommended that universities allocate dedicated budgets and establish specialized Artificial Intelligence units to support effective implementation. It is also essential to develop a clear ethical and legal framework governing the use of Artificial Intelligence in Algerian universities, ensuring its responsible, transparent, and secure adoption within the academic environment.

Further recommendations include developing digital infrastructure within Algerian universities to support Artificial Intelligence applications,

enhancing the training and qualification of human resources in Artificial Intelligence and digital transformation, integrating Artificial Intelligence into higher education strategies as a cornerstone for smart university transformation, preparing a comprehensive funded executive plan to ensure

sustainability of AI projects, encouraging research and applied innovation through dedicated university hubs and labs, and promoting partnerships with technological institutions at both national and international levels.

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