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Submitted by:
- Ouahab Mohamed Elamine
- Mebarki Chams Eddine

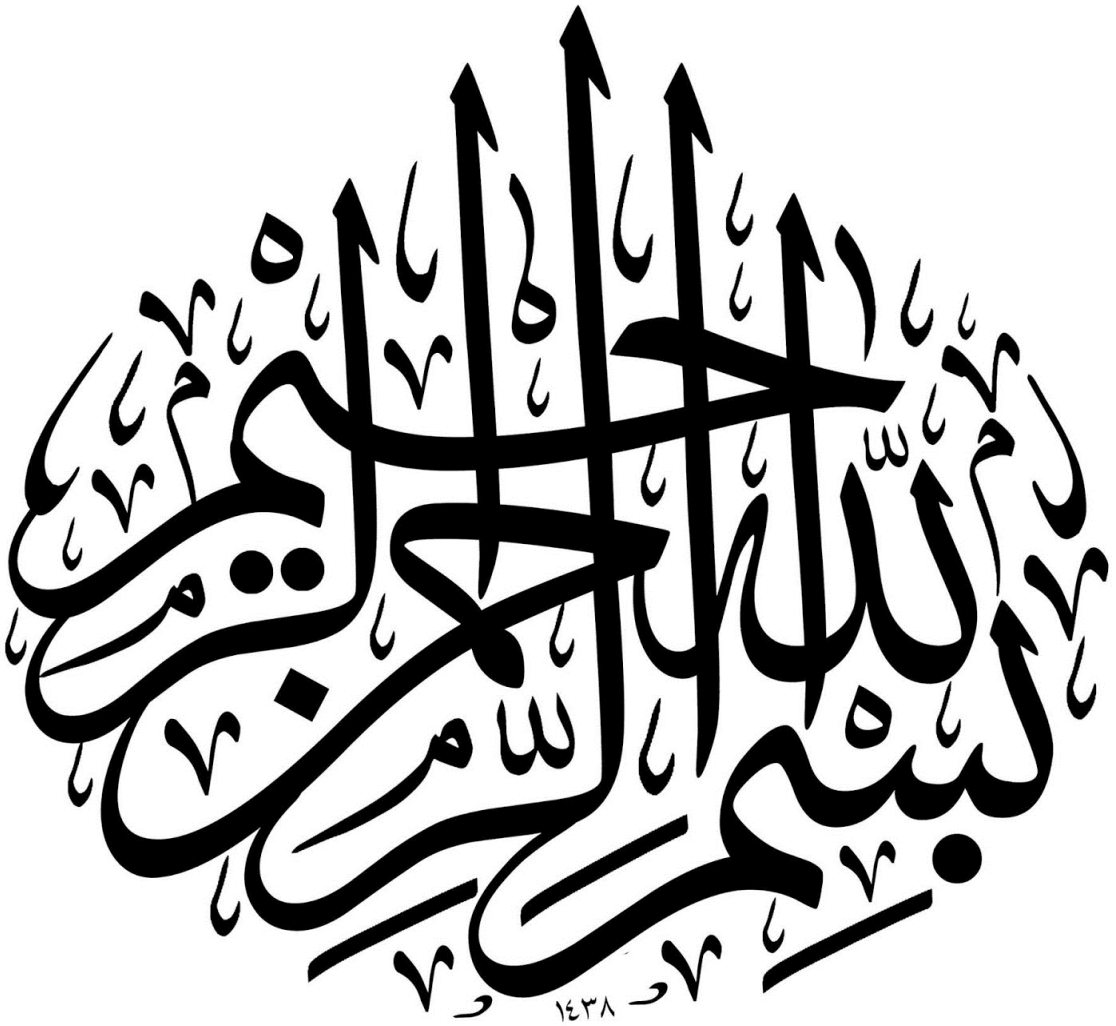
Title:

ASSESSING THE READINESS OF THE ALGERIAN ACCOUNTING PROFESSION FOR AI INTEGRATION

Members of the Jury

	Professor Lecturer A	**President**
Anfel Boudjelal	**Professor Lecturer A**	**Supervisor**
	Professor Lecturer A	**Examiner**

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بسم الله الرحمن الرحيم
١٤٣٨

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Abstract

This study aims to assess the readiness of the Algerian accounting profession for the adoption of artificial intelligence technologies. It focuses on several readiness dimensions, including digital infrastructure, accountants' skills and competencies, personal readiness, organizational and cultural readiness, regulation, and the perceived benefits and risks associated with AI adoption.

The study is based on both theoretical and empirical analysis. The theoretical part discusses the concept of artificial intelligence, its main technologies, and its impact on accounting functions. The empirical part adopts a qualitative approach based on semi-structured interviews with thirteen participants from the private sector, public sector, and higher education. The collected data were analyzed using NVivo 15 through thematic analysis, coding, matrix queries, lexical analysis, and relationship analysis.

The findings show that the Algerian accounting profession is partially ready for AI adoption. Participants generally perceived AI as a supportive tool rather than a full replacement for accountants, and they identified accuracy, time saving, and error reduction as the main expected benefits. However, full readiness remains limited by training needs, insufficient technological infrastructure, skill gaps, regulatory uncertainty, limited practical experience, and the risk of over-reliance on AI outputs. Therefore, AI adoption in Algerian accounting should be gradual, controlled, supported by training and infrastructure development, protected by cybersecurity measures, and guided by human professional judgment.

Keywords: Artificial Intelligence, Accounting Profession, Readiness, Digital Infrastructure, Professional Skills, Algeria, Thematic Analysis.

Abstract.....

ملخص

تهدف هذه الدراسة إلى تقييم مدى جاهزية مهنة المحاسبة في الجزائر لتبني تقنيات الذكاء الاصطناعي. وتركز الدراسة على عدة أبعاد للجاهزية، من بينها البنية التحتية الرقمية، مهارات وكفاءات المحاسبين، الجاهزية الشخصية، الجاهزية التنظيمية والثقافية، الإطار التنظيمي، إضافة إلى المنافع والمخاطر المتصورة المرتبطة بتبني الذكاء الاصطناعي.

اعتمدت الدراسة على جانبين: نظري وتطبيقي. تناول الجانب النظري مفهوم الذكاء الاصطناعي، أهم تقنياته، وتأثيره على وظائف المحاسبة. أما الجانب التطبيقي، فقد اعتمد على منهج نوعي قائم على مقابلات شبه موجهة مع ثلاثة عشر مشاركًا من القطاع الخاص، والقطاع العام، والتعليم العالي. وتم تحليل البيانات باستخدام برنامج NVivo 15 من خلال التحليل الموضوعاتي، الترميز، استعلامات المصفوفة، التحليل المعجمي، وتحليل العلاقات.

أظهرت النتائج أن مهنة المحاسبة في الجزائر تتمتع بجاهزية جزئية لتبني الذكاء الاصطناعي. فقد نظر المشاركون إلى الذكاء الاصطناعي باعتباره أداة داعمة للمحاسب وليس بديلًا كاملًا عنه، كما اعتبروا أن أهم منافعه تتمثل في تحسين الدقة، توفير الوقت، وتقليل الأخطاء. غير أن الجاهزية الكاملة ما تزال محدودة بسبب الحاجة إلى التدريب، ضعف البنية التحتية التكنولوجية، نقص المهارات، عدم وضوح بعض الجوانب التنظيمية، محدودية الخبرة العملية، وخطر الاعتماد المفرط على مخرجات الذكاء الاصطناعي. لذلك، ينبغي أن يكون تبني الذكاء الاصطناعي في المحاسبة الجزائرية تدريجيًا ومنظمًا، ومدعومًا بالتكوين وتطوير البنية التحتية، ومحميًا بإجراءات الأمن السيبراني، وموجّهًا بالحكم المهني البشري.

الكلمات المفتاحية :الذكاء الاصطناعي، مهنة المحاسبة، الجاهزية، البنية التحتية الرقمية، المهارات المهنية، الجزائر، التحليل الموضوعاتي.

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INTRODUCTION

Introduction……...

As one of the latest technological developments that have gained widespread attention today, artificial intelligence has been considered a significant development that can positively affect many areas of professional life, including accountancy. The area is especially sensitive concerning the issues of data analysis, reporting, auditing, processing, decision-making, among others. In view of this, there is considerable talk today about applying the potential of artificial intelligence technologies to the activities of accountants to enhance their performance and increase their effectiveness.

The above, however, would be a gross oversimplification of the process under discussion because implementing artificial intelligence into the area of interest will require much more than just having appropriate tools available. Professionals will have to develop a proper understanding of what artificial intelligence means and how they can apply it to perform certain accounting-related tasks successfully.

Moreover, there needs to be proper infrastructure, sufficient data, cybersecurity measures, procedures in place, etc., all in view of encouraging successful technological transformation.

In the case of Algeria, accounting has become largely digital due to the employment of various computerized solutions and other digital tools to carry out tasks efficiently. That said, simply introducing digitalization in the form described above may not be enough for AI implementation to take place. Instead, the issue would call for a more advanced readiness in terms of skills, infrastructure, regulation, technology acceptance, and proper use of the results provided by AI technologies.

Given the above, it can be argued that the current study seeks to measure AI readiness among accounting professionals in Algeria. More specifically, the focus will be on how Algerian accountants perceive artificial intelligence, their infrastructure preparedness, the needed skill set, resistance to change, trust in technology, and the advantages/disadvantages of AI implementation.

- **Statement of the Problem**

While AI technology provides a wide range of possibilities to improve accounting tasks, there are some preconditions for the implementation that are more than just about technology. In accounting, these include professionals' readiness, digitalization, sufficient skills, organization, regulation, and advanced technologies.

Thus, it could be claimed that in Algeria most of the activities performed by accountants have already been digitalized through various software products, corporate IT, and electronic administration systems. At the same time, one should keep in mind that the use of advanced technologies in this country's professional environment does not imply the readiness of the Algerian accounting community to implement AI solutions.

In general, it is an essential aspect since accounting is a regulated profession where any application of AI has to be in agreement with accounting standards, tax legislation, regulations, ethics, responsibility, and other aspects. Thus, without appropriate skills, infrastructures, regulation, and trust to the technology, the implementation of AI in accounting will not become successful.

Taking into consideration all these circumstances, the problem of this research could be stated as follows:

To what extent is the Algerian accounting profession ready to adopt artificial intelligence technologies?

- **Subsidiary Questions**

To answer the main research question, the study raises the following subsidiary questions:

- How do Algerian accounting professionals perceive artificial intelligence and its role in accounting practice?

- To what extent does the current digital infrastructure support or limit AI adoption in Algerian accounting practices?
- Do Algerian accountants possess the required skills and digital competencies to adopt and use AI tools effectively?
- How do resistance to change and trust in advanced technologies influence the acceptance of AI among Algerian accounting professionals?

- **Hypotheses**

Based on the main research question and the subsidiary questions, the study proposes the following hypotheses:

H1: Algerian accounting professionals generally perceive artificial intelligence as a supportive tool rather than a full replacement for accountants.

H2: Weak digital infrastructure negatively affects AI adoption in Algerian accounting practices.

H3: The lack of adequate skills and digital competencies among Algerian accountants limits the effective adoption of AI.

H4: Resistance to change and low trust in advanced technologies reduce the acceptance of AI in the Algerian accounting profession.

These hypotheses are designed to examine the main dimensions of AI readiness addressed in the study. The first hypothesis focuses on accountants' perception of AI. The second concerns the technological and infrastructural dimension. The third addresses skills and digital competencies, while the fourth examines the cultural and psychological dimension related to resistance, trust, and acceptance.

- **Importance of the Study**

The relevance of this study can be explained from three perspectives, namely, the academic, methodological, and practical significance of the study.

First, from an academic perspective, this study provides valuable insights into the existing literature on the role of artificial intelligence in accounting by analyzing the Algerian case and concentrating on the problem of readiness, as opposed to the generic effects of AI on accounting.

Second, from a methodological perspective, the study has substantial value because it employs qualitative methodology that relies on semi-structured interviews and thematic analysis using NVivo 15 software.

Third, from a practical point of view, this study could be useful for accounting specialists, organizations, educators, and policymakers in comprehending the essential prerequisites for the gradual and responsible implementation of AI in Algerian accounting.

- **Research Objectives**

This study aims mainly to assess the readiness of the Algerian accounting profession for the adoption of artificial intelligence technologies.

More specifically, the study seeks to:

- Examine how Algerian accounting professionals perceive artificial intelligence and its role in accounting practice.
- Analyze the role of digital infrastructure in supporting or limiting AI adoption in Algerian accounting practices.
- Identify the skills and digital competencies required for Algerian accountants to adopt and use AI tools effectively.
- Explore how resistance to change and trust in advanced technologies influence the acceptance of AI among accounting professionals.
- Identify the main barriers, benefits, and risks associated with AI adoption in the Algerian accounting profession.

- Provide recommendations that may support gradual and responsible AI integration in Algerian accounting.

- **Previous Studies:**

Previous studies represent an important basis for positioning the current research within the existing academic literature. They also help clarify how this study differs from earlier research in terms of topic, context, and methodology.

1. **Local Studies:**

Study	Topic	Method / Approach	Main Findings
Ben Turkia, 2024	Integration of AI in accounting and its impact on the future of the accounting profession in Algeria	Exploratory study based on the opinions of professionals and accountants	The study found that AI improves accounting procedures and reduces costs, but it also creates financial, security, and professional challenges. It concluded that AI may transform accountants' roles, but cannot fully replace them.
Saidi, 2024	Impact of AI on the accounting profession with reference to Algeria	Analytical study with reference to Algeria and selected case examples	The study found that AI can improve efficiency, accuracy, decision-making, and cost reduction in Algerian accounting. However, it also emphasized challenges such as workforce displacement, skill gaps, high implementation costs, and the need for regulatory adaptation and professional training.

2. Foreign Studies:

Study	Topic	Method / Approach	Main Findings
Alim, 2025	The impact of AI on the accounting profession: technological advancements and employment perspectives	Mixed-methods approach using surveys, company reports, and market analyses	The study found that AI improves efficiency, decision-making, financial reporting, anomaly detection, and fraud detection. However, it requires new skills and raises challenges related to employment, job security, regulatory compliance, and continuous learning.
Xu and Zhang, 2025	Practical application of accounting in the era of artificial intelligence	Analytical / practical application study	The study showed that AI supports accounting through OCR, financial analysis, forecasting, risk management, and audit tools. It concluded that AI improves efficiency, accuracy, and supervision, but creates risks such as job displacement, information security concerns, accountability issues, and dependence on technology.
Han, Sammour, Gao, and Yamoah, 2025	Digital transformation and organisational change in the roles of accountants and auditors	Exploratory qualitative study using semi-structured interviews and NVivo-based thematic analysis	The study showed that digital transformation and AI affect the routines, roles, and required competencies of accountants and auditors. It is methodologically relevant because it used interviews, NVivo, and key themes, which supports the approach adopted in the current study.
Fülöp, Ionescu, Topor, Cifuentes-Faura, and Măgdaș, 2023	Ethical concerns associated with AI in the accounting profession	Study on ethical challenges of AI use in accounting	The study examined ethical issues related to AI in accounting, including human-machine cooperation, professional responsibility, and challenges created by AI adoption. It is relevant because it links AI use in accounting with risks, ethics, and professional judgment.

3. Position of the Current Study

Comparison point	Previous studies	Current study
Main focus	Most studies focused on the impact of AI on accounting, digital transformation, employment, ethics, or professional change.	This study focuses specifically on the readiness of the Algerian accounting profession for AI adoption.
Context	Local studies addressed Algeria but focused mainly on AI's impact and future of the profession. Foreign studies addressed wider international contexts.	This study focuses on the Algerian accounting profession and examines readiness through local professional perceptions.
Methodology	Some studies used analytical, exploratory, mixed-methods, or qualitative approaches. Han et al. used semi-structured interviews, NVivo, and thematic analysis.	This study adopts a qualitative approach based on semi-structured interviews and thematic analysis using NVivo 15.
Analytical dimensions	Previous studies often discussed benefits, risks, skills, employment, ethics, or organisational change separately.	This study combines several readiness dimensions: perception, personal readiness, skills, barriers, infrastructure, regulation, benefits, and risks.
Methodological contribution	Some foreign studies prove that thematic analysis and NVivo are valid tools for studying AI in accounting and auditing.	This study applies a similar logic in the Algerian context by using codes, sub-codes, themes, matrix coding queries, lexical outputs, and relationship analysis.
Added value	Previous studies provide theoretical and empirical background on AI in accounting.	This study adds a contextual assessment of whether Algerian accounting professionals and institutions are prepared for gradual and responsible AI adoption.

- **Methodology Used:**

To address the research problem, this study adopts a qualitative research approach. This approach is appropriate because the study seeks to understand the perceptions, experiences, and views of accounting professionals regarding artificial intelligence adoption.

The empirical data were collected through semi-structured interviews with thirteen participants from the private sector, public sector, and higher education. The responses were analyzed using thematic analysis with the support of NVivo 15.

NVivo was used to organize the interview data, code participants' responses, identify themes and sub-themes, generate coding summaries, compare selected groups through matrix coding queries, and support interpretation through lexical outputs and relationship analysis. The detailed methodological process is presented in the empirical chapter.

- **Study Boundaries:**

The study is defined by thematic, temporal, geographical, and human boundaries.

Thematic boundaries:

This study focuses on assessing the readiness of the Algerian accounting profession for the adoption of artificial intelligence technologies. It examines this readiness through several dimensions, including AI perception, digital infrastructure, skills and competencies, personal readiness, organizational and cultural factors, regulation, benefits, risks, and adoption barriers.

Temporal boundaries:

The theoretical part of the study was conducted from November 2025 to January 2026. During this period, the literature related to artificial intelligence, accounting transformation, AI adoption, and readiness dimensions was reviewed and organized.

Introduction……...

The empirical part was conducted from April 20, 2026 to May 07, 2026, during which data were collected from participants and analyzed using NVivo 15.

Geographical boundaries:

The study was conducted within the Algerian context. It focuses on the Algerian accounting profession and examines AI readiness in relation to local professional, technological, organizational, and regulatory conditions.

Human boundaries:

The study involved participants from accounting-related backgrounds. The sample included private sector accountants, public sector accounting managers, and university lecturers specialized in accounting. This diversity allowed the study to capture different perspectives from professional practice, public institutions, and higher education.

- **Reasons for the Study**

The reasons for choosing this topic can be divided into objective reasons and personal or academic reasons.

Objective reasons:

- The increasing global use of artificial intelligence in accounting and auditing.
- The growing importance of digital transformation in the accounting profession.
- The need to assess whether the Algerian accounting profession is ready for AI adoption.
- The limited number of studies that focus specifically on AI readiness in the Algerian accounting context.
- The importance of identifying the skills, infrastructure, regulatory conditions, benefits, and risks related to AI adoption in accounting.

Personal and academic reasons:

- Personal interest in the transformation of the accounting profession under artificial intelligence.
- The relevance of the topic to the specialization of accounting and taxation.
- The desire to study a modern topic that connects accounting with technological development.
- The academic value of conducting an empirical study based on the perceptions of Algerian accounting professionals.

- **Study Structure:**

To address the research problem and answer the main research question, the study is divided into two main chapters.

Chapter One: Theoretical Framework

This chapter presents the theoretical foundation of the study. It discusses the concept of artificial intelligence, its evolution, its main types, and the core AI technologies relevant to accounting. It also examines the readiness dimensions required for AI adoption and analyzes the transformation of accounting functions in the era of AI, including financial accounting, management accounting, and auditing.

Chapter Two: Empirical Study

This chapter presents the empirical part of the study. It explains the methodological framework, the research approach, the sample, the data collection process, and the use of NVivo 15 in data analysis. It then presents and analyzes the main findings through themes, sub-themes, coding summaries, matrix coding queries, lexical outputs, and relationship analysis.

The study ends with a general conclusion that discusses the hypotheses, presents recommendations, and suggests future research directions.

CHAPTER 1:

Theoretical Framework of AI Readiness in Accounting

Today, the profession of accounting is changing greatly due to rapid technological changes. More and more AI technologies are utilized by accountants to automate tasks, analyze, process, identify errors in, and make decisions based on data provided. As a consequence, accounting is shifting towards more analytical and advisory activities.

However, not all countries and business environments are affected by this development equally. Even though most developed countries have adopted AI-related solutions within financial reporting, auditing, management accounting, and internal control, developing and emerging economies are still facing numerous problems. The issues include the digital environment, professional competence, organizational readiness, legislation, data quality, and resistance to technological innovation.

As far as Algeria is concerned, its accounting practice shows signs of gradual digitalization through the utilization of computers, accounting programs, internal information management systems, and e-administration portals. At the same time, digitalization does not always mean readiness for implementation of AI technologies. AI readiness implies digitalization but goes further because it relies on professional and organizational competence, culture, governance and regulation, security, and proper utilization of AI products.

That is why this chapter is aimed at providing the theoretical background necessary to comprehend artificial intelligence and its influence on the accounting profession. First, the concept of AI as well as its development will be discussed.

Next, the types of AI technology important for accounting will be identified and discussed. Finally, the chapter will focus on the distinction between traditional accounting, IT-enabled accounting, and AI accounting.

In other words, the differences between digitalization and AI will be revealed. Also, the transformation of accounting activities such as financial accounting, management accounting, and auditing under the influence of AI will be analyzed.

In addition, the opportunities and threats associated with the implementation of AI in accounting will be identified and discussed along with readiness factors. This theoretical background will help to build a framework for the empirical research on AI adoption in the Algerian context.

Section 01

1 Concept and evolution of artificial intelligence

This section aims to establish some concepts behind artificial intelligence, since it can be observed that the majority of people know what AI is, but only at a surface level.

1.1 Concept of Artificial Intelligence

The idea of artificial intelligence originates from a single source that can be presented in the form of a question: how can we create something that can possess the same specialties as humans, yet it should be faster, better, smarter, and more efficient?

Yet we can describe artificial intelligence as "Artificial intelligence (AI) is technology that enables computers and machines to simulate human learning, comprehension, problem solving, decision making, creativity, and autonomy"[1]. Artificial intelligence, in another famous definition," is a technology that enables machines to imitate various complex human skills"[2].

In summary, we can identify artificial intelligence as a technological human innovation that stems from the purpose of creating something that supports automation, decision-making, and problem-solving.

1.2 Evolution of artificial intelligence

[1] IBM, "Artificial Intelligence (AI)", available at: https://www.ibm.com/think/topics/artificial-intelligence, (accessed: 14/01/2026, 14:00).
[2] Haroon Sheikh, Corien Prins, Erik Schrijvers, *Mission AI: The New System Technology*, Springer, Cham, 2023, p. 15.

The evolution of artificial intelligence can be understood as a gradual transition from rule-based systems to data-driven and generative models. In its early stages, AI was mainly based on symbolic reasoning and expert systems. These systems relied on explicit rules created by human specialists and were designed to solve problems within limited domains. Although they represented an important step in the development of intelligent systems, their ability to adapt to new situations remained limited because they depended on predefined rules rather than learning from data[3].

A major shift occurred with the development of machine learning. Unlike traditional rule-based systems, machine learning allows algorithms to identify patterns from data and make predictions or decisions without being explicitly programmed for every situation.[4] This development made AI more flexible and more useful in professional fields that depend on large volumes of information, including finance and accounting.

The emergence of deep learning further expanded AI capabilities. Deep learning uses neural networks with multiple layers to process large and complex datasets, making it possible to improve tasks such as image recognition, language processing, fraud detection, and predictive analysis. This stage is important for accounting because many accounting operations depend on detecting patterns, identifying anomalies, processing documents, and analyzing financial data.

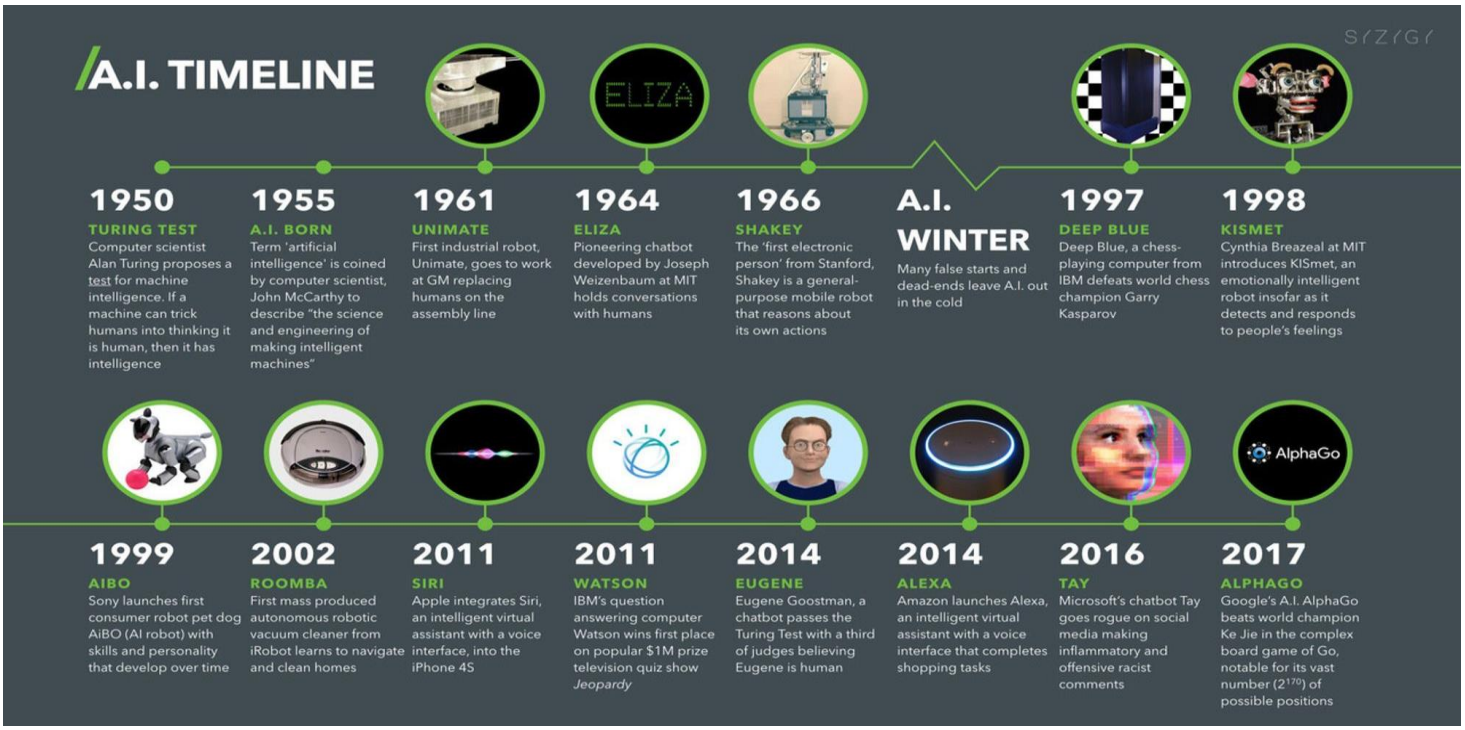
In recent years, generative AI and large language models have increased public and professional awareness of AI. These models can process and generate human-like text, summarize information, support document analysis, and assist users in producing explanations or reports.[5] Their relevance to accounting lies in their

[3] IBM, "History of Artificial Intelligence", available at: https://www.ibm.com/think/topics/history-of-artificial-intelligence, (accessed: 06/05/2026, 10:44).
[4] Google Cloud, "What is GPT?", available at: https://cloud.google.com/discover/what-is-gpt, (accessed: 06/05/2026, 10:52).
[5] Ibid.

potential to support tasks such as financial reporting, document review, data interpretation, and decision support.

Therefore, the evolution of AI shows a movement from limited rule-based automation toward more flexible systems capable of learning from data and supporting professional judgment. This transition explains why AI is increasingly discussed in accounting and why assessing readiness for its adoption has become necessary, especially in contexts where basic digitalization exists but full AI integration remains at an early stage.

Figure Nº 1: Historical Evolution of Artificial Intelligence.



Source: Prepared by the researcher based on: Alma Better, "History of AI", accessed on: 15/01/2026.

1.3 Main types of AI :

There are three main types of artificial intelligence: These types include practical AI currently used in real applications, and theoretical forms of AI that remain outside current practical use.

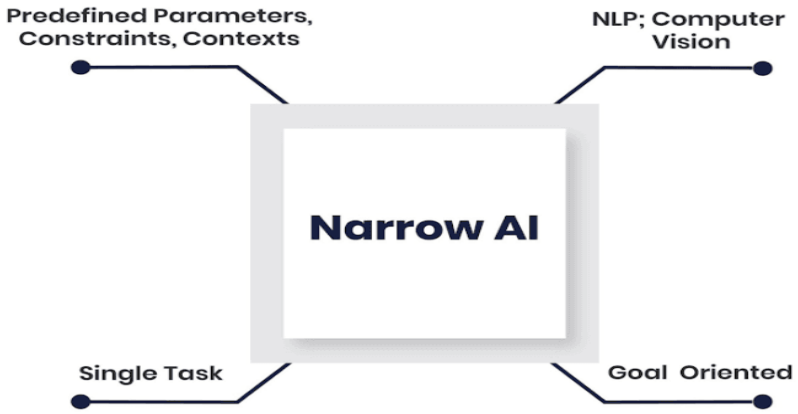
1.3.1 Artificial Narrow Intelligence (ANI):

Explanation of Artificial Narrow Intelligence or Weak AI:

Artificial Narrow Intelligence (ANI) or Weak AI is an AI system which

is built for carrying out specified functions in particular settings. The AI models that have been developed and are being used in day-to-day activities fall under this type of AI. For instance, Siri and Alexa voice assistants, recommendation engines, caption generators, as well as ChatGPT and Gemini, are some of the examples. However, these systems only carry out the required actions without possessing general human intelligence or independent understanding[6].

Figure Nº2: Main Characteristics of Artificial Narrow Intelligence



Source: Prepared by the researcher based on: Bot Penguin, "Artificial Narrow Intelligence", accessed on: 16/01/2026.

1.3.2 Artificial General Intelligence (AGI):

AGI or Artificial General Intelligence pertains to an artificial intelligence concept that suggests a level where AI can become similar to or even better than human cognition. As opposed to ANI or Artificial Narrow Intelligence that works specifically within certain limitations, AGI will be able to learn, reason, and think across diverse fields. However, AGI still belongs to the realm of theory[7].

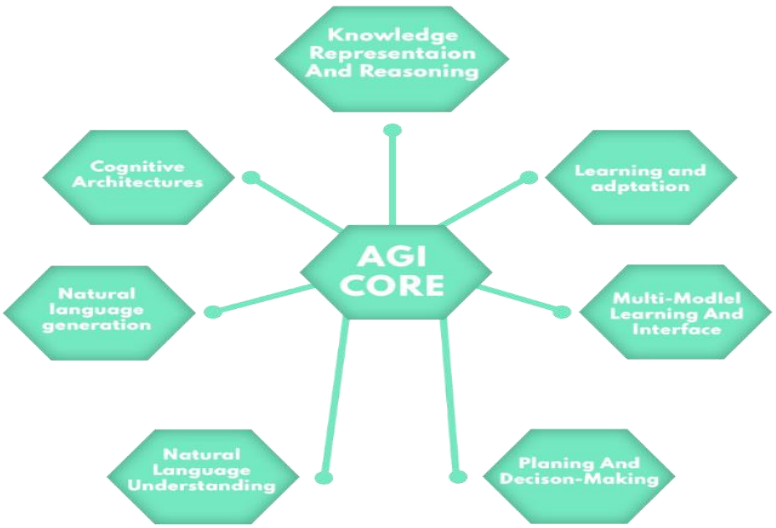
This has led to discussions on whether sophisticated large language models can be termed as one step towards achieving AGI. It is believed by

[6] Northwood Technical College, "Introduction to AI", available at: https://itlc.northwoodtech.edu/ai/introduction/staff/wvs, (accessed: 16/01/2026, 08:52).
[7] IBM, "Artificial General Intelligence (AGI)", available at: https://www.ibm.com/think/topics/artificial-general-intelligence, (accessed: 16/01/2026, 09:10).

some academics that there is a degree of generality involved in current models since they are capable of carrying out various tasks and processing diverse forms of data. However, this view has been contested by others, who claim that mere generality is not sufficient as these models lack commonsense, embodiment, persistence, and reasoning[8].

For this reason, AGI is not the primary area of emphasis of this study. This study concentrates on practical applications of AI technologies employed or which can be employed within accounting, such as machine learning, natural language processing, robotic process automation, predictive analysis, and AI-based decision-making support. Such applications fall primarily within the realm of applied or narrow AI, which better fits into the assessment of the readiness of the accounting profession in Algeria.

Figure Nº3: Core Capabilities Associated with Artificial General Intelligence



Source: researcher's own preparation.

1.3.3 Artificial Superintelligence (ASI):

[8] Ibid., (accessed: 16/01/2026, 09:20).

Artificial Superintelligence refers to a hypothetical form of artificial intelligence that would surpass human intelligence in almost all cognitive domains. Unlike AGI, which aims to reach a human-like level of general intelligence, ASI refers to a level of intelligence beyond human capabilities. IBM defines artificial superintelligence as a hypothetical AI system with an intellectual scope beyond human intelligence.[9]

However, ASI remains theoretical and is not part of current practical AI applications. It is mainly discussed in relation to future technological possibilities, ethical concerns, and long-term risks. Therefore, while ASI is useful for understanding the broader classification of AI, it is outside the practical scope of this study. The present research focuses on applied AI technologies that can realistically affect accounting practice, such as machine learning, natural language processing, robotic process automation, predictive analytics, and AI-assisted decision support.

Here is a table that summarizes the differences between AI types

Figure N°4: Comparison between ANI, AGI, and Artificial Superintelligence

AI STAGES	ANI	AGI	ASI
Stage	Past & Present	Present-in-progress	Future
Type	Narrow/Single-task	General/Human-level	Superhuman
Scope of Intelligence	Specific Domains only	Multi-domain understanding	All-encompassing, self-improving
Development Status	Already achieved	In active progress	Still Theoretical
Risk Level	Low	Moderate	Not yet realized
Human Comparison	A skilled specialist	A well-rounded thinker	High(speculative)
Examples	Google Maps, Netflix recommendations	Experimental LLMS	Beyond the limits of human capability

Source: Prepared by the researcher based on: Tutorials Dojo, "AGI vs ASI vs ANI: AI Stages Towards Super Intelligence", accessed on: 16/01/2026.

[9] IBM, "Artificial Superintelligence (ASI)", available at: https://www.ibm.com/think/topics/artificial-superintelligence, (accessed: 16/01/2026, 09:39).

1.3.4 Distinguishing AI from Expert Systems and Predictive Models

The phrase artificial intelligence can sometimes be used loosely to refer to various computer applications in business practice. Such ambiguity might lead to misunderstanding of AI technology versus expert systems[10], prediction models, and general accounting software. Hence, it is necessary to understand the difference among them before delving into AI applications in accounting.

Expert systems may be seen as one of the early examples of AI-related decision support systems, where the underlying principle involves a set of predetermined rules generated by experts. Prediction models involve the use of past observations and some form of computation to predict future results. AI systems have greater flexibility since they can learn from data, adapt to novel patterns, and handle intricate decision problems.

Table Nº1: Main Differences between Artificial Intelligence, Expert Systems, and Predictive Models

Aspect	AI	Expert Systems	Predictive Models
Learning ability	Yes (often)	No	Sometimes
Adaptability	High	Low	Limited
Main basis	Data-driven learning and reasoning	Predefined expert rules	Historical data and statistical patterns
Scope	Broad	Narrow	Narrow
Autonomy	Yes	Limited	Limited

Source: Prepared by the researcher based on the conceptual review.

This distinction is relevant to the present study because the existence of digital tools in accounting does not automatically mean that an organization is

[10] Abdulwahid Ahmad Hashed Abdullah, Faozi A. Almaqtari, "The impact of artificial intelligence and Industry 4.0 on transforming accounting and auditing practices", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 10, No. 1, 2024, p. 1.

ready for AI adoption. Traditional accounting software, expert systems, and predictive models may provide a technological foundation, but AI readiness also requires skills, data quality, infrastructure, regulation, and the ability to evaluate AI-generated outputs. Therefore, distinguishing between these tools helps avoid confusing basic digitalization with real AI readiness.

2 Core AI Technologies Relevant to Accounting:

AI is not restricted to only conversational or language-oriented applications. In the accounting domain, artificial intelligence includes various types of technology that could help with automation, processing and analyzing data, predictions, interpreting documents, and making decisions. AI-related technologies that may be used by accounting professionals include machine learning, deep learning, natural language processing, robotic process automation, and data analytics with predictive analytics.

Figure N°5: Core Artificial Intelligence Technologies Relevant to Accounting



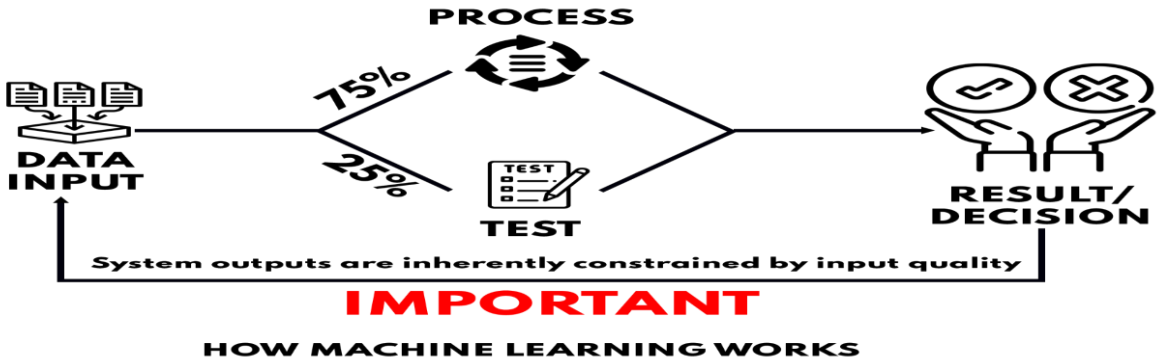
Source: researcher's own preparation.

2.1 Machine learning :

Machine learning is a branch of artificial intelligence that enables systems to learn patterns from data and make predictions or decisions without being explicitly

programmed for every situation[11]. In accounting, machine learning can support tasks such as anomaly detection, transaction classification, risk analysis, fraud detection, and forecasting. Its importance lies in its ability to process large volumes of data and identify patterns that may be difficult to detect manually.

Figure N°6: The Garbage In, Garbage Out Principle in Machine Learning Outputs



Source: researcher's own preparation.

However, the reliability of machine learning depends strongly on the quality of the data used. If the input data is incomplete, biased, or inaccurate, the output may also be unreliable. This issue is often described through the principle of Garbage In, Garbage Out (GIGO). In accounting, this means that AI outputs must always be reviewed and interpreted by professionals, especially when they affect financial reporting, tax compliance, or decision-making.

2.2 Deep Learning:

Deep learning is a more advanced form of machine learning based on artificial neural networks. It is especially useful when dealing with large and complex datasets, such as images, documents, speech, and unstructured data[12]. In accounting, deep learning algorithms could help recognize documents, analyze invoices, find patterns, and conduct more sophisticated fraud analysis.

[11] IBM, "Machine Learning", available at: https://www.ibm.com/think/topics/machine-learning, (accessed: 19/01/2026, 15:06).
[12] Coursera, "What is Deep Learning?", available at: https://www.coursera.org/articles/what-is-deep-learning, (accessed: 20/01/2026, 10:40).

While deep learning techniques might enhance the precision rate for complicated calculations, they could also generate problems regarding the transparency and interpretability of the information generated by machines. Therefore, accountants should not rely solely on AI outputs without professional verification.

2.3 Natural language processing (NLP):

Natural Language Processing, or NLP, refers to AI techniques that allow systems to understand, process, and generate human language[13]. This technology is relevant to accounting because many accounting and auditing tasks involve text-based documents, such as invoices, contracts, reports, tax files, financial statements, and regulatory documents.

In practice, NLP can help accountants summarize documents, extract key information, analyze written reports, classify textual data, and support compliance review. It can also assist in preparing explanations or reports. However, NLP outputs still require human validation, especially when the information is legally or financially sensitive.

2.4 Robotic Process Automation (RPA):

Robotic Process Automation, or RPA, refers to software tools that automate repetitive and rule-based office tasks, such as extracting data, filling forms, moving files, and transferring information between systems[14]. Some applications of RPA in accounting include invoicing, data entry, reconciliation, reporting, and verification.

It is important to distinguish between traditional RPA and AI-based intelligent automation. Classic RPA may be rule-based and, therefore, cannot learn from data. But if RPA technology works with machine learning, natural language processing, and other AI capabilities, then we are talking about intelligent automation that makes accounting faster and more efficient.

[13] Haroon Sheikh, Corien Prins, Erik Schrijvers, *Mission AI: The New System Technology*, op. cit., pp. 54-55.
[14] IBM, "Robotic Process Automation (RPA)", available at: https://www.ibm.com/think/topics/rpa, (accessed: 20/01/2026, 11:01).

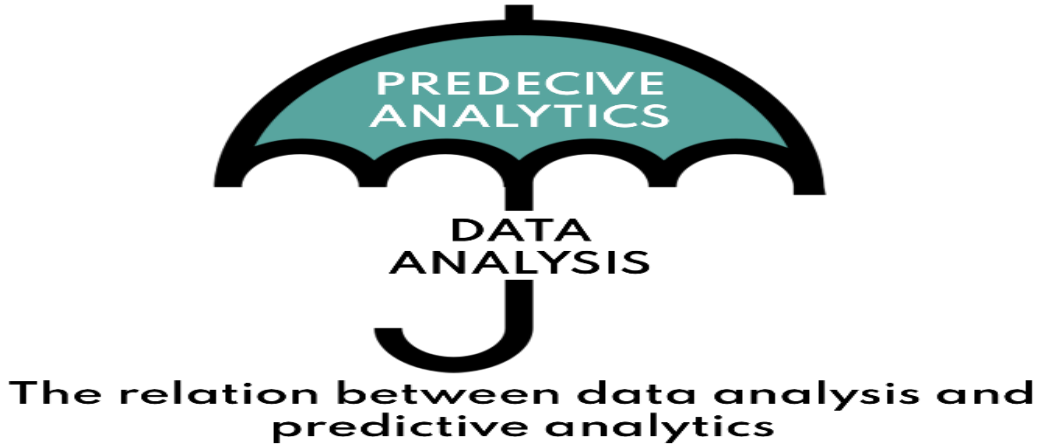
2.5 Data analysis and Predictive analytics

Data analytics refers to the process of collecting, organizing, cleaning, and analyzing data in order to extract useful information. Predictive analytics goes further by using historical data, statistical models, and machine learning techniques to forecast future outcomes[15].

In accounting, data analytics may assist in such processes as financial analysis, performance evaluation, cost management, audit planning, and decision making. As for predictive analytics, it may contribute to budgeting, forecasting, risk assessment, fraud detection, and management accounting. These technologies become particularly important because artificial intelligence in accounting largely relies on quality data.

Generally, these technologies demonstrate that artificial intelligence in accounting is not one tool, but a set of various tools aimed at providing automation, analysis, predictions, and decision making. Artificial intelligence may be applied successfully when it is accompanied by quality data, skills of accountants, infrastructure, cybersecurity, and clear regulations.

Figure N°7: Relationship between Data Analysis and Predictive Analytics



Source: researcher's own preparation.

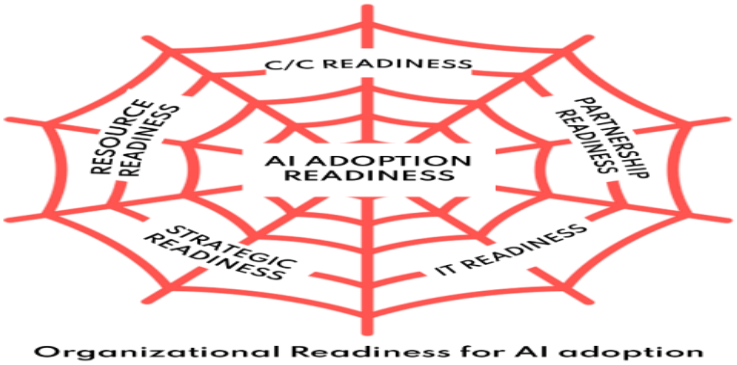
[15] IBM, "Predictive Analytics", available at: https://www.ibm.com/think/topics/predictive-analytics, (accessed: 22/01/2026, 08:22).

3 Assessing firm readiness for a Successful AI Adoption:

Successful AI adoption does not depend solely on technological advancement, but rather on a combination of organizational readiness, data quality, human skills, and governance structures.

Hence, to ensure that we are ready to adopt AI successfully, we need to check some boxes. The shape below represents what these boxes are:

Figure N°8: Main Dimensions of Organizational Readiness for Artificial Intelligence Adoption



Source: researcher's own preparation.

3.1 Cognitive and Cultural Readiness:

Cognitive and cultural readiness represent two important human dimensions of AI adoption. Cognitive readiness refers to the extent to which individuals and decision-makers understand AI concepts, limitations, and implications. This includes the ability to interpret AI outputs, recognize their limits, and make informed decisions based on them in accounting[16], this dimension is particularly important because AI-generated outputs may affect financial reporting, compliance, auditing, and decision-making.

Cognitive readiness is also related to the knowledge base of the organization. Previous research emphasizes that personnel knowledge, skills, adaptability, AI

[16] Ricardo Parulian Sibagariang, "The Application of Artificial Intelligence in Accounting Reporting within the Banking Sector", *International Journal of Trends in Accounting Research*, Vol. 6, No. 1, 2025, p. 2.

awareness, and capability-building programs are essential components of AI readiness[17]. Therefore, accountants cannot adopt AI effectively unless they possess a minimum level of AI literacy, technological awareness, and the ability to evaluate AI outputs critically.

Cultural readiness refers to the organizational culture that supports technological change. An AI-ready culture requires openness to change, trust in AI systems, leadership support, communication, upskilling, collaboration between technical and professional teams, and clear guidelines for responsible AI use[18]. In the accounting profession, cultural readiness is important because resistance to change, fear of job displacement, or lack of trust in AI may reduce acceptance, even when the technology is available.

Overall, cognitive and cultural readiness show that AI adoption is not only a technical issue. It also depends on whether accountants understand AI, trust it within reasonable limits, and work in an environment that supports learning, adaptation, and responsible use.

3.2 Resource readiness:

Resource Readiness: focuses on the company`s “flexibility” in designing and reconfiguring its resources to meet the needs of digital innovation. Broadly speaking, resource readiness illustrates how relevant resource flexibility is, when it comes to changing the configuration of IT. The resources also include human capital and information technology infrastructure, both of which are considered factors of innovation

- AI processes fit: it explains how an organization’s AI strategy and practices must work together to improve AI readiness. As per high performance

[17] Cindy Greenman, Derrick Esplin, Ross Johnston, James Richards, "An Analysis of the Impact of Artificial Intelligence on the Accounting Profession", *Journal of Accounting, Ethics & Public Policy (JAEPP)*, Vol. 25, No. 2, 2024, p. 33.

[18] TechClass, "How to Create an AI-Ready Culture in Your Organization", available at: https://www.techclass.com/resources/learning-and-development-articles/how-to-create-ai-ready-culture-in-your-organization, (accessed: 22/01/2026, 10:36).

companies adopt process such as “Protocols in place to ensure data quality” and “well defined processes for data governance”.

- Financial budget: refers to the amount of money that companies put into AI adoption.
- Change Management: aids employees in com- prehending and adapting to AI induced organizational change[19].

3.3 Strategic readiness:

Strategic AI readiness isn’t about chasing the latest technologies, it’s about building the foundations to scale responsibly. That means aligning strategy with business value, embedding governance early, and empowering people across the organization[20].

– AI business potential: the fit and compatibility of an organization with AI developments is described by AI business potential. Because AI technologies are highly connected to data, data availability and data quality support this potential, as the first is a fuel to the AI solution, whereas the second characteristic determines the accurate outcome.

– Top management support in adopting AI: indicates a willingness to begin AI projects from the top down while simultaneously supporting bottom-up initiatives[21].

3.4 IT READINESS:

IT readiness refers to the extent to which an organization possesses the technological foundation required to support AI adoption. In accounting, this includes reliable hardware, accounting software, secure databases, internet connectivity, data storage systems, cybersecurity measures, and the ability to

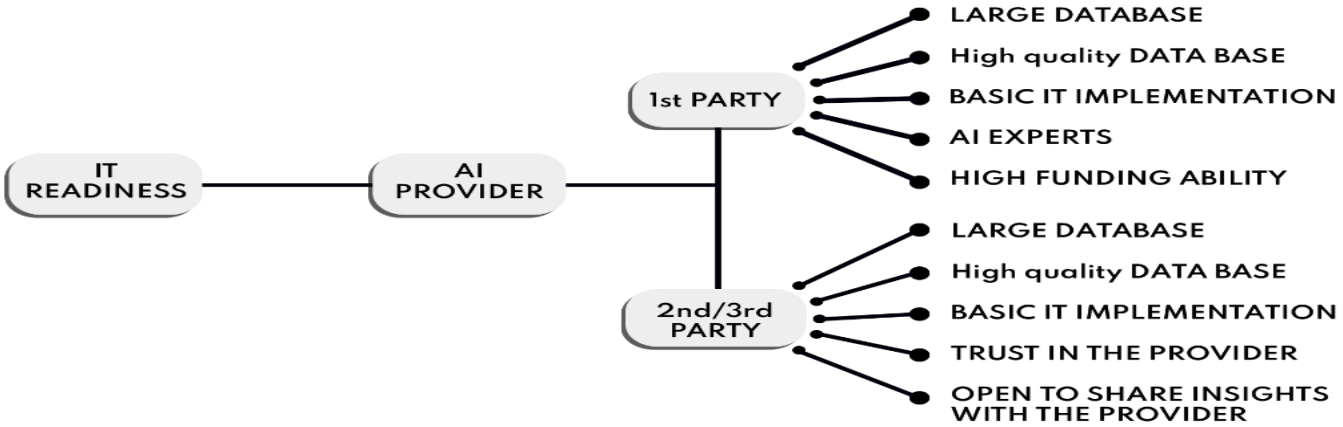
[19] Cindy Greenman, et al., "An Analysis of the Impact of Artificial Intelligence on the Accounting Profession", op. cit., pp. 32-33.
[20] Forrester Blogs, "Strategic AI Readiness: How to Move from Hype to Scalable Impact", available at: https://www.forrester.com/blogs/strategic-ai-readiness-how-to-move-from-hype-to-scalable-impact/, (accessed: 22/01/2026, 10:59).
[21] Cindy Greenman, et al., "An Analysis of the Impact of Artificial Intelligence on the Accounting Profession", op. cit., p. 33.

integrate AI tools with existing accounting systems.

AI adoption depends heavily on the availability and quality of digital infrastructure. Organizations that already use information technology to support their core capabilities are more likely to develop flexibility, innovation, and stronger operational performance[22]. However, basic IT availability does not automatically mean full AI readiness. AI systems require structured and reliable data, secure access, system compatibility, and users who are able to work with digital tools effectively.

In practice, IT readiness may differ depending on how AI tools are implemented. Organizations may develop their own AI systems internally, rely on external AI providers, or use third-party AI tools integrated into existing software. This distinction is important because each model requires different levels of infrastructure, technical skills, cost, control, and data protection

Figure Nº9: IT Requirements for First-Party and External-Provider AI Implementation



Source: researcher's own preparation.

[22] Ibid.

Overall, IT-readiness represents a basic condition for AI adoption in accounting. Without adequate infrastructure, reliable data systems, cybersecurity, and compatibility with accounting software, AI integration may remain limited even when accountants are willing to adopt it.

3.5 PARTNERSHIP READINESS:

refers to the degree to which an organization's digital innovation is supported by external stakeholders. Customers and users play complementary roles in fostering digital innovation, according to a previous study[23]:

– Customer and other stakeholders AI readiness and Innovation valence: when considering AI adoption, discussing customers and other stakeholders' capacity to positively react to the new technology adoption;

– Capability to teach users how the models work.

4 Brief Reflection on the Algerian Context:

4.1 Technological Level in the Algerian Context

From a broader perspective, the level of technological development within an economy constitutes a fundamental factor shaping the efficiency, innovation capacity, and competitiveness of its institutions and professional sectors. In Algeria, the overall adoption of advanced technologies remains relatively moderate compared to global trends, particularly in areas such as cloud computing, artificial intelligence, and data-driven systems. This situation reflects a wider digital transition process that is still evolving across multiple sectors.

Nevertheless, gradual progress is evident, as both public and private actors are increasingly engaging in digital transformation initiatives. Large organizations, particularly in strategic industries such as oil and gas, have begun implementing integrated digital systems, including Enterprise Resource Planning (ERP), to improve operational efficiency and data management. At the same time, the government has launched various e-government initiatives—such as electronic tax

[23] Ibid.

platforms—aimed at modernizing public services, enhancing transparency, and reducing administrative complexity.

Despite these advancements, the overall technological environment continues to face several structural constraints. These include limitations in digital infrastructure, gaps in technical expertise, varying levels of organizational readiness, and, in certain contexts, a degree of resistance to change. As a result, while the foundations for digital transformation are being established, the widespread and effective integration of advanced technologies remains an ongoing challenge[24]

[24] Danish Karim, Khalil Ahmad, Amjad Ali, "Artificial Intelligence and the Evolution of Accounting: Transforming Roles, Skills, and Professional Practices", *Qualitative Research Journal for Social Studies*, Vol. 2, No. 1, 2025, p. 553.

Section 02: Transformation of Accounting Functions in the Era of AI

Accounting has undergone several generational changes, directly related to the evolution of technology, due to its flexible nature. This led us to divide it into three main types.

- Traditional accounting, or manual accounting, is a type that does not contain any kind of automation, and everything is mainly done by hand.
- IT-enabled accounting, and it refers to the one that integrates simple information technology tools. Also, it can be called "digitalized accounting."
- AI-based accounting is the latest, and it is fundamentally built upon the idea of automation. And it tries to integrate the AI technologies mentioned above into one of its functions.

1. Traditional Accounting: Foundations Before the Digital Shift

1.1 Concept and Scope of Traditional Accounting Functions:

1.1.1 Definition of accounting:

Accounting is a broad subject, and we cannot provide a single definition. Among the popular definitions we have:

Definition 01: Accounting is an information system that measures, processes, and communicates financial information about a business. Accountants focus on the needs for financial information, whether the decision makers are inside or outside a business or other economic entity.[25]

Definition 02: accounting can be defined as an information system that provides reports to users about the economic activities and condition of a business. You could think of accounting as the “language of business.” This is because accounting is the means by which businesses’ financial information is

[25] Belverd E. Needles, Marian Powers, and Susan V. Crosson, *Principles of Accounting*, 12th Edition, South-Western Cengage Learning, 2013, p. 37.

communicated to users.[26]

Definition 03: Accounting systematically keeps a record, summarizes, and analyses economic transactions to provide a clean idea of a business enterprise's financial health. It is the spine of financial management, promoting accuracy, transparency, and compliance.[27]

From the definitions above, we can say that accounting is the art of recording, summarizing, and clarifying financial data of a firm, with the goal of creating a business language that represents the financial statement of the firm to help the decision-making process, and most importantly, stakeholders can fully understand the financial situation of the company.

1.1.2 Scope of accounting:

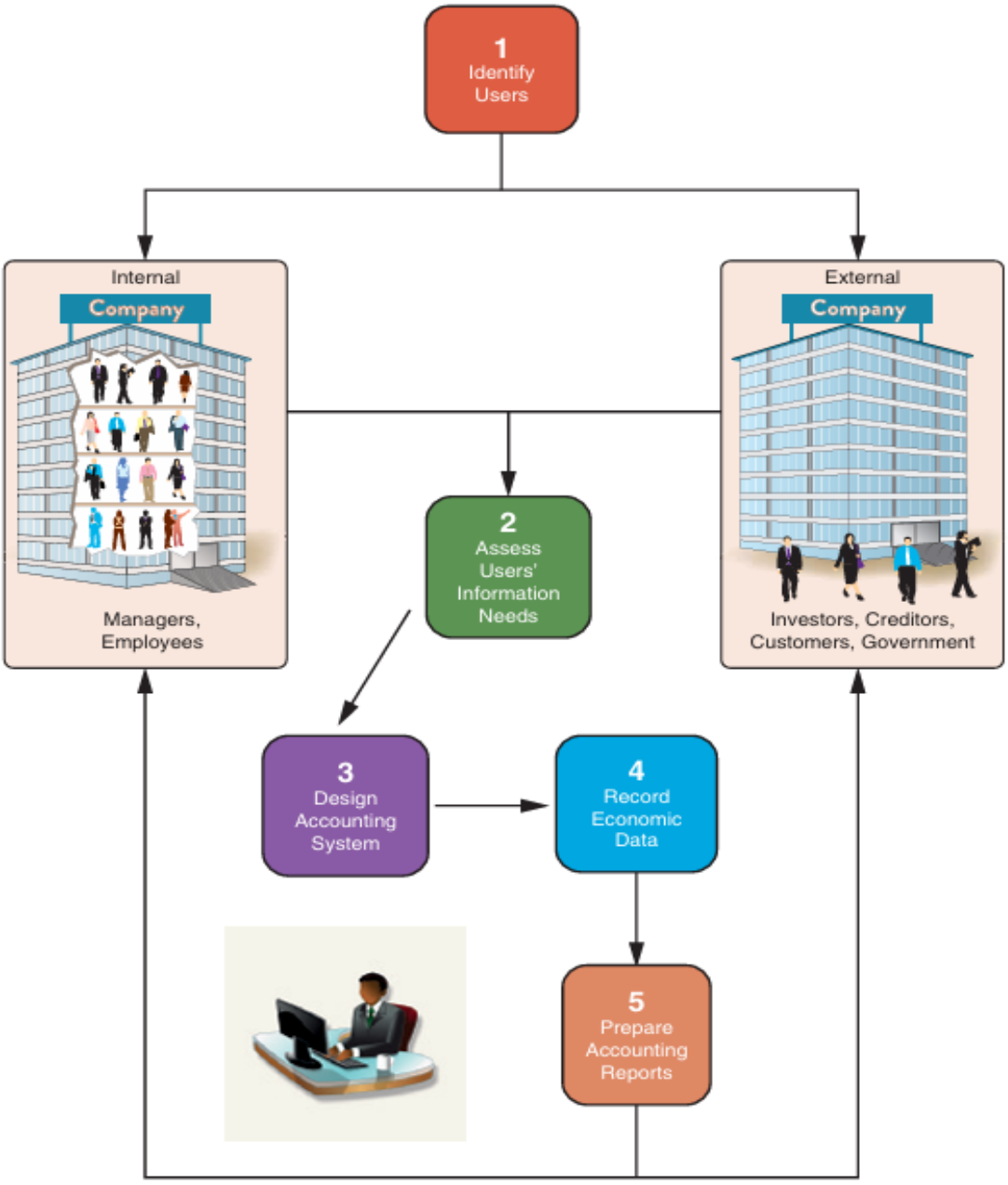
Going back to the definitions above, we can tell that accounting is fundamentally based upon three main things: they are

- Recording: Record economic data about business activities and events.
- Summarizing: Design the accounting information system to meet users' needs.
- Reporting: Prepare accounting reports for users[28]

These, together with other factors, present an accounting information system.

[26] Carl S. Warren, James M. Reeve, and Jonathan Duchac, *Accounting*, 27th Edition, South-Western Cengage Learning, 2018, p. 37.
[27] MPES Learning, "What is Accounting?", available at: https://www.mpeslearning.com/blog/what-is-accounting, (accessed: 10/03/2026, 15:31).
[28] Belverd E. Needles et al., *Principles of Accounting*, *op. cit.*, pp. 37-38.

Figure N°10: Accounting Information System and Its Main Users



Source: researcher's own preparation.

1.2 Branches of accounting:

As mentioned above, accounting is a broad field that plays a vital role in business, and this is accomplished through its branches, with three main ones:

1.2.1 Financial Accounting in Its Classical Form:

External users of accounting information include investors, creditors, customers, and the government. These users are not directly involved in managing and operating the business. The area of accounting that provides external users with

information is called financial accounting. The objective of financial accounting is to provide relevant and timely information for the decision-making needs of users outside the business. [29]

1.2.2 Management Accounting in Its Classical Form:

Internal decision makers use information provided by managerial accounting about operating, investing, and financing activities. Managers and employees need information about how they have done in the past and what they can expect in the future.[30]

1.2.3 Auditing in Its Classical Form:

Auditing involves closely reviewing business processes and documents, such as financial statements, to ensure accuracy in reporting. Individuals, small businesses, and large corporations go through audits, which auditors conduct either internally (by auditors employed by the company itself) or externally (by accounting firms). [31]

1.3 Limitations of manual accounting and Drivers of Digital Transformation:

1.3.1 Manual accounting system:

Manual Accounting is a traditional paper-based system where accounting data is recorded in a paper journal and ledger registers, vouchers, books are used to retain, organize and analyze accounting transactions of a company. It is mostly used in small businesses operated by a few people, such as sole proprietors, shopkeepers, etc, to maintain the record of the company transactions, and that is because of its lower cost in use and implementation[32]

1.3.2 Limitations of manual accounting:

[29] Carl S. Warren et al., *Accounting*, *op. cit.*, p. 37.
[30] Belverd E. Needles et al., *Principles of Accounting*, *op. cit.*, p. 37.
[31] The Forage, "What is Auditing?", available at: https://www.theforage.com/blog/skills/auditing, (accessed: 11/03/2026, 08:57)
[32] Kuicthok Yak, *Manual Accounting System And Computerized Accounting System*, p. 2.

Although manual accounting may still be suitable for very small companies with limited transactions, its use becomes less productive if there is an increase in the number of tasks being performed. Manual accounting systems have been noted to be characterized by time-consuming data entry, a greater chance of human error, poor accessibility, and lack of scalability. These factors limit the productivity of accounting and affect cooperation and control of processes. Moreover, the use of manual accounting might cause complications when it comes to meeting compliance needs and making decisions. The fact that records are usually kept on paper makes it difficult to maintain clear audit trails, meet regulatory obligations, and analyze finances. Therefore, the need for digital accounting systems arose from the limitations of manual accounting..[33]

1.3.3 Drivers of Digital Transformation:

Several factors are propelling the digital transformation of accounting processes:

- Regulatory Complexity: The increasing complexity of financial reporting regulations requires precise, timely, and transparent reporting.
- Stakeholder Expectations: Investors and stakeholders demand real-time access to financial data. Digital accounting solutions provide instant insights into financial performance, empowering better decision-making.
- Competitive Pressures: To stay ahead, firms must embrace digital technology to improve efficiency, reduce costs, and enhance the quality of their financial reporting.

[33] IQ BackOffice, "The Challenges of Having a Manual Accounting System", available at: https://www.iqbackoffice.com/the-challenges-of-having-a-manual-accounting-system/, (accessed: 11/03/2026, 09:35).

- Data Explosion: The volume of financial data continues to grow, making manual accounting processes untenable. Big data tools enable firms to manage, analyze, and leverage vast amounts of financial data efficiently.[34]

2 Digitalized Accounting: The IT-Enabled Era (Pre-AI):

Digitalized or IT-based systems are generally used to describe the accounting that sits between the manual and AI-driven ones. It is currently presented as a bridge between two eras. Yet it is the core foundation for the new AI-Driven systems, since the latter is a pure evolution of IT-based systems.[35]

Figure N°11: Historical Evolution of Accounting in Relation to Technological Development

Historical Period	Milestone in Accounting	Relevant Technological Innovation
Antiquity (Mesopotamia)	Primitive records of transactions on clay tablets	First forms of control and manual annotation
Middle Ages (1494)	Publication of "Double-entry Method" by Luca Pacioli	Formalization of the double-entry system.
First Industrial Revolution	Accountant as bookkeeper	Introduction of steam propulsion machines.
Second Industrial Revolution	Accounting speculation and the emergence of publicly traded companies	Advancement of mechanical and electronic technologies.
Third Industrial Revolution	Automation of financial data processing	Emergence of computers and accounting software.
Fourth Industrial Revolution	Fusion of physical and digital, AI and robotization of tasks	Implementation of the Digital Age and AI.

Source: Prepared by the researcher based on the reviewed literature on accounting digitalization.

2.1 Transition from Manual to IT-Based Accounting Systems

The transition from manual accounting to IT-based accounting occurred gradually as organizations began to adopt digital tools to improve the speed, accuracy, and organization of accounting information. This transition can be summarized through three main stages: spreadsheets, specialized accounting software, and enterprise resource planning systems.

The first stage was the use of calculators and spreadsheet programs, especially

[34] DFIN Solutions, "Digital Transformation in Finance and Accounting", available at: https://www.dfinsolutions.com/knowledge-hub/thought-leadership/knowledge-resources/digital-transformation-finance-and-accounting, (accessed: 22/03/2026, 15:53).
[35] *Accounting Revolution in the Digital Age: The Transformative Power of Artificial Intelligence*, p. 7.

with the expansion of personal computers. Spreadsheet software, such as Microsoft Excel, allowed accountants to organize data, perform calculations, and prepare reports more efficiently than manual methods[36]. However, these tools still required direct human input and professional supervision.

The second stage was the development of specialized accounting software. These systems were designed to respond more directly to accounting needs, such as recording transactions, preparing financial statements, managing accounts, and supporting compliance requirements. Compared with spreadsheets, specialized accounting software provided more structure, consistency, and control in accounting work.[37]

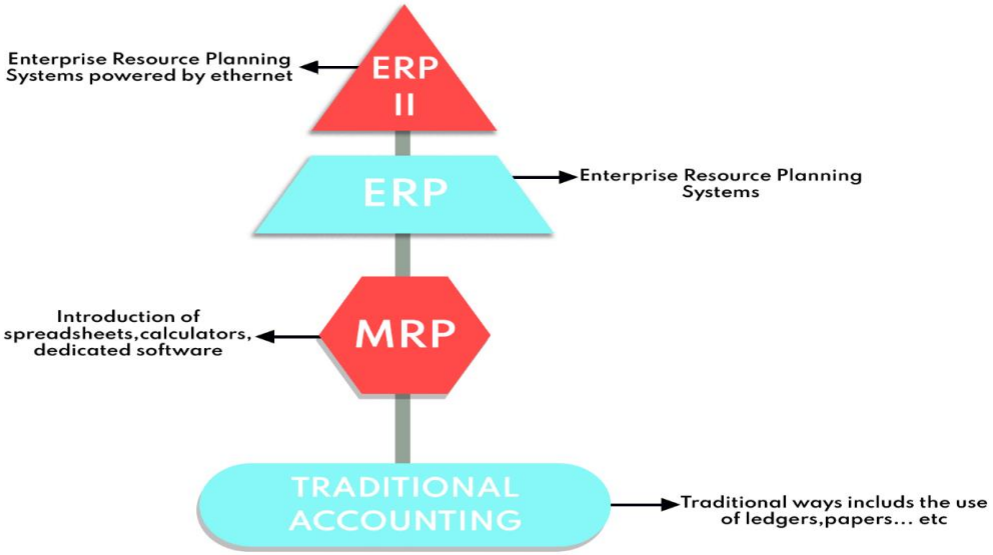
The third stage was the introduction of Enterprise Resource Planning systems. ERP systems integrate different business functions into a unified information system and allow accounting data to be connected with other organizational processes such as inventory, sales, purchasing, human resources, and management control.[38]This integration improved data availability, workflow coordination, and organizational reporting.

Overall, IT-based accounting systems helped reduce the limitations of manual accounting by improving speed, accuracy, accessibility, and data organization. However, these systems remain mainly dependent on predefined rules and human input. They represent an important foundation for AI-supported accounting, but they do not automatically indicate full AI readiness.

The shape below presents the full timeline of IT accounting:

[36] Gridlex, "History and Future of Accounting Software", available at: https://gridlex.com/a/history-and-future-of-accounting-software-st415/, (accessed: 31/03/2026, 09:54).
[37] "Development and Sustainability of Specialized Accounting Software Products", p. 645.
[38] Shadrack Katuu, "Enterprise Resource Planning: Past, Present, and Future", p. 39.

Figure Nº12: Evolution from Traditional Accounting to Integrated ERP-Based Systems



Source: researcher's own preparation.

2.2 The Ceiling of Basic Digitalization: What IT Cannot Do Alone

Despite the significant improvements brought by information technology tools, from spreadsheets to ERP platforms, these technologies reached a structural ceiling that prevented them from fully meeting the demands of modern business environments. While they succeeded in digitizing and automating routine tasks, they remained fundamentally basic, so accounting remains a rule-based, static, and reactive process. Repetitive tasks and manual data entry characterized traditional accounting systems. The integration of digital technologies has increased speed and enhanced accuracy, yet fundamental limitations persisted in how these systems could process and interpret complex financial realities.

What Basic IT Systems Could Not Do:

1. They cannot learn or adapt:

The goal of integrating IT tools in accounting was to reduce repetitive tasks and enhance accuracy[39]. This was the purpose of the technology in general back in the

[39] "Development and Sustainability of Specialized Accounting Software Products", *op. cit.*, p. 643.

day. However, this purpose has changed, and it has shifted from helping humans enhance their workflows to narrowing the use of humans in business and reducing dependence on manual intervention, and supporting more advanced analytical processes.

Unlike the AI tools, basic IT cannot predict, learn, or handle large data sets, so it is a way to enhance the pipeline, but not to advance it to a new level.

2. They cannot process unstructured data :

Data quality and volume are key to running a well-run business. Basic IT tools can handle data, but with a lot of limitations, since we identify the struggle of these tools with large and unstructured data sets.

Most of the data injected into these systems is structured, and this process takes a lot of time from the human responsible for this operation. We still talk at the level of small data sets, so what about when it comes to the large ones? It will be an operational challenge. In contrast to AI tools, which can analyze large volumes of structured and unstructured data[40]

3. They cannot predict or Forecast Intelligently:

Traditional accounting systems offer the bare minimum of features; they record and report what has already happened. AI, by contrast, frees up time to achieve deeper insights and moves the role of accountants.

4. They cannot detect hidden patterns or anomalies.

Fraud detection in traditional systems relies on preset rules and manual sampling. Whereas AI can analyze much larger data sets, learn from them, and AI can analyze larger datasets and may produce faster and more accurate results when properly supervised.

A bridge to AI accounting:

[40] Chara Kottara, "Artificial intelligence and the new norm in financial and managerial accounting and auditing", p. 3202.

In short, basic digitalization improved the speed and accuracy of accounting tasks, but it did not transform the nature of accounting work. The profession remained backward-looking, manual in judgment, and limited in analytical depth. These structural limitations created the conditions for a more fundamental shift: the integration of artificial intelligence into accounting functions.

3 AI-Driven Transformation of Accounting Functions:

3.1 The Conceptual Shift: From Backward-Looking to Real-Time:

AI integration in accounting has significantly improved accuracy and efficiency transforming several traditional accounting practices. By automating routine tasks like data entry and reconciliation, AI reduces human errors and enhances financial record reliability. This automation saves time, enabling accountants to concentrate on complex analysis and strategic planning.[41]

3.2 Financial Accounting in the Age of AI:

3.2.1 Automated Bookkeeping and Journal Entries:

AI-powered automation reduces the time spent on manual bookkeeping. Optical Character Recognition (OCR) enables AI systems to extract relevant information from invoices, receipts, and financial documents, minimizing human intervention[42]

- At this stage, AI technologies such as NLP, ML, and RPA become relevant.
- Robotic Process Automation has the ability to undertake monotonous and repetitive activities,[43] and bookkeeping and recording are tasks that can be efficiently supported by RPA.

[41] Yahia Saidi, "Impact of Artificial Intelligence on the Accounting Profession: Analytical study with reference to Algeria", p. 550.
[42] Azizi Othman, "Artificial Intelligence in Accounting: Transforming Financial Management and Decision-Making", p. 1.
[43] Chara Kottara, "Artificial intelligence and the new norm in financial and managerial accounting and auditing", *op. cit.*, p. 3204.

- Pattern recognition, and is known as machine learning.[44]Before recording any financial information, it has to undergo a process of analyzing, classifying, and fixing; these processes are time and effort-consuming. In this context, ML becomes useful since it has the ability to learn and adapt.

3.2.2 AI in Financial Reporting:

AI can play an important role in financial reporting by making the process more efficient and less time-consuming, using the same tools mentioned before, with an extra layer at the NLP level.

NLP role:

Natural Language Processing (NLP) is reshaping how financial reporting is done. From creating polished investor materials to tracking regulatory compliance, NLP-driven tools bring speed, precision, and deeper insights to the table. These advancements give startups and smaller companies access to powerful tools that help them compete more effectively. Let's take a closer look at how NLP simplifies investor reporting, market analysis, and compliance. The main contributions of NLP to financial reporting include:

- **Processes unstructured data**: NLP analyzes large volumes of text like financial statements, earnings calls, and regulatory filings to extract key insights.
- **Reduces errors**: Automates data extraction, cross-checking, and flagging inconsistencies for more reliable reports.
- **Saves time**: Summarizes lengthy documents in minutes, replacing hours of manual work.
- **Provides real-time insights**: Tracks live data from markets, news, and internal systems for instant feedback.

[44] ICAEW, "Artificial intelligence and the future of accountancy", p. 6.

- **Simplifies compliance**: Scans contracts and filings to detect risks and ensure regulatory adherence.
- **Improves investor communication**: Generates polished, investor-ready reports with clear narratives and visualizations. [45]

ML can support NLP and AI-based automation by enabling systems to learn from data and improve pattern recognition. RPA supports automation, NLP supports language processing, and ML supports learning and pattern detection. AI has a significant impact on accounting, one study also indicates that AI can improve accounting efficiency by reducing time-consuming and repetitive tasks.

Figure N°13: Main Applications of Artificial Intelligence in Financial Reporting

Process	Manual Processing Time	AI-Driven Processing Time	Efficiency Gain
Invoice Processing	2-3 days	2-3 hours	80%
Bank Reconciliation	5-7 days	1-2 days	75%
Tax Calculation	4-5 days	1 day	70%
Audit Report Preparation	3-4 weeks	5-7 days	65%

Source: Prepared by the researcher based on: Ashish Singh, "The Future of Accounting: How AI and Automation are Changing the Profession", p. 10.

[45] Lucid, "How NLP Transforms Financial Reporting", available at: https://www.lucid.now/blog/nlp-transforms-financial-reporting/, (accessed: 02/04/2026, 09:57).

The Evolving Role of the Financial Accountant:

The role of accountants will be reshaped in general. Still, by examining the bypaths of the accounting profession, we can clearly see that this process will differ depending on the level of complexity of the accounting branch and the number of repetitive tasks involved.

Figure Nº14: Transformation of Financial Accounting Tasks under Artificial Intelligence

Accounting Task	% Automated by AI	% Still Human-Controlled
Data Entry & Transaction Recording	90%	10%
Payroll Processing & Invoicing	85%	15%
Tax Preparation & Filing	75%	25%
Financial Forecasting & Budgeting	65%	35%
Risk Assessment & Fraud Detection	60%	40%
Financial Advisory & Strategy	30%	70%
Auditing & Compliance Review	45%	55%

Source: Prepared by the researcher based on: Ashish Singh, "The Future of Accounting: How AI and Automation are Changing the Profession", p. 11.

From the table above, we can see many roles that involve repetitive practical tasks may be automated or supported by AI, whereas roles oriented toward decision-making will not. As a result, the accountant's role will be shifted toward a more analytical and decision-making role, as this helps accountants remain relevant in a changing professional environment.

This can be emphasized through this segment: ‘‘The introduction of AI into accounting has raised concerns about job displacement. However, the literature suggests that AI will not lead to mass unemployment among accountants but will instead transform their roles. Zehong Li and Li Zheng (2018) argue that AI will automate routine tasks, allowing accountants to focus on more value-added activities

such as financial analysis and decision-making."[46]

Figure N°15: Emerging Skills and Responsibilities of Accountants in the AI Era

Skill Category	Average Pre-AI Importance	Average Post-AI Importance
Manual Data Entry	4.2	2.3
Regulatory Compliance	3.7	3.9
Analytical Thinking	2.9	4.5
Use of AI/Automation Tools	2.2	4.3
Strategic Business Insight	3.1	4.4

Source: Prepared by the researcher based on: Danish Karim, "Artificial Intelligence and the Evolution of Accounting: Transforming Roles, Skills, and Professional Practices", p. 22.

Therefore, the evolution of the accountant's role raises an important question regarding the readiness of Algerian accountants to upgrade their skills and adapt to global professional change.

3.3 Management Accounting Reimagined by AI:

3.3.1 From reporting to deciding the core shift:

Management accounting is particularly affected by AI because it is closely linked to analysis, planning, performance evaluation, and decision support. The responsibilities of management accountants, which have evolved from reporting aggregated historical values to including performance measurement and providing management with relevant information for decision-making[47]. Since AI is pushing accounting toward a more analytical, planning-oriented field, which management accounting is based on, this may accelerate the development of the function, and make management accounting AI-ready more than other functions.

[46] "The impact of Artificial Intelligence on the accounting profession: technological advancements and employment perspectives", p. 1174.
[47] "Advancements in Management Accounting and Digital Technologies: A Systematic Literature Review", p. 1.

3.3.2 AI-Powered Budgeting and Forecasting:

Budgeting and forecasting are core functions of management accounting, since the budget is based on the historical data of the firm, which allows us to forecast future performance, risks, and opportunities of the firm itself

Descriptive analytics:

Descriptive analytics is an important step in making a firm's budget. The more data we have, the more solid budgeting and forecasting will be. With AI tools, this step could be taken to a new level, as these tools unlock the potential to gather, filter, and analyze large volumes of data that may be difficult to process manually. This may improve the following stages of budgeting and forecasting, making them more efficient and flexible.

Predictive analytics:

Budgeting and forecasting can be supported by both descriptive and predictive analytics. Descriptive analytics helps understand past and current performance, while predictive analytics uses historical and current data to estimate future outcomes. Traditional budgeting often suffers from rigidity and manual bias. AI enhances this process through rolling forecasts, scenario modeling, and predictive analytics. By integrating both internal data (e.g., sales trends, capacity utilization) and external factors (e.g., market fluctuations), AI-driven forecasting tools generate dynamic budgets that adjust in real-time . Reinforcement learning is increasingly applied to optimize resource planning over time, learning from prior budget outcomes to improve future iterations [48]

3.3.3 Cost Management:

Cost management is the control of actual or forecasted expenditure of an organisation. It involves controlling costs which will help you to estimate and allocate your budget effectively. It's about increasing an organisation's productivity,

[48] Marja-Liisa Tenhunen, "AI-Driven Management Accounting: A New Frontier in Strategic Finance", p. 90

enhancing profitability and ultimately plays an essential role in planning, controlling, and making business decisions[49].

AI can process large and complex datasets, which may make cost management more effective, since Big data analytics is the process of analyzing large volumes of structured and unstructured data to identify patterns, trends, and insights for improving business decision-making. It can facilitate the discovery of essential measures to be incorporated into management control systems, contributing to tracking and improving productivity[50].

3.3.4 Strategic Decision Support:

The AI role in this function is critical and impactful. AI can support this role significantly since it is about possibilities and what to expect, and this returns to the predictive analysis feature. AI systems can synthesize vast datasets - financial, operational, environmental - to simulate complex business scenarios. These simulations, powered by predictive and prescriptive analytics, help managers evaluate the financial impact of strategic choices such as market entry, product pricing, or capital investment.[51]

3.3.5 Evolving Role of the Management Accountant:

AI tools such as ML, NLP, and predictive analytics can support several core functions of management accounting, since the capabilities complement management accounting requirements, as shown in the table below.

[49] CIPS, "Cost Management", available at: https://www.cips.org/intelligence-hub/finance/cost-management, (accessed: 05/04/2026, 15:21).
[50] "Advancements in Management Accounting and Digital Technologies: A Systematic Literature Review", *op. cit.*, p. 5.
[51] Marja-Liisa Tenhunen, "AI-Driven Management Accounting: A New Frontier in Strategic Finance", *op. cit.*, p. 90.

Figure N°16: Applications of Artificial Intelligence in Management Accounting Functions

Technology	Application	Strategic Benefit	Strategic Benefit
Machine Learning	Forecasting, anomaly detection	Enhanced accuracy, continuous model improvement	Enhanced accuracy, continuous model improvement
Natural Language Processing	Text summarization, sentiment analysis	Contextual insights, qualitative risk detection	Contextual insights, qualitative risk detection
Predictive Analytics	Scenario planning, rolling forecasts	Proactive decision-making, agility in planning	Proactive decision-making, agility in planning

Source: Prepared by the researcher based on: "AI-Driven Management Accounting: A New Frontier in Strategic Finance", p. 90.

3.3.6 Real-World Example in Management Accounting:

❒ **Nordea:**

Nordea, a major Nordic financial services group, provides an example of how AI can be used to improve efficiency and support financial analysis.

❒ **Their goal:**

is to integrate tech into their workflow to enhance partnership experiences, as said by its own CEO "The next chapter will be about using our scale and technology to create even more value for our customers, shareholders and the Nordic region."[52]

❒ **How do they use AI in management accounting?**

❒ **Automation and decision making:**

adopted AI to automate routine tasks such as invoice processing, reconciliation, and financial reporting. This shift allowed accountants to focus on higher-value strategic activities, improving both the accuracy and speed of financial reporting. However, Nordea encountered challenges related to data quality and skepticism about the transparency of AI decision-making, particularly in regulatory compliance.

[52] Nordea, "Our Strategy", available at: https://www.nordea.com/en/about-us/our-strategy, (accessed: 05/04/2026, 16:03).

The bank is continuing to refine its AI systems to ensure greater data integrity and better integration with its overall financial strategy.[53]

Deep analytics tools:

These are specialized domain experts that can solve specific problems and handle large data sets. As an example, we are implementing a solution that provides easy access to our thousands of equity research reports, improves relevance through efficient insight discovery and saves time by rapidly processing large content volumes.[54]

These examples indicate that AI adoption is becoming increasingly present in large organizations, although the level and form of adoption differ across contexts, such as Vodafone, Deloitte, and General Electric (GE) USA, which means AI adoption is real and can't be denied.

3.4 Auditing in the AI Era: From Sampling to Continuous Assurance:

3.4.1 traditional auditing and sampling problem:

If accounting is often called the "language of business," auditing is the verification and independent testing of this language that ensures the accuracy and reliability of financial information. Auditors are often described as "watchdogs" because they act as vigilant observers, monitoring financial activities to detect any signs of mismanagement, fraud, or errors.[55] Traditionally, auditors have scrutinized accounting records to uphold adherence to standards and regulations, while also identifying irregularities and potential instances of fraud[56] This operation was done manually because the growth in the amount of data makes it time-consuming to go through every financial record. This thing led auditors to follow the sampling

[53] Marja-Liisa Tenhunen, "AI-Driven Management Accounting: A New Frontier in Strategic Finance", *op. cit.*, p. 91.
[54] Nordea, "Three Ways We Use AI to Accelerate Efficiency and Growth", available at: https://www.nordea.com/en/news/three-ways-we-use-ai-to-accelerate-efficiency-and-growth, (accessed: 05/04/2026, 16:06).
[55] Anjali, "AI in accounting and auditing: A transformational paradigm", p. 1708.
[56] Diogo Leocádio, "Artificial Intelligence in Auditing: A Conceptual Framework for Auditing Practices", p. 7.

method; the auditor's objective here is to obtain a representative sample[57] Here, the auditor uses mathematical methods, along with his experience, to make a final decision based on the analyzed data.

While audit sampling remains important, relying only on traditional sampling may become less sufficient in data-intensive environments where AI tools can analyze larger volumes of transactions.

3.4.2 AI-Powered Anomaly Detection – Deep learning:

Anomaly detection refers to a practice in which auditors detect accounting fraud by selecting samples among journal entries, also known as a general ledger (GL), and testing them to ensure accuracy[58]

The processes of anomaly detection are one of the most demanding audit tasks, since the auditor needs to be careful and precise in detecting suspicious data, whether he is an internal or an external auditor. The integration of AI and Machine Learning (ML) technologies into auditing processes revolutionizes the way auditors operate. By harnessing the power of AI, auditors can analyze vast datasets more quickly, identifying complex patterns and anomalies that may elude human detection. ML models continuously learn from data, improving their accuracy and efficiency over time. Therefore, AI-driven tools can prioritize areas of concern, allowing auditors to allocate their time and resources more efficiently[59]

With the power of ML, AI tools can help auditors prepare larger and more organized datasets for analysis. The integration of this technology allows auditors to focus on making decisions and take off the process that might reduce their abilities. By letting the ML perform these tasks repeatedly, it will create a more specialized system dedicated to a specific operation. This system is called Deep Learning, which

[57]Statistical Sampling Method, Used in the Audit, p. 2

[58] EY, "How an AI application can help auditors detect fraud", available at: https://www.ey.com/en_gl/insights/assurance/how-an-ai-application-can-help-auditors-detect-fraud, (accessed: 07/04/2026, 15:12).

[59] Diogo Leocádio, "Artificial Intelligence in Auditing: A Conceptual Framework for Auditing Practices", *op. cit.*, p. 4.

will raise the quality of auditors and improve anomaly detection.

KPMG's report (2024), AI in financial reporting and audit: Navigating the new era, states that companies want auditors to use GenAI because of its ability to uncover more complex data relationships and patterns through deep learning [60].

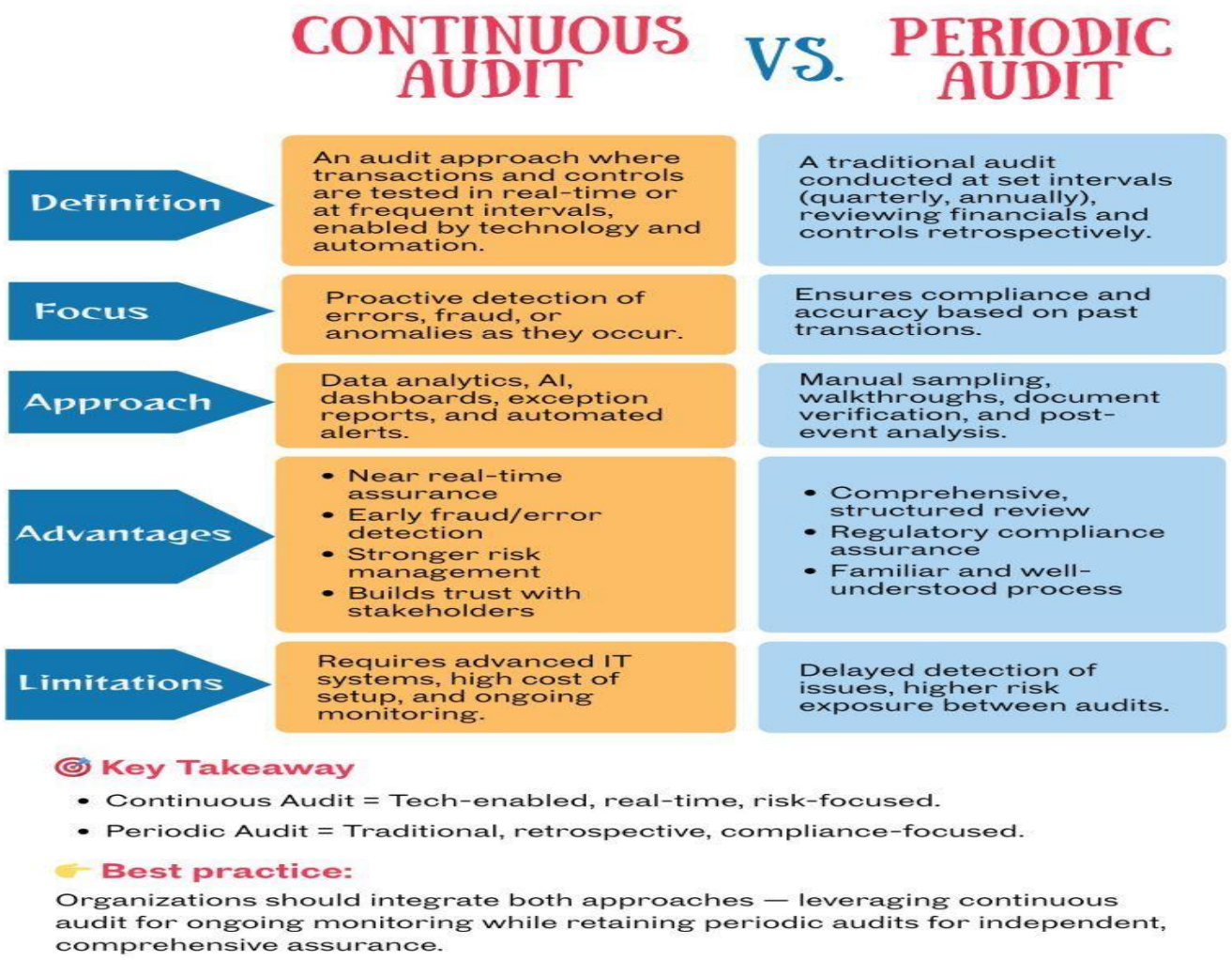
NLP is also part of the AI revolution in auditing. Since this technology is about reading and organizing unstructured data, it will play a huge role in providing well-structured datasets for ML to analyze and summarize. This combination can provide a more structured dataset for audit judgment and decision-making.

3.4.3 Continuous Auditing vs. Periodic Auditing

Continuous auditing is any of the methods used by auditors to perform an audit on a continuous basis. Continuous auditing tests transactions based on prescribed criteria, identifies anomalies, and is the responsibility of the auditor. Efforts to improve corporate governance and enhance investor confidence will lead to greater use of continuous auditing to generate assurance on demand.[61] AI tools make gathering and organizing data an automated process. These phases of auditing used to take a lot of time, making continuous auditing hard to implement. Yet with the integration of AI, this form of auditing has become more feasible. Applying this methodology in firms internally or with external auditors makes the audit process more reliable, and it organizes the relationship between the internal and the external audit. The exhibit below explains the differences between continuous and periodic auditing more.

[60] Anjali, "AI in accounting and auditing: A transformational paradigm", *op. cit.*, p. 1708.
[61] J. Donald Warren, Jr., "Continuous Auditing: An Effective Tool for Internal Auditors", p. 1.

Figure Nº17: Comparison between Continuous Auditing and Periodic Auditing



Source: researcher's own preparation.

3.4.4 Traditional auditing process vs AI-driven process:

A summary

AI integration can support several auditing functions, but its use should depend on the nature of the audit task, data availability, and professional judgment.

Unlike other accounting functions, where AI is pushing it toward reshaping, auditing differs from some other accounting functions, since it is a decision-making process; AI may enhance audit quality and allow auditors to focus more on risk assessment and professional judgment, rather than

reshaping it completely.

By harnessing AI-driven algorithms and predictive analytics, auditors can analyze vast volumes of data with unparalleled speed and precision, enabling them to uncover patterns, anomalies, and potential risks with greater accuracy[62]. Auditors in the age of AI will focus more on the technical side rather than on repetitive tasks that would lower the efficiency of their work. In the exhibit below, a full summary of Traditional vs AI-Driven auditing:

Figure Nº18: Comparison between Traditional Auditing and AI-Driven Auditing

Comparative Analysis B/W AI-Enabled Audit v/s Traditional Audit		
Phase	**AI Enabled Automated Audit Process**	**Traditional Audit Process**
Pre-Planning	•AI collects and analyzes Big Data (exogenous) • Data related to the client's organizational structure, operational methods, and accounting and financial systems feed into AI system	•Auditor examines client's industry •Auditor examines client's organizational structure, operational methods, and accounting and financial systems
Contracting	•AI uses the estimate of the risk level (from Phase 1) and calculates audit fees and the number of hours • AI analyzes a database of contracts and prepares the contract •Auditor and client sign contract	•Engagement letter prepared by the auditor based on the estimated client risk • Auditor and client sign contract
Understanding Internal Controls and Identifying Risk Factors	•Feed flowcharts, questionnaire answers, and narratives into the AI system and use image recognition and text mining to analyze them • Use visualization and pattern recognition to identify risk factors •AI aggregates all these data to identify fraud and illegal-acts risk factors	•Document understanding (flowcharts, questionnaires, narratives, walkthrough) •Auditor aggregates this information and uses their judgment to identify risks factors • Understanding of IC to determine the scope, nature, and timing of substantive tests
Control Risk Assessment	•Continuous control monitoring systems examine controls continuously • AI runs process mining to verify proper IC implementation • Logs are automatically generated to ensure their integrity	•Examination of the client's IC policies and procedures •Risk assessment for each attribute • Test of controls • Risk reassessment • Document testing of controls
Phase	**AI Enabled Automated Audit Process**	**Traditional Audit Process**
Substantive Tests	**•Continuous Data Quality Assurance ensures quality of data and evidence •AI examines data provenance •Continuous test of details of transactions on 100% of the population • Continuous test of details of balances (at all times) • Continuous pattern recognition, outlier detection, benchmarks, and visualization**	**•Periodical sampling-based tests, and nature, extent, and timing depend on IC tests •Tests of details of a sample of transactions • Test of details of balances (at a certain point in time) • Analytical procedures**
Evaluation of Evidence	•This becomes part of the previous phase	•Auditor must evaluate the sufficiency, clarity, and acceptability of collected evidence. Accordingly, auditor may either collect more evidence, or withdraw from engagement
Audit Report	•AI uses a predictive model to estimate the various risks identified •Audit report can be continuous (graded 1–00 for example) rather than categorical (clean, qualified, adverse, etc.)	•Auditor aggregates previous information to issue a report • Report is categorical: clean, qualified, adverse, etc.

Source: Prepared by the researcher based on: Yogesh Pandla, "Artificial Intelligence (AI)", pp. 9-10.

[62] Anjali, "AI in accounting and auditing: A transformational paradigm", *op. cit.*, p. 1709.

3.4.5 Real-world example:

Deloitte AI:

Deloitte provides industry-leading audit, consulting, tax, and advisory services to many of the world's most admired brands, including nearly 90% of the Fortune 500® and more than 9,000 U.S.-based private companies. At Deloitte, we strive to live our purpose of making an impact that matters for our people, clients, and communities. We bring together distinct talents, technologies, disciplines, and an ecosystem of alliances to help tackle today's most complex business challenges and drive long-term progress. Deloitte is proud to be part of the largest global professional services network serving our clients in the markets that are most important to them. Bringing more than 180 years of service, our network of member firms spans more than 150 countries and territories[63]

Current landscape of AI in the external audit

In the ever-evolving landscape of AI, the external audit profession finds itself at a critical crossroads of transformative change. As AI technologies advance, auditors are increasingly leveraging these innovations to revolutionize their traditional approaches. This fundamental shift goes beyond mere automation; it encompasses a fundamental redefinition of audit methodologies. The promise of heightened accuracy and sophisticated data analysis tools draws auditors into a domain where efficiency gains are not just a byproduct but a central objective. On that front, Deloitte has released its own chatbot for its workforce across the UK, Europe, and the Middle East, designed to help improve workplace efficiencies. Furthermore, Deloitte has been using Argus for the extraction of data from PDF documents and transforming it into a tabular format for further analysis and risk sensing.

Role of AI in the external audit

By automating traditionally performed tasks, AI holds the potential to

[63] Deloitte, "About Deloitte", available at: https://www.deloitte.com/us/en/about.html, (accessed: 07/04/2026, 18:13).

revolutionize external audits. Efficient handling of data entry, validation, and pattern recognition tasks by AI algorithms allows auditors to shift their focus to more complex analyses and strategic decision-making. The examination of vast datasets extracted from several sources, such as accounting software, bank statements, or transaction records, for anomalies or trends through machine learning algorithms significantly enhances the accuracy of financial analysis.

Most prominent AI use cases involve automation of repetitive tasks, minimizing the risk of human error, predicting potential financial trends based on historical data, and analyzing unstructured financial data, such as text in financial reports. Furthermore, AI can identify unusual patterns or behaviors indicative of fraudulent activities within financial records by pinpointing suspicious patterns or behaviors such as accounting irregularities, unauthorized transactions, or misappropriation of assets. As AI streamlines these processes, auditors increasingly expand their role to invaluable partners, redirecting their expertise to interpret results, assess risks, and provide valuable insights in the audit process.

3.5 Intelligent Automation as a Cross-Functional Force:

Intelligent automation combines AI, RPA, and business process management to automate workflows and support decision-making across organizational functions. In accounting, it can connect financial accounting, management accounting, and auditing by improving data flow, reducing repetitive work, and supporting analysis. However, its effectiveness depends on data quality, system integration, governance, and human supervision.[64]

4 Real-World Evidence from Emerging Economies:

4.1 Saudi Arabia experience (Vision 2030):

4.1.1 Context of AI Adoption:

[64] IBM, "Intelligent Automation", available at: https://www.ibm.com/think/topics/intelligent-automation, (accessed: 15/04/2026, 10:33).

AI through Vision-2030 as a strategy to develop its intellectual economy and create digital leadership away from its oil-dependent economy. AI-based financial technology requires capital investment in artificial intelligence technology to fulfill all legal requirements with necessary ethical standards.[65]

4.1.2 The technology organization environment:

The technology–organization–environment (TOE) framework is described in Tornatzky and Fleischer's The Processes of Technological Innovation (1990). The book describes the entire process of innovation – stretching from the development of innovations by engineers and entrepreneurs to the adoption and implementation of those innovations by users within the context of a firm. The TOE framework represents one segment of this process – how the firm context influences the adoption and implementation of innovations.[66]

4.1.3 Unified theory of acceptance and use of technology:

The **unified theory of acceptance and use of technology** (**UTAUT**) is a technology acceptance model formulated by Venkatesh and others in "User acceptance of information technology: Toward a unified view" in the organisational context.[1] The UTAUT aims to explain user intentions to use an information system and subsequent usage behavior. The theory holds that there are four key constructs:

1. performance expectancy,
2. effort expectancy,
3. social influence, and

[65] Talal Fawzi Alruwaili, "The impact of artificial intelligence on accounting practices: an academic perspective", p. 2.
[66] Jeff Baker, "The Technology–Organization–Environment Framework", in: *Information Systems Theory: Explaining and Predicting Our Digital World*, Vol. 1, Springer, 2012, p. 2.

4. facilitating conditions.[67]

Since Saudi Arabia's objective with the 2030 vision in business is to develop a highly skilled workforce capable of leveraging advanced technologies for financial management. AI-driven transformations will necessitate new expertise, including data analytics, algorithmic decision-making, and ethical AI governance. This shift aligns with that objective. Saudi Arabia uses these workflows to have well-operated AI adoption and make the path to the 2030 vision a lot smoother.[68]

4.1.4 Impact on Accounting Functions:

AI can impact accounting functions in different ways, making it more efficient and effective. That was perceived as an exclusive thing for developed countries, yet with the Saudi experience, this common thought is diminished; emerging countries can also have a great AI adoption that can have a real impact on accounting functions. Going back to the Saudi experience, AI has made:

- Artificial Intelligence reduces the need for manual intervention by streamlining repetitive operations such as data entry, reconciliation, and reporting. This automation reduces the possibility of human error while simultaneously increasing efficiency.[69]

- AI can automate monotonous processes, such as data input, reconciliation, and report preparation, freeing up accountants to work on more intricate and analytical roles. This resulted in increased productivity and decreased human error.[70]

- Using artificial intelligence (AI), past data can be analyzed to identify patterns and trends that can be utilized to predict future financial performance. This facilitates

[67]Wikipedia, "Unified Theory of Acceptance and Use of Technology", available at: https://en.wikipedia.org/wiki/Unified_theory_of_acceptance_and_use_of_technology, (accessed: 15/04/2026, 11:34).
[68] Talal Fawzi Alruwaili, "The impact of artificial intelligence on accounting practices: an academic perspective", *op. cit.*, p. 2.
[69] Randa Abd, "The Impact of Artificial Intelligence (AI) on the Accounting System of Saudi Companies", p. 2.
[70] *Ibid.*, p. 9.

the creation of more precise forecasts and well-informed business decisions.[71]

4.1.5 Infield results of the Saudi experiment:

In this part, we use a study done by a group of Saudi researchers on the Impact of Artificial Intelligence (AI) on the Accounting System of Saudi Companies:

Sample the Study:

[72]The Saudi study surveyed 213 professionals, predominantly male (86.4%) and concentrated in the mid-career age group (36–45 years). Most respondents held bachelor's or postgraduate degrees, with 15.5% having PhDs. However, 83.6% lacked international professional certifications. The majority specialized in accounting (54.9%) and worked as accountants (58.2%), with experience ranging from less than 5 years to more than 20 years.

[71] *Ibid.*, p. 3.
[72] *Ibid.*, p. 6.

Figure Nº19: Profile of Accounting Professionals Included in the Saudi Study

Table 1. Frequencies and percentage

Panel: A		
Gender	Frequency	Percentage
Male	184	86.4
Female	29	13.6
Total	213	100.0
Panel: B		
Age	Frequency	Percentage
Less than 25 years old	2	0.9
From 25 — 35 years old	48	22.5
From 36 — 45 years old	105	49.3
From 46 — 60 years old	54	25.4
Above 60 years old	4	1.9
Total	213	100.0
Panel: C		
Qualification	Frequency	Percentage
Diploma	1	0.5
Bachelor	125	58.7
Postgraduate Diploma	4	1.9
Master	50	23.5
PhD	33	15.5
Other	0	0.0
Total	213	100.0
Panel: D		
Professional Qualification	Frequency	Percentage
Other	13	6.1
Nothing	178	83.6
American Fellowship	8	3.8
British Fellowship	7	3.3
Arab Fellowship	7	3.3
Total	213	100.0
Panel: E		
Major	Frequency	Percentage
Other	16	7.5
Business Administration	28	13.1
Information Technology	11	5.2
Banking Sciences	41	19.2
Accounting	117	54.9
Total	213	100.0
Panel: F		
Job level	Frequency	Percentage
Other	33	15.5
Department Manager	14	6.6
General Manager/ or above	130	61.0
Accountant	36	16.9
Total	213	100.0
Panel: G		
Experience	Frequency	Percentage
Above 20 years	16	7.5
From 16-20 years	35	16.4
From 11-15 years	51	23.9
From 5-10 years	63	29.6
Less than 5 years	48	22.5
Total	213	100.0

Source: Prepared by the researcher based on: Randa Abd, "The Impact of Artificial Intelligence (AI) on the Accounting System of Saudi Companies", p. 8.

Comment: This profile reflects a technically competent workforce with strong educational backgrounds, though limited exposure to global certifications. The dominance of mid-career professionals suggests practical insights into AI adoption challenges and opportunities.

Reliability of the Study:

Figure Nº20: Reliability Analysis of the Saudi Study Constructs

Table 3. Reliability indicator and Internal consistency reliability

	N of Items	Cronbach's Alpha	Hotelling's T-Squared	F	Sig
Capacities for forecasting and data analysis	5	.892	12.278	3.026	.000
Using IA to integrate accounting systems with other systems	5	.781	31.332	7.722	.000
Accounting system	5	.966	18.915	4.662	.001

Source: Prepared by the researcher based on: Randa Abd, "The Impact of Artificial Intelligence (AI) on the Accounting System of Saudi Companies", p. 8.

Reliability analysis confirmed strong internal consistency across constructs, with Cronbach's Alpha values of 0.892 (forecasting & data analysis), 0.781 (integration with other systems), and 0.966 (accounting system). Composite reliability values also exceeded accepted thresholds, reinforcing the robustness of the measurement tool.

Comment: These results indicate that Saudi professionals provided consistent and reliable responses, reflecting a shared understanding of AI's role in accounting.

This strengthens the credibility of the study and ensures that subsequent findings are statistically sound.

Actual Results:

Figure Nº21: Results of Hypotheses Testing on AI Integration in Saudi Accounting Systems

Table 6. Hypotheses Testing

Hypothesis	β	STDEV	T	R	R2	F	Sig.
Capacities for forecasting and data analysis -> Accounting system	-.331	.107	-3.094	.464[a]	.715	28.814	.000[b]
Using IA to integrate accounting systems with other systems -> Accounting system	.802	.109	7.351				

Source: Prepared by the researcher based on: Randa Abd, "The Impact of Artificial Intelligence (AI) on the Accounting System of Saudi Companies", p. 9.

regression analysis revealed that:

- **Integration with other systems** had a strong positive effect on accounting systems ($\beta = 0.802$, $p < 0.000$).
- **Forecasting and data analysis** showed a negative relationship ($\beta = -0.331$, $p < 0.000$).
- The model explained 71.5% of variance in accounting system performance ($R^2 = 0.715$).

Comment: The Saudi case highlights that while AI integration with ERP and CRM systems is transformative, forecasting applications face skepticism. This may stem from trust issues in predictive models or lack of expertise in interpreting AI-generated forecasts. The high explanatory power of the model confirms that AI

adoption is a major determinant of accounting system modernization.

Additional Insights from Literature

Beyond the statistical results, the Saudi study emphasized several broader impacts of AI on accounting systems:

- **Automation of routine tasks** such as data entry, reconciliation, and reporting, reducing human error and saving costs.
- **Enhanced fraud detection** through continuous monitoring of transactions and anomaly detection.
- **Real-time financial analysis** enabling faster decision-making and risk assessment.
- **Workforce transformation**, with accountants shifting from clerical roles to analytical and advisory functions.
- **Challenges** include data security, privacy concerns, ethical implications, and resistance to change.

The Saudi experience demonstrates that AI adoption in accounting is not uniform across applications. Integration with existing systems is widely accepted and impactful, while forecasting tools encounter resistance. These findings provide a useful regional perspective and pave the way for examining Algeria's readiness in the next chapter.

4.2 South Africa experience:

4.2.1 Context of AI Adoption:

In South Africa, accountants perceive that organizational, technological, and environmental factors play a role in adopting AI in financial reporting[73]

The study found that 72.5% of surveyed accountants agreed that centralization

[73] T. Moloi and H. Obeid, "Perceptions of South African Accountants on Factors with a Role in the Adoption of Artificial Intelligence in Financial Reporting", 2024, p. 6.

of decision-making affects AI adoption, while 84.5% highlighted the importance of skill availability, and 82.8% emphasized top management support. On the technological side, 80.5% agreed that staff skills and knowledge of AI tools influence adoption, and 82.4% stressed the importance of supplier technical support. Environmental pressures such as competition (65.8%) and customer expectations (60.4%) were significant, while trade unions and lobby groups were not perceived as influential (means below 3).

Furthermore, accountants reported that AI is already used to harness and store data (≈75–77%), integrate and analyze information (≈75–78%), detect errors (≈71%), and prepare reports (≈60%).

Comparative Note with Saudi Arabia:

Compared to Saudi Arabia, where AI adoption in accounting is largely driven by government initiatives and regulatory frameworks under Vision 2030, South Africa demonstrates a firm-level and profession-driven model. In Saudi Arabia, the state sets the pace of modernization, while in South Africa, adoption depends on organizational readiness, technological infrastructure, and professional bodies such as SAICA, SAIPA, CIMA, and ACCA. This divergence illustrates that emerging economies follow different trajectories: Saudi Arabia represents a top-down, regulation-heavy approach, whereas South Africa reflects a bottom-up, market-oriented pathway. Such contrast provides a useful lens for assessing Algeria's case, where the balance between state regulation and professional readiness remains to be determined[74].

4.3 Malaysia experience:

Artificial Intelligence adoption in Malaysia is influenced by organizational, technological, and environmental factors, with government policy and competitive pressure playing a particularly strong role

[74] *Ibid.*, pp. 6-13

Organizational Factors

- Top management support and organizational innovativeness are critical determinants of adoption
- Firms with skilled employees and training programs are more likely to integrate AI[75]
- Resource availability and leadership commitment accelerate adoption[76]

Technological Factors

- Ease of integration with existing systems and supplier support are decisive in adoption decisions.
- Complexity of tools and readiness of infrastructure influence uptake.
- Training availability and vendor assistance are repeatedly emphasized[77].

Environmental Factors

- Competitive pressure and customer expectations strongly encourage firms to adopt AI.
- Government initiatives, such as Malaysia's National AI Roadmap, provide legitimacy and incentives.
- Industry standards and investor expectations also play a role[78].

Impact of AI Adoption in Malaysia[79]

The Malaysian studies go beyond determinants to highlight impacts:

-AI adoption improves operational efficiency by reducing costs and errors

-Firms report enhanced decision-making capabilities, with faster and more accurate analytics

[75] Seng Loong Kok, "Artificial Intelligence (AI) Adoption: The Case of the Malaysian Financial Industry", p. 7.
[76] Tan Kock Lim, "Determinants Of Artificial Intelligence Adoption In Accounting Among Malaysia Small And Medium-Sized Enterprises", p. 5.p6.
[77] Tan Kock Lim, "Determinants Of Artificial Intelligence Adoption In Accounting Among Malaysia Small And Medium-Sized Enterprises", *op. cit.*, p. 9.
[78] *Ibid.*, p. 10.
[79] "AI Revolution: How Malaysian Firms are Redefining Accounting Performance", pp. 12-15.

-Customer experience is transformed through personalization, chatbots, and predictive services

-AI adoption is linked to digital transformation agendas, redefining business models and competitiveness.

Comparative Note: South Africa vs. Malaysia

-South Africa: Adoption shaped by organizational readiness and professional associations, with unions and lobby groups having little influence.

-Malaysia: Adoption shaped by government policy and competitive pressure, alongside organizational and technological readiness.

-Shared insight: In both contexts, skills and management support are decisive.

-Key difference: Malaysia's adoption is more policy-driven and externally pressured, while South Africa's is profession-driven and internally motivated.

4.4 India's Experience

Indian AI adoption in accounting and finance functions positively influences financial, operational, and strategic performance of organizations[80]

Organizational Readiness

-The study found a **high level of AI adoption (M = 4.15)** and **organizational preparedness (M = 3.95)**, reflecting adequate infrastructure, skilled professionals, and managerial support.

-Employee capability and readiness were highlighted as critical moderators of adoption effectiveness[81]

Financial Impact

-Regression analysis showed that AI adoption has a **strong positive effect on financial performance ($\beta = 0.52$, $R^2 = 0.39$)**.

-Benefits include better cost control, enhanced accuracy, and faster decision-

[80] Hemraj Kawadkar, "AI Adoption in Accounting and Finance: Impact on Organizational Performance", p. 423.
[81] *Ibid.*, p. 422.

making.[82]

Operational Impact

-AI adoption significantly improves operational performance ($\beta = 0.47$, $R^2 = 0.35$), with the highest mean score ($M = 4.10$) among performance dimensions.

-AI-driven automation and analytics substantially improve operational efficiency by streamlining processes, reducing manual errors, and increasing productivity.[83]

Strategic Impact

-Strategic performance also benefits ($\beta = 0.44$, $R^2 = 0.31$), though less strongly than financial and operational outcomes

-AI supports data-driven insights, improved forecasting, and stronger managerial decision-making.

Challenges

-Skill gaps, system integration, and resistance to change remain constraints ($M = 3.45$), but these challenges do not outweigh the overall performance benefits.[84]

-Continuous training and change management are recommended to fully realize AI's potential.

Comparative Note: India vs. South Africa and Malaysia

-South Africa: Adoption shaped by organizational readiness and professional associations, with unions/lobby groups having little influence.

-Malaysia: Adoption shaped by government policy and competitive pressure, alongside organizational and technological readiness.

-India: Adoption strongly linked to **performance outcomes**, financial, operational, and strategic, with empirical evidence showing measurable improvements.

[82] *Ibid.*, p. 425.
[83] *Ibid.*, p. 426.
[84] *Ibid.*, p. 427.

This positions India as a case where AI adoption is not only widespread but demonstrably impactful, reinforcing the argument that emerging economies can leverage AI for tangible organizational gains

4.5 Conclusion to Emerging Economies' Experience

The exploration of Saudi Arabia, South Africa, Malaysia, and India demonstrates that while the determinants of AI adoption in accounting share common themes such as organizational readiness, technological infrastructure, and managerial support, the pathways and impacts differ significantly across contexts. Saudi Arabia illustrates a **state-driven, regulation-heavy model**, South Africa highlights a **profession-led and firm-level approach**, Malaysia emphasizes **policy support and competitive pressures**, and India provides empirical evidence of **tangible performance gains** across financial, operational, and strategic dimensions. Collectively, these cases confirm that emerging economies are not passive recipients of technological change but actively shape adoption in line with their institutional environments, market dynamics, and professional structures. This comparative analysis provides a critical lens for assessing Algeria's trajectory: whether its accounting profession will follow a **top-down regulatory path**, a **bottom-up professional adaptation**, or a hybrid model that balances both

5 Challenges and Risks of AI Integration in Accounting:

While the preceding sections have demonstrated the transformative potential of artificial intelligence across financial accounting, management accounting, and auditing, the integration of these technologies is not without profound, multifaceted challenges. A balanced and rigorous academic assessment demands that these risks be examined with the same analytical depth afforded to the opportunities. This section identifies and critically analyses five core challenges: algorithmic bias, data quality dependency, the black box problem, cybersecurity and data privacy risks, and the threat of deskilling and job displacement.

5.1 Algorithmic Bias:

Among the most consequential risks associated with AI in accounting is the problem of algorithmic bias. Algorithmic bias occurs when systematic errors in machine learning algorithms produce unfair or discriminatory outcomes. It often reflects or reinforces existing conditions.[85]

What causes algorithmic bias?:[86]

Algorithmic bias is not caused by the algorithm itself, but by how the data science team collects and codes the training data. Specific causes include:

- Biases in training data;
- Biases in algorithm design;
- Biases in proxy data;
- Biases in evaluation;
- Biases in data.

Flawed data is characterized as non-representative, lacking information, historically biased or otherwise "bad" data. It leads to algorithms that produce unfair outcomes and amplify any biases in the data. AI systems that use biased results as input data for decision-making create a feedback loop that can also reinforce bias over time. This cycle, where the algorithm continuously learns and perpetuates the same biased patterns, leads to increasingly skewed results.

Bias can also arise during the training phase if data is incorrectly categorized or assessed. Sometimes, algorithms can "learn" from data correlation rather than causation, as they do not possess the abilities to understand the difference. When this happens, the output of the algorithm can be biased in that the model failed to consider

[85] IBM, "Algorithmic Bias", available at: https://www.ibm.com/think/topics/algorithmic-bias, (accessed: 19/04/2026, 15:31).
[86] Ibid. 19/04/2026 15:31

other factors in the data that may be of more importance.

A commonly cited example of correlation bias is a hypothetical model that determines a causal relationship between increased shark attacks and higher ice cream sales. In reality, both situations tend to occur during summer and only possess a correlating relationship.

Biases in algorithmic design

Algorithms design can also introduce bias. Programming errors, such as an AI designer unfairly weighting factors in the decision-making process, can unknowingly transfer into the system. Weighting is often a technique to avoid bias, as it involves adjustments to data so that it better reflects the actual population. However, it might require assumptions from designers, which can lead to inaccuracies and introduce bias. Developers might also embed the algorithm with subjective rules based on their own conscious or unconscious biases.

Impact on the proffession:

Algorithmic bias is particularly problematic in auditing tasks such as risk assessment and anomaly detection. AI systems trained on historical datasets may replicate existing biases embedded in those data, leading to uneven or less reliable audit outcomes across different contexts[87]

Furthermore, the use of complex and non-transparent models may limit the ability of auditors to interpret results and identify potential sources of bias[88]. This lack of transparency may affect the application of professional judgment and create challenges in ensuring accountability

To address these concerns, the literature emphasizes the importance of implementing mitigation strategies such as fairness testing, bias detection techniques, and the use of explainable artificial intelligence (XAI) tools[89]. These

[87] Bias and Ethics of AI Systems Applied in Auditing: A Systematic Review", *Heliyon*, 2024, pp. 6–8.
[88] ScienceDirect, "Research Article on AI Auditing", available at: https://www.sciencedirect.com/science/article/abs/pii/S1467089522000240, (accessed: 19/04/2026, 15:50).
[89] Ibid.

approaches aim to improve the interpretability and reliability of AI systems, allowing professionals to better understand and critically evaluate algorithmic outputs. Moreover, governance mechanisms and ethical oversight are increasingly recognized as essential components in ensuring the responsible use of AI in accounting environments.

While this problem is having a big impact on auditing, it can also affect other accounting functions, as the exhibit below explains how Algorithmic bias affects the accounting decision-making system inside a firm.

Figure Nº22: Impact of Algorithmic Bias on Accounting and Auditing Decisions

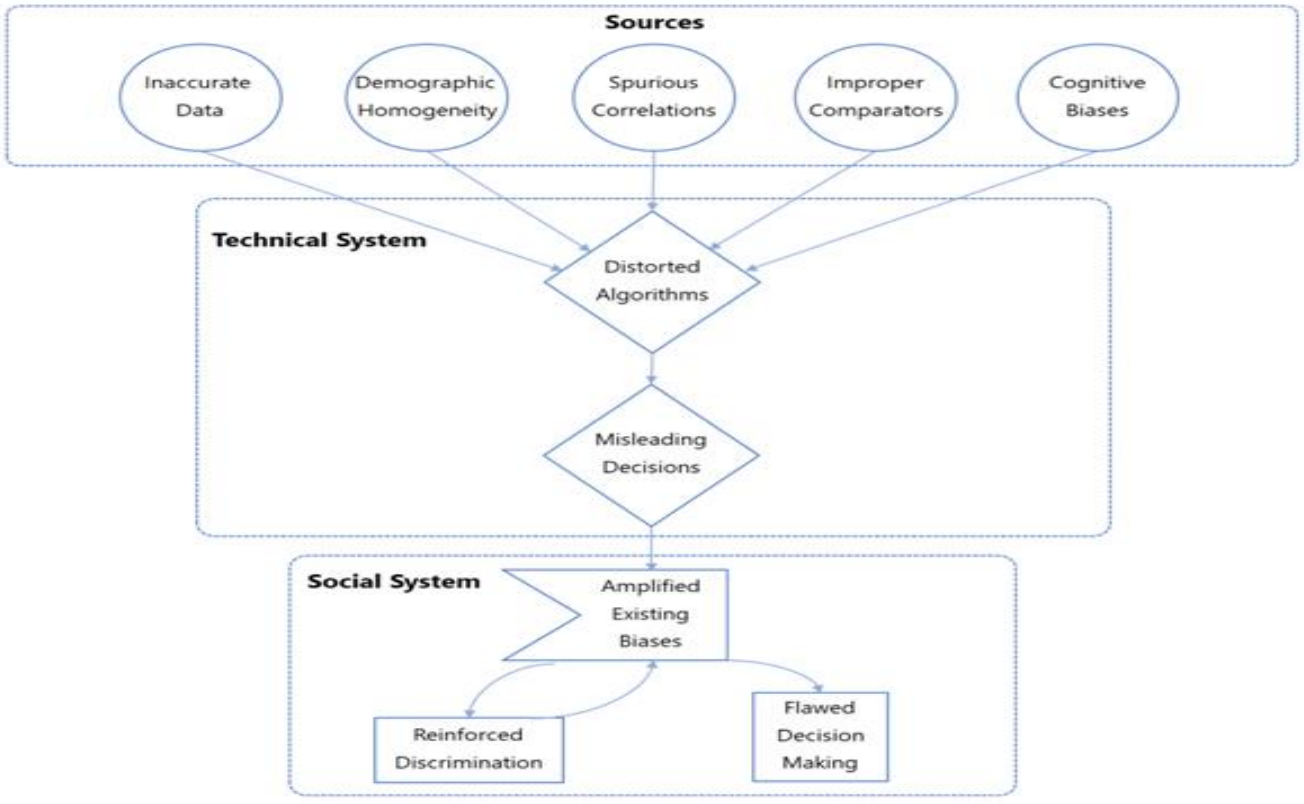


Fig. 3. AI Bias propagation pathways across sociotechnical dimensions.

Source: Prepared by the researcher based on: "Bias and ethics of AI systems applied in auditing - A systematic review", p. 7.

5.2 The Black Box Problem:

A critical challenge for accounting is the opacity of AI decision-making, widely

referred to in the literature as the "black box" problem. Complex machine learning models, including deep neural networks, process inputs and produce outputs through layers of non-linear transformations that are, by design, unintelligible to human observers. This opacity fundamentally conflicts with the core principles of the accounting profession: transparency, auditability, and accountability.

What is a black box AI?[90]

A black box AI is an AI system whose internal workings are a mystery to its users. Users can see the system's inputs and outputs, but they can't see what happens within the AI tool to produce those outputs.

Consider a black box model that evaluates job candidates' resumes. Users can see the inputs—the resumes they feed into the AI model. And users can see the outputs—the assessments the model returns for those resumes. But users don't know exactly how the model arrives at its conclusions—the factors it considers, how it weighs those factors, and so on.

Many of the most advanced machine learning models available today, including large language models such as OpenAI's ChatGPT and Meta's Llama, are black box AIs. These artificial intelligence models are trained on massive data sets through complex deep learning processes, and even their own creators do not fully understand how they work.

These complex black boxes can deliver impressive results, but the lack of transparency can sometimes make it hard to trust their outputs. Users cannot easily validate a model's outputs if they don't know what's happening under the hood. Furthermore, the opacity of a black box model can hide cybersecurity vulnerabilities, biases, privacy violations and other problems.

To address these challenges, AI researchers are working to develop explainable AI tools that balance the performance of advanced models with the need for

[90] IBM, "Black Box AI", available at: https://www.ibm.com/think/topics/black-box-ai, (accessed: 19/04/2026, 16:00).

transparency into AI outcomes.

We see that the Black Box problem is a huge one, yet it is limited since it shines only when it comes to decision-making and analytical processes, which are tasks where accountants are not using AI. Still, the Black Box problem and Algorithmic Bias can happen due to over-reliance on AI tools.

Cybersecurity & Data Privacy:

Data security in accounting involves the use of large amounts of data, depending on its intended purpose, within an AI platform. This data can be sensitive and private, thus creating a risk of data breaches. The lack of a regulatory body to govern data privacy and usage makes the implementation of AI in accounting a significant concern for organizations.[91]

Deskilling and Job Displacement:

The final and perhaps most socially resonant challenge concerns the impact of AI-driven automation on the accounting workforce. Two distinct but related phenomena must be distinguished: job displacement, referring to the elimination of roles previously performed by human accountants, and deskilling, referring to the gradual erosion of human expertise through over-reliance on automated systems, even among professionals who retain their positions.

On the question of displacement, the International Monetary Fund estimates that AI will impact approximately 40% of global jobs, with advanced economies exhibiting even greater exposure at up to 60% of the workforce.[92] Within accounting and finance specifically, roles involving structured, routine cognitive tasks, data entry, bank reconciliation, standard report generation, and basic tax preparation, are among the most directly exposed to automation.[93] The World Economic Forum has

[91] Nagat Ben Turkia, "The Integration of AI in Accounting and Their Impact on the Future of the Accounting profession in Algeria – An Exploratory Study", *Journal of Economic and Financial Research*, 2024, p. 425.
[92] International Monetary Fund (IMF), *World Economic Outlook: Steady but Slow: Resilience amid Divergence*, Washington, DC, April 2024, pp. 12-14.
[93] Cheng Peiwen, "The Impact of Artificial Intelligence Application on Job Displacement and Creation: A Systematic Review", p. 2495.

identified accountants and auditors among the roles expected to experience sharp falls in demand as automation advances.[94] However, it is critical to note that the literature does not uniformly support a scenario of mass unemployment. Rather, AI will automate routine tasks while simultaneously creating demand for accountants with advanced analytical, advisory, and managerial competencies.[95] The central challenge is therefore one of workforce transition rather than wholesale elimination.

The deskilling risk is more subtle and arguably more insidious. Research has documented that accounting organisations relying heavily on sophisticated automation packages have in some cases rendered their accountants, and consequently the organisations as a whole, unable to perform basic accounting functions independently.[96] This phenomenon represents a form of institutional cognitive atrophy: as AI systems absorb routine competencies, the professional knowledge and procedural expertise required to perform those tasks manually or to critically evaluate AI outputs may progressively erode. This creates a structural vulnerability: in the event of system failure, cyberattack, or regulatory challenge, organizations may find themselves without the human capital necessary to operate effectively without AI support.

The risk of overreliance on AI is not merely theoretical but is already observable in professional practice. Field research conducted with experienced professionals from large public accounting firms identified auditor overreliance on AI as one of the principal adoption challenges, alongside transparency, bias, and data privacy concerns.[97] This finding is further corroborated empirically: a structured survey of Saudi accounting academics demonstrated that excessive AI usage triggers what the authors term "automation fatigue," evidenced by a statistically significant negative

[94] World Economic Forum (WEF), *The Future of Jobs Report 2025*, Geneva, 2025, p. 19.
[95] "The impact of artificial intelligence on accounting", in *Proceedings of the 4th International Conference on Social Science and Higher Education*, p. 816.
[96] Kevin Crowston, "Deskilling and upskilling with generative AI systems", pp. 6-7.
[97] Julia Kokina and Thomas H. Davenport, "Challenges and opportunities for artificial intelligence in auditing: Evidence from the field", *Accounting Horizons*, Vol. 31, No. 2, 2017, p. 4.

relationship between repetitive AI usage and professional engagement ($\beta = -0.2210$, $p < 0.0001$).[98] This finding carries direct implications for accounting education and professional development: the cultivation of AI literacy must be paired with the deliberate preservation of foundational accounting competencies, ensuring that professionals are equipped to engage with AI as informed and critical interlocutors rather than passive users.

6 Brief Reflection on the Algerian Context:

As the preceding sections have demonstrated, the integration of artificial intelligence into accounting has significantly transformed professional practices across financial reporting, auditing, and management accounting in advanced economies. These developments highlight not only the technological potential of AI but also the structural, organizational, and human requirements necessary for its effective adoption.

However, the applicability of these transformations cannot be assumed to be universal. The adoption of AI in accounting is highly dependent on contextual factors, including the level of technological infrastructure, the availability of skilled professionals, regulatory frameworks, and the broader organizational and cultural environment.

In this regard, it becomes essential to examine how these global advancements relate to the Algerian context. While international experiences provide valuable benchmarks, the local reality may present specific constraints and opportunities that influence the pace and nature of AI adoption within the accounting profession.

Therefore, this section provides a brief reflection on the Algerian context, aiming to position the theoretical insights discussed earlier within a more localized perspective. This reflection serves as a conceptual bridge to the empirical part of the study, where the readiness of the Algerian accounting profession to adopt artificial

[98] Talal Fawzi Alruwaili, "The impact of artificial intelligence on accounting practices: an academic perspective", *op. cit.*, p. 13.

intelligence will be assessed in a structured, evidence-based manner.

6.1 The Current State of the Accounting Profession in Algeria:

In the context of emerging economies, the accounting profession plays a fundamental role in supporting economic stability and institutional development. In Algeria, the accounting sector constitutes a key pillar of the economic system, delivering essential services such as financial reporting, auditing, tax compliance, and advisory support to both public and private organizations. Although recent developments have been influenced by economic reforms and a growing emphasis on transparency, the sector continues to face several structural challenges, including issues related to regulatory alignment, shortages of qualified professionals, and the relatively slow adoption of advanced technologies.[99]

6.2 Technology level in the Algerian Accounting:

From a technological perspective, the evolution of accounting systems is a critical determinant of efficiency, transparency, and integration within modern economies. In Algeria, the adoption of advanced technologies in accounting remains relatively limited compared to global trends, particularly in areas such as cloud computing, artificial intelligence, and big data analytics. Nevertheless, gradual progress is observable, as both public and private actors are increasingly engaging in digital transformation initiatives.

Large organizations, especially in strategic sectors such as oil and gas, have begun implementing Enterprise Resource Planning (ERP) systems to enhance accounting processes and improve financial data integration. In parallel, the government has introduced e-government initiatives, including electronic tax platforms, the facilitate online tax filing, strengthen compliance, and reduce administrative burdens.

[99] Yahia Saidi, "Impact of Artificial Intelligence on the Accounting Profession: Analytical study with reference to Algeria", *op. cit.*, p. 552.

Despite these efforts, the broader adoption of modern accounting technologies continues to face structural constraints, notably limitations in digital infrastructure, a shortage of specialized skills, and organizational resistance to change in certain firms.[100]

6.3 Structural Challenges of the Algerian Accounting Sector

Despite ongoing reforms and gradual modernization efforts, the accounting profession in Algeria continues to face several structural and operational challenges that may hinder its development and adaptability**.** One of the most significant issues is the shortage of qualified professionals, as the demand for skilled accountants exceeds the available supply. This gap can be partly attributed to limitations within the educational system and the insufficient alignment of professional training programs with international standards.

Another key challenge concerns regulatory alignment. Although the Algerian Accounting System (SCF) was introduced the align with international standards such as IFRS, further harmonization remains necessary. In practice, many organizations perceive the regulatory framework as complex, which may affect its effective implementation.

In addition, the relatively slow pace of technological adoption continues to limit improvements in efficiency and accuracy within accounting practices. Organizations that delay digital transformation may face increasing competitive pressures in a rapidly evolving global environment. Finally, the presence of a substantial informal economy adds another layer of complexity, as many small entities operate outside formal accounting and taxation systems. This situation complicates financial reporting, reduces transparency, and poses challenges for effective tax compliance and economic monitoring.[101]

[100] *Ibid.*, p. 553
[101] *Ibid.*, p. 554.

Given the structural challenges outlined above, assessing the actual readiness of the Algerian accounting profession to adopt artificial intelligence requires moving beyond a purely theoretical perspective**.** While the literature identifies key constraints—such as skills shortages, regulatory complexity, and limited technological adoption—the extent to which these factors are present in practice can only be adequately understood through empirical investigation.

To address this, the study adopts a qualitative research approach using semi-structured interviews with Algerian accounting professionals across different fields. This approach allows for an in-depth exploration of participants' perceptions, experiences, and attitudes toward AI and technological transformation within their professional environment.

The collected data are analyzed using NVivo software, enabling a systematic coding process that identifies key themes and patterns. This methodological approach facilitates the organization and interpretation of qualitative data, ensuring a structured and rigorous analysis of the factors influencing AI readiness in the Algerian accounting context.

CHAPTER 2: Assessing AI Readiness in the Algerian Accounting Profession

1. Methodological Framework of the Study

This section presents the methodological framework adopted in the empirical part of the study. It explains the epistemological position, research approach, sampling strategy, data collection process, and the use of NVivo 15 for qualitative data analysis.

1.1 Research Epistemology

This study is grounded in an interpretivist epistemological perspective. This approach is appropriate because the research seeks to understand how accounting professionals perceive, interpret, and respond to the possible adoption of artificial intelligence in their professional environment. Since the study focuses on perceptions, experiences, meanings, and attitudes rather than numerical measurement, interpretivism allows the researcher to examine the subjective views of participants within their social and professional context.

In this regard, the readiness of the Algerian accounting profession for AI adoption is not treated as a purely technical issue. It is understood as a phenomenon shaped by human judgment, professional identity, organizational culture, technological exposure, and institutional conditions. Therefore, a qualitative approach was considered suitable for capturing the depth and complexity of participants perspectives.

1.2 Research Approach and Methodology

The study adopted a qualitative research approach based on semi-structured interviews. This approach was selected because the objective of the research is to explore the readiness of the Algerian accounting profession for AI adoption from the perspective of professionals directly or indirectly connected to accounting practice.

Semi-structured interviews were considered appropriate because they provide both consistency and flexibility. A common set of questions was used with all participants, which ensured that the same core themes were addressed across the

sample. At the same time, the format allowed participants to express their views freely and provide explanations based on their own professional experience.

The study relied on thematic analysis to process the collected data. This method allowed the researcher to identify recurring themes, compare participants views, and interpret the main patterns related to AI perception, personal readiness, adoption factors, skills, barriers, infrastructure, regulation, benefits, and risks.

1.3 Data Collection and Sample Description

The empirical data were collected from thirteen (13) participants using semi-structured interview questionnaires. The participants were selected through purposive sampling in order to include individuals with relevant knowledge or experience in accounting, public administration, or accounting education.

The sample included three main categories: private sector accountants, public sector accounting managers, and university lecturers specializing in accounting. This diversity was useful because it allowed the study to compare views across different professional environments and identify both shared patterns and sector-based differences.

Table Nº2: Sample Description of the Study Participants

Category	Number	Description
Private sector accountants	6	Four accountants from a private company, one from a tourism agency, and one from a business group
Public sector accounting managers	5	Managers from national social security institutions for salaried and non-salaried workers
University lecturers	2	Accounting lecturers from higher education
Total	13	Private, public, and academic participants

Source: Prepared by the researcher based on NVivo 15.

The diversity of the sample helped capture different perspectives regarding AI adoption. Private sector participants provided insights into practical accounting

work, public sector participants reflected institutional and administrative realities, while academic participants offered a more theoretical and educational view of AI readiness.

1.4 Data Collection Process

The data collection process combined written responses with direct informal discussions. Each participant was given a standardized questionnaire containing questions related to the main dimensions of the study, including AI perception, readiness, skills, barriers, infrastructure, regulation, benefits, and risks.

Participants answered the questions in written form, which allowed them to reflect carefully and provide structured responses. In addition, informal discussions were conducted before and after completing the questionnaire. These discussions helped clarify the purpose of the study, reduce ambiguity, and better understand the intended meaning behind participants written answers.

After collection, the responses were reviewed, organized, and prepared for qualitative analysis. Each completed interview questionnaire was treated as an independent unit of analysis before being imported into NVivo 15.

1.5 Data Analysis Using NVivo

The thirteen interview files were imported into NVivo 15 and analyzed using NVivo 15, a qualitative data analysis software used to organize, code, classify, and interpret textual data. In this study, NVivo was not used as a substitute for the researchers interpretation, but as a tool to make the analysis more systematic, organized, and traceable.

The analysis followed a thematic coding process. First, the interview files were imported into NVivo as separate sources. Each participant was then created as a case, allowing the researcher to classify participants according to sector, position, and years of experience. This made it possible to compare responses across private sector, public sector, and academic participants.

The main themes were created based on the research framework and the interview structure. These themes included: AI Perception, Personal Readiness, Adoption Factors, Skills, Barriers, Infrastructure, Regulation, Benefits, and Risks. Sub-codes were then developed according to the actual content of participants responses. Relevant text segments were manually coded under the appropriate nodes, and when a statement included more than one meaning, it was coded under more than one node.

After completing the coding process, NVivo outputs were used to support the interpretation. Code summaries helped identify the most frequent themes and sub-themes, while matrix coding queries allowed comparisons across participant groups. Text search, word cloud, word tree visualizations, and relationship analysis were also used as supporting tools to strengthen the interpretation of the findings.

Overall, NVivo helped move the analysis from raw interview responses to organized themes, comparisons, and interpreted findings, while the final interpretation remained based on the researchers understanding of the data and the Algerian accounting context.

2 Presentation and Analysis of Findings

This section presents and interprets the main findings obtained from the thematic analysis conducted in NVivo. The results are organized according to the main themes developed during the coding process: AI perception, personal readiness, adoption factors, required skills, barriers, infrastructure, regulation, benefits, and risks. Each theme is presented through coding summaries and, where relevant, matrix coding queries in order to identify the dominant patterns and compare participants views.

2.1 Analysis of AI Perception Among Participants:

This theme is directly related to the first hypothesis, which assumes that Algerian accounting professionals generally perceive AI as a supportive tool rather

than a full replacement for accountants. So it is important because the way accountants understand AI influences their willingness to adopt it, their level of trust in its outputs, and their expectations regarding its role in future accounting practice.

The coding process identified several sub-codes under this theme, including AI as a supportive tool, AI enhances accounting, AI cannot replace accountants, confusion between AI and basic IT, and the possibility of a new advisory role for accountants.

Table Nº3: Coding Summary of AI Perception among Participants

AI Perception	**This theme captures how participants perceive and understand artificial intelligence in the accounting profession, including its role, limitations, potential impact, and common misconceptions.**	**0**	**0**
AI as a supportive tool		10	19
AI can be integrated into Algerian accounting		1	1
AI cannot replace accountants		7	9
AI Enhances Accounting		10	17
AI Role Awareness		0	0
Important role		7	7
Confusion between AI and Basic IT		3	4
New Role for accountants as a financial advisor		2	2
Usage should be conservative		1	1

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that participants generally perceive AI positively,

but within controlled limits. The most frequent sub-code was **AI as a supportive tool**, appearing in 10 files with 19 references, followed by **AI Enhances Accounting**, appearing in 10 files with 17 references. This indicates that most participants view AI as a technology that can assist and improve accounting work rather than replace the accountant.

At the same time, the sub-code **AI cannot replace accountants** appeared in 7 files with 9 references. This shows that participants still attach strong importance to human judgment, accounting expertise, legal interpretation, and professional responsibility. In this sense, AI is accepted as a support mechanism, while the accountant remains responsible for validating outputs, interpreting results, and ensuring compliance with the accounting and tax framework.

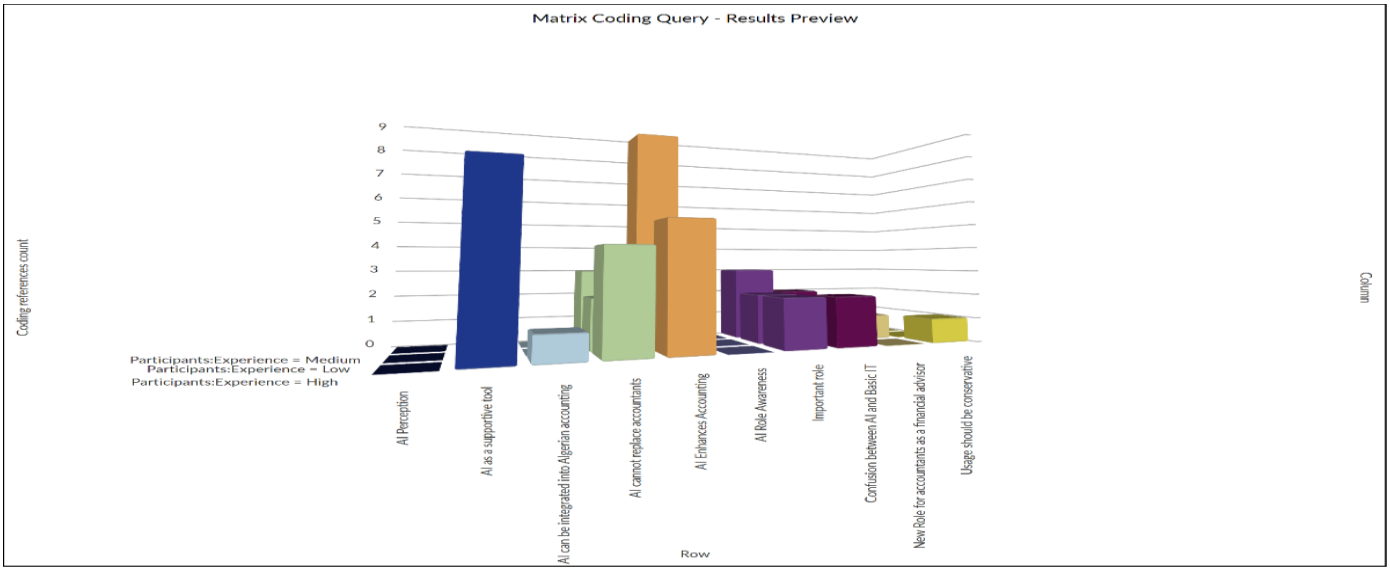
Another important finding concerns the sub-code **Confusion between AI and Basic IT**, which appeared in 3 files with 4 references. Although this frequency is not high, it is analytically significant. It indicates that some participants confused AI with traditional accounting software, Excel, internal platforms, or ordinary digital tools. This finding is especially relevant because this confusion was mainly associated with public sector participants. It suggests that, in some institutional contexts, digitalization may be mistaken for AI readiness.

Overall, the findings show that participants are not resistant to AI in principle. Rather, they are open to it when it is framed as a supportive and controlled tool. However, this positive perception must be accompanied by stronger conceptual awareness of what AI is and how it differs from basic digital technologies.

2.1.1 Experience-Based Analysis of AI Perception:

Figure Nº23: Experience-Based Matrix Coding Query for AI Perception

	A: Participants:Experience = Low	B: Participants:Experience = Medium	C: Participants:Experience = High
1: AI as a supportive tool	7	5	7
2: AI can be integrated into Algerian accounting	0	0	1
3: AI cannot replace accountants	2	3	4
4: AI Enhances Accounting	3	9	5
5: Usage should be conservative	0	0	1
6: Confusion between AI and Basic IT	0	2	2
7: New Role for accountants as a financial advisor	1	1	0
8: AI Role awareness	2	3	2



Source: Prepared by the researcher based on NVivo 15.

The matrix results show that the perception of AI as a supportive tool is shared across all experience levels. Both low-experience and high-experience participants strongly referred to AI as a supportive tool, while medium-experience participants showed the strongest association with **AI Enhances Accounting**. This suggests that medium-experience participants may be particularly able to recognize the practical value of AI in improving accounting tasks.

In contrast, references to **AI cannot replace accountants** increased with experience. This indicates that more experienced participants place stronger emphasis on the irreplaceable role of professional judgment, responsibility, and knowledge of accounting and tax regulations.

The matrix also shows that **Confusion between AI and Basic IT** appeared among medium- and high-experience participants, while it did not appear among low-experience participants. When combined with the sector-based observation that this confusion came mainly from public sector accountants, this becomes a key finding: professional experience alone does not guarantee conceptual clarity regarding AI.

Overall, the experience-based analysis confirms that AI perception is generally positive but cautious. Participants recognize AIs potential to support accounting work, but they also insist that it should remain under human supervision and should not replace the accountant. This supports the broader conclusion that AI acceptance in Algerian accounting is present, but still requires conceptual clarification and professional guidance.

2.2 Analysis of Personal Readiness Among Participants:

The second theme examined the personal readiness of participants to adopt artificial intelligence tools in accounting practice. This theme is important because a positive perception of AI does not necessarily mean that professionals are fully prepared to use it. Readiness depends on prior experience, willingness to learn, openness to change, familiarity with AI, and confidence in existing skills.

The coding process identified several sub-codes related to AI usage, careful adoption, positive experience, familiarity level, interest in technology, openness to change, and willingness to learn.

Table Nº4: Coding Summary of Personal Readiness among Participants

Personal Readiness	**This theme refers to the individual readiness of accountants to adopt AI, including their experience, familiarity, mindset, willingness to learn, and level of engagement with AI tools.**	**0**	**0**
AI Usage		0	0
Limited usage		2	2
Never Used AI		3	4
Used AI		5	6
Careful adoption		8	8
Current owned Skills level Awareness		0	0
High		7	10
Experience		0	0
Positive experience		4	5
Used AI as a supportive tool		4	4
Familiarity level		0	0
High		4	5
Moderate		3	3
Mindset		0	0
Interest in technology		3	3
Openness to change		2	3
Willingness to learn		5	6
Readiness level is good		1	1

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that **careful adoption** is one of the clearest indicators of personal readiness, appearing in 8 files with 8 references. This suggests that participants are not rejecting AI tools, but they prefer a gradual and controlled adoption. Their readiness is therefore conditional: they are willing to use AI when its outputs can be verified and when its use remains compatible with

accuracy, confidentiality, and professional responsibility.

The results also show uneven practical experience with AI tools. The sub-code **Used AI** appeared in 5 files with 6 references, while **Never Used AI** appeared in 3 files with 4 references and **Limited usage** appeared in 2 files with 2 references. This means that some participants had already interacted with AI-related tools, but AI use is not yet widespread or mature among the sample.

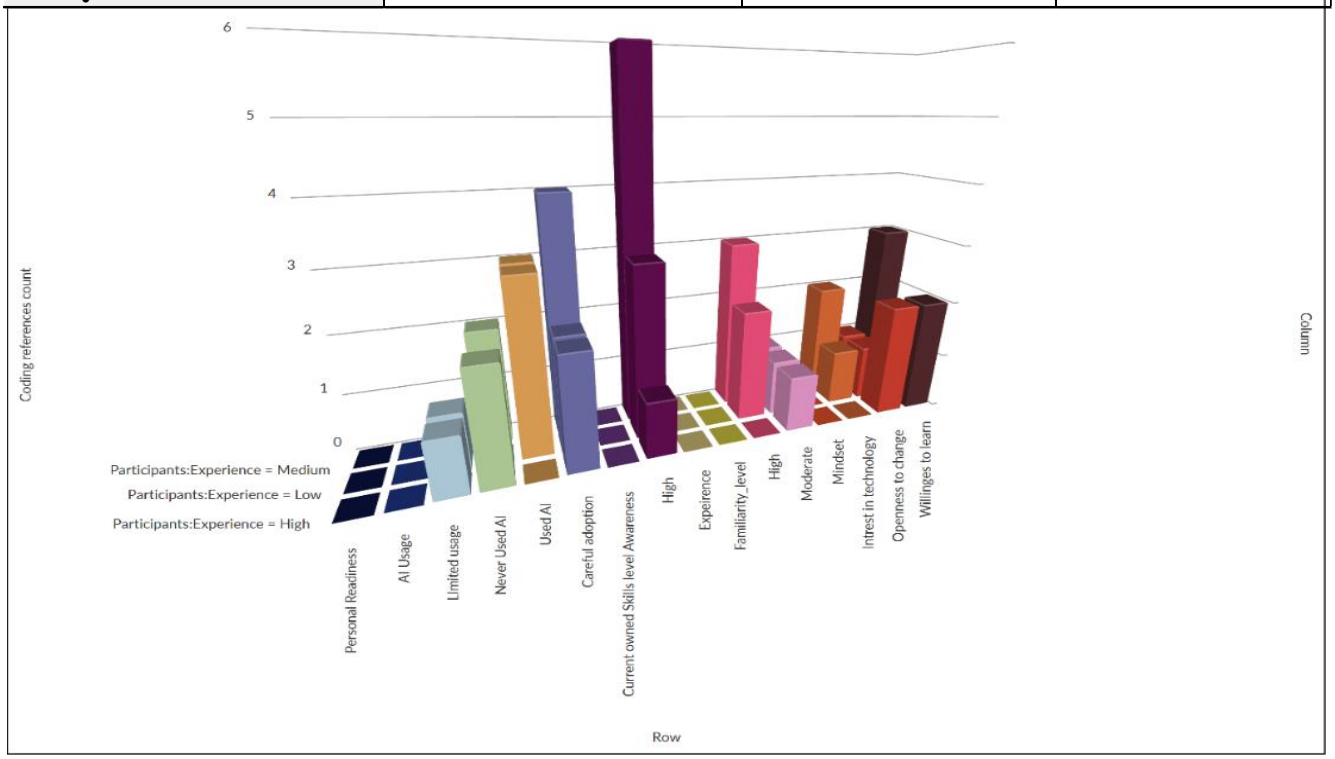
A learning-oriented attitude was also visible. **Willingness to learn** appeared in 5 files with 6 references, while **Interest in technology** and **Openness to change** appeared with lower but still relevant frequencies. This indicates that readiness is not only based on current ability, but also on the motivation to develop new skills. Therefore, participants personal readiness can be described as emerging, but still dependent on training and practical exposure.

Overall, the findings indicate that personal readiness is present but uneven. Participants generally show openness toward AI, especially when it is introduced as a supportive tool. However, limited experience, cautious attitudes, and the need for further training prevent this readiness from being considered fully mature.

2.2.1 Experience-Based Analysis of the Personal Readiness:

Figure Nº24: Experience-Based Matrix Coding Query for Personal Readiness

	A : Participants:Experience = Medium	B : Participants:Experience = Low	C : Participants:Experience = High
1 : Personal Readiness	0	0	0
2 : AI Usage	0	0	0
3 : LImited usage	0	1	1
4 : Never Used AI	2	0	2
5 : Used AI	3	3	0
6 : Careful adoption	4	2	2
7 : Current owned Skills level Awareness	0	0	0
8 : High	6	3	1
9 : Expeirence	0	0	0
10 : Familiarity_level	0	0	0
11 : High	3	2	0
12 : Moderate	1	1	1
13 : Mindset	0	0	0
14 : Intrest in technology	2	1	0
15 : Openness to change	1	1	2
16 : Willinges to learn	3	1	2



Source: Prepared by the researcher based on NVivo 15.

The matrix results show that **medium-experience participants** recorded the strongest presence in several readiness-related sub-codes, including **Used AI**, **Careful adoption**, **Familiarity level – High**, and **Willingness to learn**. This suggests that this group may represent the most balanced level of readiness, combining professional experience with openness to technological development.

Low-experience participants also showed notable readiness, especially under **Used AI**, where they recorded the same number of references as medium-experience participants. This may indicate that less experienced participants are more exposed to recent digital tools or more willing to experiment with AI technologies.

High-experience participants showed a different pattern. They recorded no references under **Used AI**, while they appeared under **Never Used AI**, **Limited usage**, **Careful adoption**, **Openness to change**, and **Willingness to learn**. This suggests that experienced professionals may be less practically exposed to AI tools, but they are not necessarily opposed to adoption. Their readiness appears more cautious and dependent on assurances related to accuracy, regulation, confidentiality, and responsibility.

Overall, the experience-based analysis confirms that personal readiness is partial and uneven. It exists more clearly at the level of openness and willingness than at the level of actual AI use. This means that personal readiness in the Algerian accounting profession still requires practical exposure, training, and institutional support before it can develop into effective adoption.

2.3 Analysis of Adoption Factors Influencing AI Integration:

After examining participants perception of AI and their personal readiness, the analysis turns to the factors that may influence the actual adoption of AI tools in accounting practice. This theme is important because positive attitudes alone are not sufficient for adoption. The decision to use AI depends on several practical,

organizational, technical, and regulatory conditions.

The coding process identified several adoption factors, including tool efficiency, usage difficulty, organizational support, training availability, security, cost, availability of supporting software, alignment with regulations, and the broader evolution of the accounting profession.

Table Nº5: Coding Summary of Adoption Factors Influencing AI Integration

Name	Description	Files	References
Adoption Factors	This theme includes all factors that influence the adoption of AI in accounting, such as cost, security, training availability, organizational support, ease of use, and alignment with current regulations.	0	0
Availability of supporting software		1	1
Cost per tool		1	1
Evolution of the Accounting profession		2	2
If the tools are secure enough		2	3
Organizational support		4	4
Tools efficiency		5	7
Tools should be aligned with Current regulations		1	1
Training availability		4	4
Usage difficulty		4	5

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that **tool efficiency** was the most frequently mentioned adoption factor, appearing in 5 files with 7 references. This suggests that participants are more likely to consider AI adoption when they perceive the tools as useful, practical, and capable of improving accounting tasks. In other words, AI adoption is strongly linked to perceived value rather than technological novelty alone.

The second important factor was **usage difficulty**, appearing in 4 files with 5

references. This indicates that ease of use plays a central role in shaping adoption decisions. If AI tools are perceived as complex or difficult to integrate into daily accounting routines, accountants may hesitate to adopt them even when they recognize their benefits.

The analysis also highlights the importance of **organizational support** and **training availability**, each appearing in 4 files with 4 references. These factors show that adoption cannot depend only on individual willingness. Accountants need institutional support, access to training, technical assistance, and a work environment that encourages technological adaptation.

Security and regulatory alignment also appeared as relevant factors, although with fewer references. This is important because accounting involves sensitive financial information and must remain compliant with legal and professional rules. Therefore, participants appear more willing to adopt AI when tools are secure, reliable, and compatible with the current accounting framework.

Overall, the findings show that AI adoption is shaped by an ecosystem of enabling conditions. Participants are open to AI when tools are efficient, easy to use, secure, supported by the organization, and aligned with regulations. However, adoption becomes less likely when tools are difficult, unsupported, costly, or unclear in terms of legal compatibility.

This theme confirms that AI adoption in Algerian accounting is not merely an individual decision. It requires practical usefulness, training, institutional preparation, and regulatory confidence. These factors connect directly with the next sections, especially the analysis of required skills and barriers.

2.4 Analysis of Required Skills:

The fourth theme examined the skills required for accountants to remain effective in an AI-driven accounting environment. This theme is central to the study because AI adoption does not depend only on the availability of tools or the

willingness to use them. It also depends on whether accountants possess the necessary competencies to understand, use, monitor, and evaluate AI outputs.

In this study, the required skills were grouped into three main categories: technological skills, analytical and decision-making skills, and accounting skills.

Table Nº6: Coding Summary of Required Skills for AI Adoption

Skills	This theme refers to the key competencies required for accountants to operate in an AI-driven environment, including accounting expertise, analytical thinking, decision-making, and technological skills.	0	0
Accounting Skills		6	8
analytical and decision-making skills		10	13
Technological skills		12	16

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that **technological skills** were the most frequently mentioned, appearing in 12 files with 16 references. This indicates that participants consider digital competence a central requirement for AI adoption in accounting. In an AI-supported environment, accountants are expected to interact with digital tools, understand software functions, handle data, and adapt to technological changes. Therefore, technological skills are no longer secondary; they are becoming part of the accountants professional competence.

The second most frequent category was **analytical and decision-making skills**, appearing in 10 files with 13 references. This finding shows that participants do not reduce AI adoption to the technical use of software. They recognize that accountants must be able to interpret results, detect inconsistencies, evaluate AI-generated outputs, and support decision-making. AI may produce outputs, but the accountant remains responsible for judging whether these outputs are logical, accurate, and professionally valid.

Accounting skills appeared in 6 files with 8 references. Although less frequent than technological and analytical skills, they remain fundamental. Participants emphasized that accountants must continue to master accounting principles, financial reporting, tax regulations, and professional rules. This is because AI tools cannot be used responsibly without a strong accounting foundation. A weak accountant may not be able to detect mistakes in AI-generated outputs or judge whether results comply with the Algerian accounting and tax framework.

Overall, the findings show that AI adoption requires a hybrid professional profile. The future accountant must combine technological literacy, analytical thinking, and solid accounting knowledge. This confirms that AI does not eliminate the accountants role; rather, it changes the nature of the competencies needed to perform it effectively. Training and professional development should therefore focus not only on software use, but also on critical thinking, data interpretation, and advanced accounting competence.

2.5 Analysis of AI Adoption Barriers:

The fifth theme examined the barriers that may hinder or slow the adoption of artificial intelligence in the Algerian accounting profession. This theme is important because positive perception and personal willingness are not sufficient for successful adoption. Even when participants recognize the value of AI, practical implementation may remain limited if accountants and organizations face human, technological, organizational, or regulatory obstacles.

The coding process identified several barriers, including resource challenges, lack of training, organizational challenges, mindset challenges, tool complexity, low technological skills, lack of technical skills, and contrast with the local accounting framework.

Table Nº7: Coding Summary of AI Adoption Barriers

Barriers	This theme includes the main obstacles that hinder AI adoption in accounting, including technical limitations, lack of skills or training, organizational constraints, and challenges related to tools and systems.	0	0
Contrast with the local accounting framework		3	3
lack of technical skills		2	2
Lack of Training		6	8
Low technological skills		3	5
Mindset challenges		5	6
Organizational challenges		6	6
Resources challenges		8	10
Tools complexity		5	5

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that **resource challenges** were the most frequently mentioned barrier, appearing in 8 files with 10 references. This indicates that AI adoption requires more than individual motivation. It also requires appropriate tools, reliable systems, technical support, secure digital environments, and sufficient institutional capacity.

The second major barrier was **lack of training**, appearing in 6 files with 8 references. This finding is particularly important because it connects directly with the previous theme on required skills. Participants recognized the need for technological and analytical competencies, but insufficient training may prevent accountants from developing these skills. Therefore, training represents one of the main conditions for transforming positive attitudes toward AI into practical readiness.

Organizational challenges and **mindset challenges** also appeared as relevant barriers. Organizational challenges suggest that AI adoption may be slowed by weak managerial support, rigid procedures, lack of digital strategy, or limited

institutional commitment. Mindset challenges reflect hesitation, resistance to change, or fear of using unfamiliar tools. However, this should not be interpreted as total rejection of AI, but rather as cautious acceptance shaped by the nature of accounting work, where accuracy, confidentiality, and legal responsibility are central.

The complexity of AI tools was another important obstacle. If AI tools are perceived as difficult to understand or difficult to integrate into daily accounting routines, accountants may hesitate to adopt them. This difficulty becomes more serious when combined with lack of training and weak technological competence.

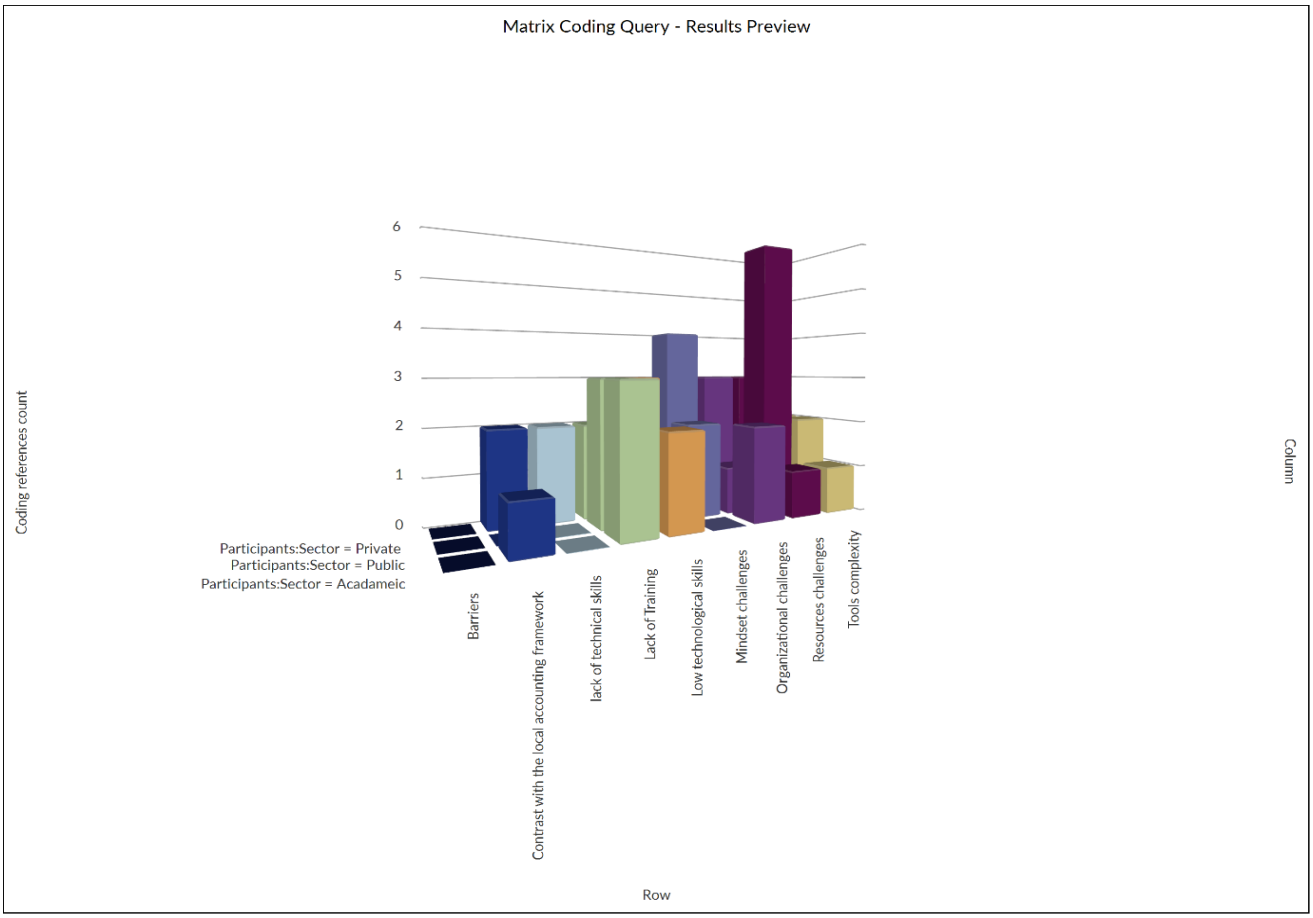
A key distinction should be made between **low technological skills** and **lack of technical skills**. In this study, low technological skills refers to weakness in using digital tools, software, data systems, and modern technologies. By contrast, lack of technical skills refers to insufficient advanced accounting competence, such as mastery of accounting rules, tax regulations, financial laws, accounting entries, and professional judgment. This distinction is important because responsible AI use requires both technological competence and strong accounting knowledge. An accountant who lacks digital skills may fail to use AI tools, while an accountant who lacks advanced accounting knowledge may fail to evaluate AI outputs correctly.

Finally, **contrast with the local accounting framework** appeared as a barrier. This suggests that AI tools must be compatible with the Algerian accounting system, tax rules, and professional requirements. If AI tools are designed according to external accounting environments without adaptation to the Algerian framework, their adoption may become difficult or risky.

2.5.1 Sector-Based Analysis of AI Adoption Barriers:

Figure Nº25: Sector-Based Matrix Coding Query for AI Adoption Barriers

	A : Participants:Sector = Private	B : Participants:Sector = Public	C : Participants:Sector = Acadameic
1 : Barriers	0	0	0
2 : Contrast with the local accounting framework	2	0	1
3 : lack of technical skills	2	0	0
4 : Lack of Training	2	3	3
5 : Low technological skills	3	0	2
6 : Mindset challenges	4	2	0
7 : Organizational challenges	3	1	2
8 : Resources challenges	3	6	1
9 : Tools complexity	2	2	1



Source: Prepared by the researcher based on NVivo 15.

The sector-based matrix shows that **resource challenges** were most strongly associated with the public sector, with 6 references compared to 3 in the private sector and 1 in the academic sector. This may reflect the dependence of public institutions on centralized systems, administrative procedures, and limited flexibility in adopting new technological solutions.

In contrast, private sector participants recorded more references to **mindset challenges**, **low technological skills**, **organizational challenges**, **lack of technical skills**, and **contrast with the local accounting framework**. This suggests that private sector accountants are more directly exposed to practical implementation issues, especially those related to adaptation, skills, and compatibility with daily accounting work.

Academic participants emphasized **lack of training**, **low technological skills**, and **organizational challenges**. This reflects a more educational and structural perspective, where the main concern is not only the availability of AI tools, but whether accountants are properly trained to use them critically and professionally.

The matrix also shows that **lack of training** appeared across all three groups, making it a shared barrier across sectors. This confirms that training is a general requirement for improving AI readiness in the Algerian accounting profession.

Overall, the findings show that AI adoption barriers are multidimensional. They include resource limitations, insufficient training, organizational constraints, tool complexity, weak digital competence, insufficient advanced accounting competence, and concerns about compatibility with the local framework. These results reinforce the conclusion that AI readiness is partial: participants are generally open to AI, but several barriers still prevent smooth and immediate integration.

2.6 Analysis of Infrastructure Readiness:

The sixth theme examined the readiness of technological infrastructure to

support the integration of artificial intelligence in accounting practice. This theme is important because AI adoption requires more than positive attitudes or individual willingness. It also depends on the availability of adequate technological systems, software, data management, cybersecurity, internet connectivity, and technical support.

In this study, infrastructure readiness refers to participants perceptions of the current technological environment within their organizations and whether it is sufficient to support AI integration.

Table Nº8: Coding Summary of Infrastructure Readiness for AI Adoption

Infrastructure	This theme reflects the current technological environment and infrastructure readiness within organizations, including whether existing systems are sufficient to support AI integration or require further improvement.	0	0
Current Environment		6	7
Infrastructure needs more improvements		4	4
Level of readiness of the infrastructure		0	0
AI integration may be possible in companies due to alignment with regulations and accounting systems		3	3
Moderate		4	4
Not ready to support AI integration		3	3
Sufficient to support AI integration		5	5

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows mixed perceptions regarding infrastructure readiness. The sub-code **Current Environment** appeared in 6 files with 7 references, indicating that several participants referred to existing digital tools such as computers, accounting software, internal platforms, and administrative systems. This suggests that many workplaces already possess a basic technological

environment.

However, the results do not indicate full AI readiness. While **Sufficient to support AI integration** appeared in 5 files with 5 references, other sub-codes such as **Infrastructure needs more improvements**, **Moderate**, and **Not ready to support AI integration** show that participants views were divided. This means that some organizations may be digitally equipped, while others still require improvement in system performance, technical support, cybersecurity, and software modernization.

A key interpretation is that existing digital infrastructure should not automatically be considered AI readiness. Some participants, especially from the public sector, confused AI with ordinary digital tools such as accounting software, internal systems, or online platforms. This suggests that parts of the Algerian accounting environment may still be at the stage of digitalization rather than advanced AI adoption.

Therefore, infrastructure readiness can be described as **partial and uneven**. Existing accounting software and digital tools may provide a starting point, but they are not sufficient on their own. Effective AI integration would require stronger data systems, better cybersecurity, AI-compatible software, trained users, and clearer governance procedures.

Overall, this theme confirms that technological infrastructure is a key condition for AI adoption. The Algerian accounting profession may have a basic digital foundation in some institutions, but full AI integration requires a higher level of technological maturity and institutional preparation.

2.7 Analysis of the Regulatory Framework:

The seventh theme examined participants views on the Algerian regulatory and accounting framework in relation to artificial intelligence integration. This theme is important because accounting is a regulated profession, and any AI tool used in

accounting practice must remain compatible with accounting principles, tax rules, legal requirements, and professional responsibilities.

In this study, the regulation theme captures participants opinions regarding whether the current Algerian accounting framework can support AI integration, and whether it requires further updates.

Table Nº9: Coding Summary of the Regulatory Framework for AI Adoption

Regulations	This theme captures participants views on the compatibility, adequacy, and evolution of Algerian accounting regulations and legal frameworks in relation to AI integration.	0	0
Algerian regulations and laws are not compatible with AI tools and need to be updated		2	2
AI needs alignment and compliance with the accounting framework (accountants respect the regulations)		4	5
Regulations are still evolving, but they require more updates		4	4
Algeria regulation has Solid principles		3	3
The Algerian accounting systems and regulations are compatible with AI		3	3

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that the most frequent sub-code was **AI needs alignment and compliance with the accounting framework**, appearing in 4 files with 5 references. This indicates that participants did not view AI adoption as a purely technical matter. Instead, they emphasized that AI tools must operate within the boundaries of the Algerian accounting framework and respect existing professional rules.

The results also show a mixed perception of regulatory readiness. Some participants considered the Algerian accounting framework to have solid principles and to be compatible with AI in principle. However, others emphasized that

regulations are still evolving and require further updates. This suggests that the existing framework may provide a foundation, but it is not yet fully adapted to the specific issues introduced by AI.

The need for regulatory modernization is particularly important because AI raises new questions related to responsibility, output validation, cybersecurity, data protection, and professional accountability. If the legal framework does not clearly define how AI outputs should be used, reviewed, and controlled, accountants may hesitate to rely on AI tools in tasks involving financial reporting, taxation, auditing, and compliance.

This theme also connects with the earlier finding related to confusion between AI and basic IT tools. If some professionals still confuse AI with ordinary digital systems, then regulation should not only address technical compliance, but also provide conceptual clarification about what counts as AI use in accounting and what responsibilities remain with the accountant.

Overall, the findings suggest that regulatory readiness is **partial**. The Algerian accounting framework may offer a basic foundation, but further updates are needed to ensure responsible AI adoption, especially regarding transparency, accountability, data protection, and validation of AI-generated outputs.

2.7.1 Sector-Based Analysis of the Regulatory Framework:

Figure Nº26: Sector-Based Matrix Coding Query for the Regulatory Framework

	A : Participants:Sector = Private	B : Participants:Sector = Public	C : Participants:Sector = Acadameic
1 : Regulation	0	0	0
2 : Algerian regulations and laws are not compatible with AI tools and need to be updated	0	0	2
3 : Alignment and compliance with the accounting framework	5	0	0
4 : Regulations are still evolving, but they require more updates	3	1	0
5 : Solid principals	3	0	0
6 : The Algerian accounting systems and regulations are compatible with AI	1	2	0

Source: Prepared by the researcher based on NVivo 15.

The sector-based matrix shows clear differences between participant groups. Private sector participants referred most frequently to **alignment and compliance with the accounting framework**, with 5 references. They also mentioned the need for regulatory updates and the existence of solid principles. This suggests that private sector participants tend to view the current framework as usable, but requiring adaptation when AI tools are introduced.

Public sector participants mainly referred to the idea that Algerian accounting systems and regulations are compatible with AI. However, this result should be interpreted carefully, especially in light of the earlier finding that some public sector participants confused AI with basic IT tools. Their perception of compatibility may therefore reflect compatibility with existing digital systems rather than with advanced AI-based accounting tools.

Academic participants presented the most critical view. Their responses were concentrated under the sub-code **Algerian regulations and laws are not compatible with AI tools and need to be updated**. Although this appeared with limited references, it is analytically important because academic participants may approach the issue from a more theoretical and forward-looking perspective. Their

view suggests that the current framework may not yet be sufficiently prepared to address AI-specific concerns.

Overall, the matrix confirms that perceptions of regulatory readiness are not uniform. Private sector participants emphasize compliance and gradual adaptation, public sector participants show more confidence in existing compatibility, while academic participants stress the need for deeper regulatory modernization. This supports the broader conclusion that regulatory readiness for AI adoption in Algerian accounting remains partial and uneven.

2.8 Analysis of Benefits of AI Adoption:

The eighth theme examined the perceived benefits of artificial intelligence adoption in accounting. This theme is important because it explains why participants may support AI integration despite the barriers and risks identified in previous sections. In this study, benefits refer to the positive outcomes that participants associate with AI use in accounting practice, especially accuracy, time efficiency, error reduction, decision support, and professional development.

Table Nº10: Coding Summary of Perceived Benefits of AI Adoption

Benefits	This theme refers to the perceived advantages of using AI in accounting, such as improving accuracy, saving time, supporting decision-making, enhancing compliance, and reducing costs.	0	0
AI is a mentor that explains and simplifies accounting process and information		6	6
AI reduce errors		9	13
Analyzing and in helping decision making process		2	3
Cost reduction		2	2
Enhance compliance with tax and regulations		1	1
Enhance transparency		1	1
Fraud detection		1	1
Helps creating competent accountant		4	4

Providing More Accuracy		12	28
Saves Time		12	25

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that Providing More Accuracy was the most frequently mentioned benefit, appearing in 12 files with 28 references. This indicates that participants strongly associate AI with improving the quality and reliability of accounting work. In accounting, accuracy is directly connected to financial reporting quality, compliance, and professional credibility; therefore, this result shows that participants see AI as a tool that may support one of the core values of the profession.

The second major benefit was Saves Time, appearing in 12 files with 25 references. Participants viewed AI as a tool capable of accelerating routine and repetitive accounting tasks, such as data entry, report preparation, document processing, and verification. This benefit is important because saving time may allow accountants to focus more on analysis, control, and decision support.

The third major benefit was AI reduce errors, appearing in 9 files with 13 references. This finding is closely related to accuracy and time efficiency. Participants believe that AI may reduce human errors, especially in repetitive or technical tasks. However, this benefit should be interpreted carefully because AI does not eliminate the need for human verification. As shown in previous themes, participants still emphasized careful adoption and output monitoring.

Other benefits were mentioned less frequently, such as simplifying accounting information, supporting professional competence, helping decision-making, reducing costs, enhancing compliance, improving transparency, and fraud detection. Although these benefits appeared with fewer references, they show that some participants recognize broader possibilities for AI beyond routine task support.

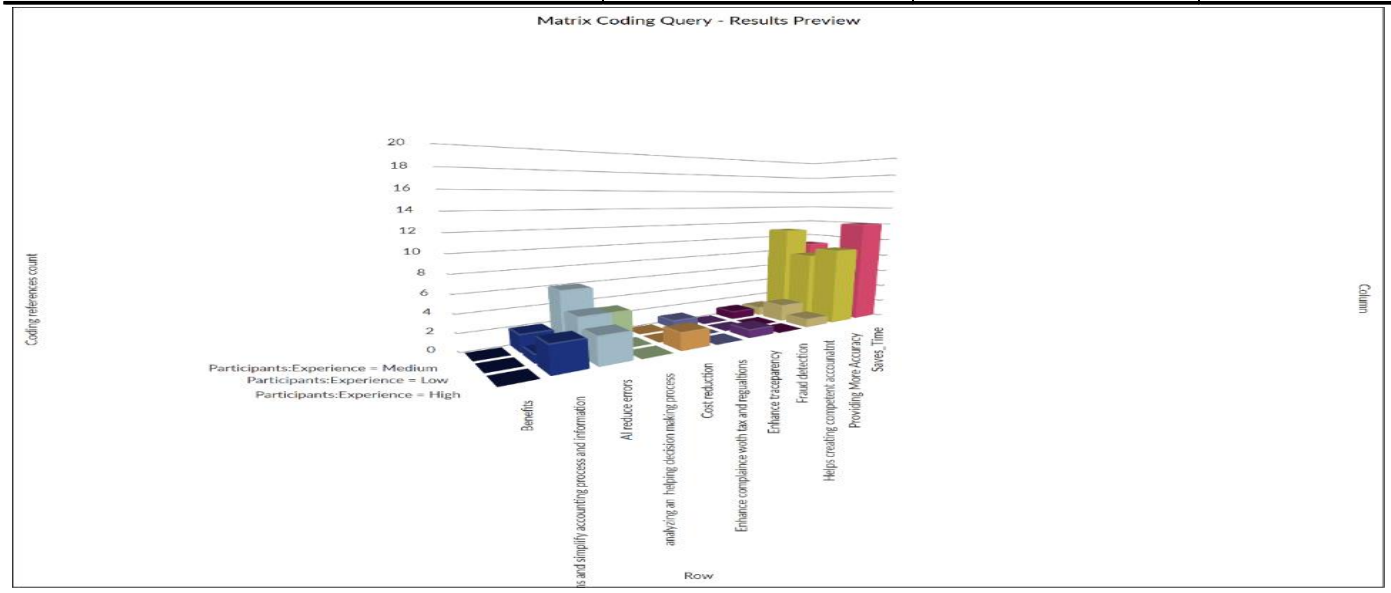
Overall, the findings show that participants mainly perceive AI benefits in

operational terms. They strongly value AI for improving accuracy, saving time, and reducing errors, while more advanced benefits such as fraud detection, compliance monitoring, transparency, and strategic decision support were less frequently mentioned. This suggests that AI is currently understood more as a practical support tool than as a fully strategic transformation tool.

2.8.1 Experience-Based Analysis of Benefits:

Figure Nº27: Experience-Based Matrix Coding Query for Benefits of AI Adoption

	A : Participants:Experience = Medium	B : Participants:Experience = Low	C : Participants:Experience = High
1 : Benefits	0	0	0
2 : Ai is a mentor that explains and simplify accounting process and information	2	1	3
3 : AI reduce errors	6	4	3
4 : analyzing an helping decision making process	3	0	0
5 : Cost reduction	0	0	2
6 : Enhance complaince woth tax and regualtions	1	0	0
7 : Enhance traceparency	0	0	1
8 : Fraud detection	1	0	0
9 : Helps creating competent accounatnt	1	2	1
10 : Providing More Accuracy	11	8	9
11 : Saves_Time	9	4	12



Source: Prepared by the researcher based on NVivo 15.

The experience-based matrix shows that **accuracy** is strongly recognized across all experience levels, with 11 references among medium-experience participants, 8 among low-experience participants, and 9 among high-experience participants. This confirms that accuracy is a shared benefit, regardless of experience.

The benefit of **saving time** was also strongly recognized, especially among high-experience participants, with 12 references. This may indicate that experienced professionals, who are more familiar with the workload and repetitive nature of accounting tasks, are particularly aware of AIs potential to reduce time pressure.

Medium-experience participants recorded the highest number of references for **AI reduce errors**, with 6 references. They were also the only group that referred to decision-making support. This suggests that medium-experience participants may have a more practical and balanced view of AI benefits, recognizing both operational improvements and some analytical possibilities.

Low-experience participants focused mainly on visible and direct benefits such as accuracy and competence development, while advanced benefits such as cost reduction, compliance, transparency, and fraud detection were less visible in their responses. This may be due to their limited exposure to strategic accounting responsibilities.

Overall, the matrix confirms that participants across experience levels recognize AIs operational benefits, especially accuracy, time saving, and error reduction. However, advanced benefits remain less developed in participants perceptions. This supports the broader finding that AI is mainly perceived as a tool for improving daily accounting work rather than as a complete strategic transformation of the profession.

2.9 Analysis of Risks Associated with AI Adoption:

The ninth theme examined the risks associated with the adoption of artificial

intelligence in accounting. This theme balances the previous discussion of benefits by showing that participants do not view AI as automatically reliable or risk-free. Since accounting involves sensitive financial data, legal obligations, and professional responsibility, the adoption of AI must be accompanied by control, verification, and clear accountability.

Table Nº11: Coding Summary of Risks Associated with AI Adoption

Risks	This theme includes the perceived risks associated with AI adoption, such as data security concerns, high costs, job displacement, over-reliance on AI outputs, and regulatory uncertainty.	0	0
Concerns over data loss		1	1
Cybersecurity issues		5	5
High implementation cost		1	1
Inconsistent regulations and laws		3	3
Job Displacement		2	2
Output Quality		5	6
Over-reliance on AI output		7	11
Refusal from certain parties that may be affected by the integration		1	1
Uneven adoption across sectors		2	2

Source: Prepared by the researcher based on NVivo 15.

The coding summary shows that **over-reliance on AI output** was the most frequently mentioned risk, appearing in 7 files with 11 references. This indicates that participants are mainly concerned about accountants depending excessively on AI-generated results without sufficient verification, critical thinking, or professional judgment. This finding connects directly with earlier themes, where participants emphasized that AI should remain a supportive tool rather than a replacement for accountants.

The second major risk concerns **output quality**, which appeared in 5 files with 6 references. Participants expressed concern about the accuracy, reliability, and suitability of AI-generated outputs. This is important because AI may support accounting work, but its outputs still require review and contextual interpretation. In accounting, an incorrect output may have financial, tax, or legal consequences.

Cybersecurity issues also appeared as a significant risk, with 5 files and 5 references. This concern is particularly relevant because accounting systems handle confidential information, including financial records, payroll data, tax documents, and institutional files. Therefore, AI adoption must be accompanied by strong cybersecurity measures and data protection procedures.

The sub-code **inconsistent regulations and laws** appeared in 3 files with 3 references. This confirms the importance of regulatory clarity. If the legal framework does not clearly define the responsibilities and limits of AI use in accounting, professionals may hesitate to rely on AI tools, especially in tasks related to financial reporting, taxation, auditing, and compliance.

Other risks appeared less frequently, including job displacement, uneven adoption across sectors, data loss, high implementation cost, and resistance from affected parties. Although these risks were not dominant, they still show that AI adoption may create social, organizational, and financial concerns if it is not properly managed.

Overall, the findings show that participants concerns are mainly centered on control, reliability, and responsibility. The main risk is not AI itself, but the possibility of using it without sufficient understanding, verification, or professional supervision. This confirms that AI adoption in Algerian accounting should be gradual, secure, and supported by clear rules, training, and human oversight.

This theme reinforces the broader conclusion that the readiness of the Algerian accounting profession for AI adoption is **partial rather than complete**. Participants recognize AIs potential benefits, especially accuracy, time saving, and

error reduction, but they remain cautious because of risks related to over-reliance, output quality, cybersecurity, and regulatory uncertainty.

2.10 Lexical Support for the Thematic Findings:

In addition to thematic coding and matrix coding queries, text search and word tree visualizations were used as supporting tools in NVivo. The purpose of this step was not to replace the thematic analysis, but to provide a lexical overview of the interview dataset and to examine how certain key terms appeared in context. This helped confirm whether the main themes identified through coding were also reflected in the vocabulary used by participants.

Figure N°28: Word Cloud of the Most Frequent Terms in Participants' Responses

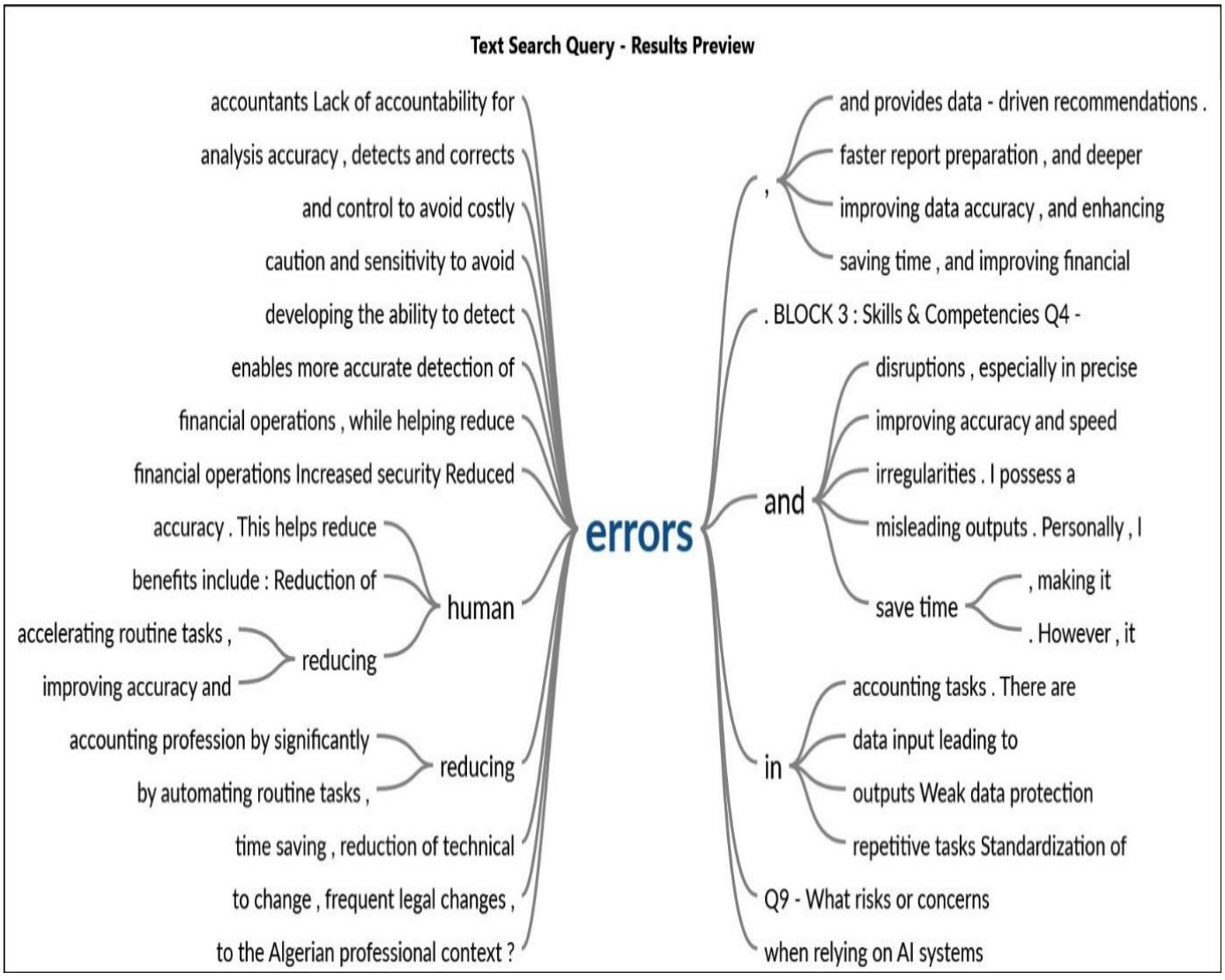


Source: Prepared by the researcher based on NVivo 15.

The word cloud provides a general overview of the most frequent terms appearing in the interview responses. The prominence of words such as

"accounting," "tools," "data," "skills," "financial," "tasks," "artificial," and "intelligence" indicates that participants responses were strongly focused on the relationship between accounting practice and AI-related tools. The presence of terms such as "skills," "data," "errors," and "training" also supports the thematic findings related to required competencies, perceived benefits, barriers, and risks.

Figure Nº29: Word Tree Analysis of the Term "Errors"



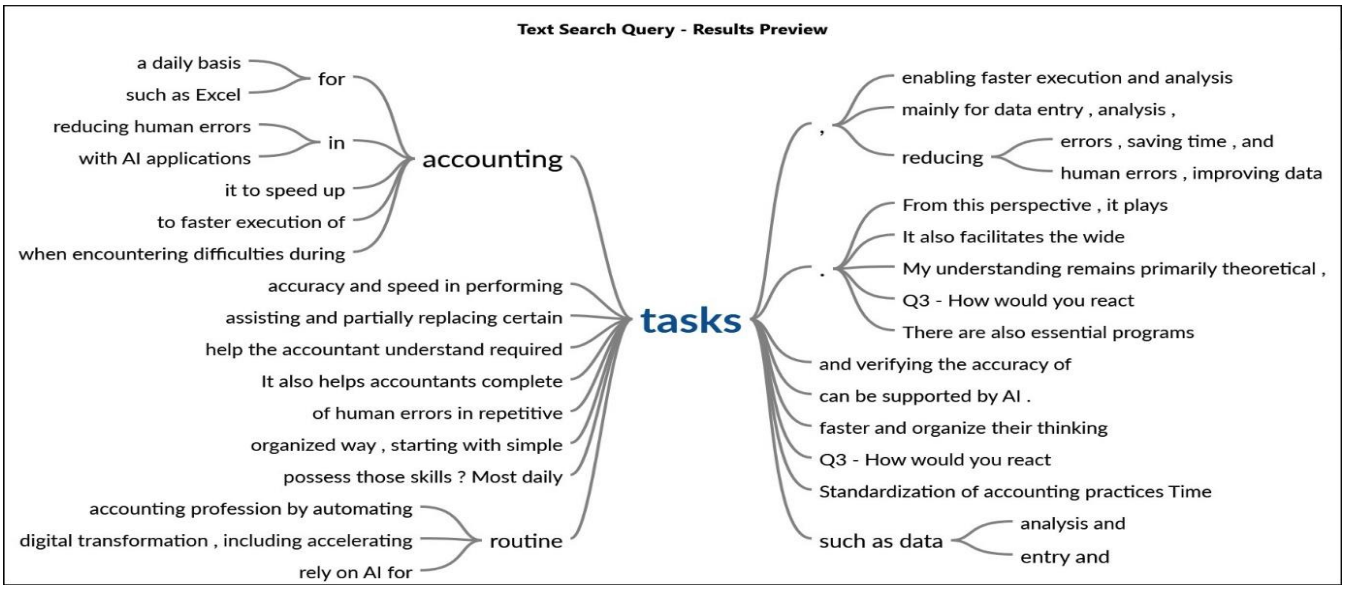
7

Source: Prepared by the researcher based on NVivo 15.

The word tree for the term "errors" shows that participants used this word in both positive and cautionary contexts. On the positive side, AI was associated with reducing human errors, improving accuracy, and supporting repetitive accounting

tasks. However, the same term also appeared in relation to misleading outputs, data input problems, and the need for verification. This confirms that participants did not perceive AI as automatically reliable. Instead, they viewed it as useful only when combined with human control, professional judgment, and output validation.

Figure Nº30: Word Tree Analysis of the Term "Tasks"



Source: Prepared by the researcher based on NVivo 15.

The word tree for the term "tasks" shows that participants frequently discussed AI in relation to data entry, analysis, verification, routine accounting processes, and faster execution. This supports one of the central interpretations of the study: participants mainly perceive AI as an operational support tool. Rather than focusing primarily on advanced strategic applications, respondents linked AI to the improvement and acceleration of daily accounting activities.

Overall, the lexical outputs support the thematic analysis. The repeated appearance of terms related to tools, data, tasks, errors, skills, and accounting confirms that participants responses were centered on the practical implications of AI adoption. These visualizations, therefore, strengthen the reliability of the thematic findings by showing that the dominant vocabulary of the interviews is

consistent with the main themes identified through coding.

3 General Discussion and Overall Assessment of Readiness

This section discusses the overall meaning of the empirical findings and assesses the readiness of the Algerian accounting profession for artificial intelligence adoption. The discussion brings together the results of the thematic analysis, matrix coding queries, lexical outputs, and relationship analysis in order to provide a consolidated interpretation of the study findings.

3.1 Synthesis of the Main Findings

The thematic analysis shows that the readiness of the Algerian accounting profession for AI adoption is shaped by several interconnected dimensions. It cannot be assessed only through the availability of technology or through participants positive attitudes. Rather, readiness depends on perception, personal readiness, adoption conditions, skills, barriers, infrastructure, regulation, benefits, and risks.

First, The findings show that participants generally perceived AI positively. Most of them considered it a supportive tool that can improve accounting work, reduce errors, save time, and assist decision-making. However, this positive perception does not mean that the profession is fully ready for AI adoption, because readiness also depends on infrastructure, skills, regulation, and organizational conditions. Personal readiness followed a similar pattern. Some participants had used AI-related tools, while others had limited or no experience. Overall, readiness appeared as emerging and conditional rather than fully mature.

Second, the findings indicate that AI adoption depends strongly on skills and enabling conditions. Participants emphasized the importance of technological skills, analytical and decision-making skills, and solid accounting knowledge. This suggests that the future accountant must combine digital literacy with professional expertise. At the same time, adoption factors such as tool efficiency, ease of use,

training availability, organizational support, security, and regulatory alignment were identified as important conditions. This confirms that AI adoption is not merely an individual choice, but a process requiring institutional support and professional preparation.

Third, the analysis revealed several barriers that limit readiness. The most important barriers were resource challenges, lack of training, organizational constraints, mindset challenges, tool complexity, weak technological skills, and insufficient advanced accounting competence. These findings show that the profession is not completely resistant to AI, but it is not fully prepared either. The barriers explain why positive perception does not automatically translate into effective adoption.

Fourth, infrastructure and regulation appeared as central institutional dimensions. Some participants considered their current technological environment sufficient because of the existence of computers, accounting software, internal systems, and digital platforms. However, the analysis suggests that basic digitalization should not be confused with genuine AI readiness. In addition, participants expressed mixed views on the regulatory framework. While some considered the Algerian accounting framework compatible with AI in principle, others emphasized the need for updates to address responsibility, cybersecurity, data protection, and validation of AI-generated outputs.

Finally, participants strongly associated AI with operational benefits such as improved accuracy, time saving, and error reduction. These benefits represent the strongest positive justification for AI adoption. However, participants also identified important risks, especially over-reliance on AI outputs, output quality problems, cybersecurity issues, and regulatory uncertainty. This balance between benefits and risks confirms that AI adoption is perceived as promising but conditional.

Overall, the synthesis of the findings indicates that the Algerian accounting

profession is in a partial readiness stage. There is awareness, acceptance, and recognition of AIs potential value, but full readiness is limited by gaps in training, infrastructure, regulation, practical experience, and conceptual clarity.

3.2 Discussion of the Hypotheses:

The empirical analysis provides sufficient evidence to discuss the hypotheses formulated at the beginning of the study. Since this research follows a qualitative approach, the hypotheses are not tested statistically. Instead, they are discussed through thematic interpretation, based on participants responses, coding results, and matrix comparisons generated through NVivo. This approach is consistent with the exploratory nature of the study, where the objective is to assess readiness, identify patterns, and understand the factors shaping AI adoption in the Algerian accounting profession.

H1: Algerian accounting professionals generally perceive artificial intelligence as a supportive tool rather than a full replacement for accountants.

The findings support this hypothesis. The analysis of the AI perception theme shows that participants generally viewed artificial intelligence positively and mainly described it as a supportive tool for accounting work. The codebook confirms that AI as a supportive tool appeared in 10 files with 19 references, while AI Enhances Accounting appeared in 10 files with 17 references. This indicates that participants recognize the potential of AI to improve accounting tasks, support analysis, save time, reduce errors, and enhance the efficiency of professional work.

At the same time, the findings show that participants did not consider AI a full replacement for accountants. The sub-code AI cannot replace accountants appeared in 7 files with 9 references. This indicates that participants still attach strong importance to human judgment, professional responsibility, accounting expertise,

legal interpretation, and the verification of AI-generated outputs. In this sense, AI is accepted as an assisting technology, while the accountant remains central in decision-making and professional accountability.

Therefore, H1 is supported. Algerian accounting professionals generally perceive AI as a useful and supportive tool, but not as a complete substitute for the accountant's role.

Decision: Supported.

H2: The weak digital infrastructure negatively affects AI adoption in Algerian accounting practices.

The findings partially support this hypothesis. The infrastructure theme shows that participants views were mixed. Some participants described the existing technological environment as sufficient to support AI integration, while others considered it moderate, in need of improvement, or not ready. The codebook shows that **Current Environment** appeared in 6 files with 7 references, **Sufficient to support AI integration** appeared in 5 files with 5 references, while **Infrastructure needs more improvements** appeared in 4 files with 4 references and **Not ready to support AI integration** appeared in 3 files with 3 references.

This means that digital infrastructure is not uniformly weak across all organizations. Some institutions already use computers, accounting software, internal systems, and digital platforms. However, these tools may represent basic digitalization rather than genuine AI readiness. This is particularly important because some public sector participants confused AI with basic IT tools, suggesting that the existence of digital systems does not necessarily mean that the organization is ready for AI.

Thus, weak or incomplete infrastructure does affect AI adoption, but the effect is not identical across all sectors and institutions. The issue is not the total absence of technology, but the gap between basic digital tools and advanced AI-compatible infrastructure.

Therefore, H2 is **partially supported**.

Decision: Partially supported.

H3: The lack of adequate skills and digital competencies among Algerian accountants limits the effective adoption of AI.

The findings strongly support this hypothesis. Skills appeared as one of the central requirements for AI adoption. Participants emphasized the importance of technological skills, analytical and decision-making skills, and accounting skills. In the codebook, **Technological skills** appeared in 12 files with 16 references, making it the most frequently mentioned skill category. It was followed by **analytical and decision-making skills**, which appeared in 10 files with 13 references, and **accounting skills**, which appeared in 6 files with 8 references.

These results show that participants clearly recognize that AI adoption requires more than traditional accounting knowledge. Accountants need to understand digital tools, interpret AI outputs, analyze data, and maintain professional judgment. At the same time, the barriers theme confirms that lack of training, low technological skills, and lack of technical skills may limit adoption. Lack of training appeared in 6 files with 8 references, while low technological skills and lack of technical skills also appeared as barriers.

This means that skill gaps directly affect AI readiness. Even when participants accept AI and recognize its benefits, limited digital competence may prevent them from using it effectively. Therefore, the hypothesis is supported by both the skills theme and the barriers theme.

Decision: Supported.

H4: Resistance to change and low trust in advanced technologies reduce the acceptance of AI in the Algerian accounting profession.

The findings partially support this hypothesis. The analysis did identify mindset-related challenges and cautious attitudes toward AI. In the barriers theme, **Mindset challenges** appeared in 5 files with 6 references, indicating that resistance

to change or hesitation toward new tools exists among some participants. In the personal readiness theme, **Careful adoption** appeared in 8 files with 8 references, showing that participants prefer gradual and controlled use of AI rather than immediate or full reliance on it.

However, the findings do not show a general rejection of AI or a strong overall lack of trust. On the contrary, participants generally perceived AI positively and associated it with accuracy, time saving, and error reduction. The benefits theme was one of the strongest in the analysis, with **Providing More Accuracy** appearing in 12 files with 28 references and **Saves Time** appearing in 12 files with 25 references.

This means that resistance and low trust exist, but they do not dominate the participants overall attitudes. What appears more clearly is cautious acceptance. Participants are open to AI, but they want human supervision, output verification, data security, and regulatory clarity. Their hesitation is not necessarily irrational resistance; it is often linked to the professional nature of accounting, where accuracy, confidentiality, and legal responsibility are essential.

Therefore, H4 is **partially supported**. Resistance to change and trust concerns reduce unconditional acceptance, but they do not prevent general openness toward AI.

Decision: Partially supported.

Summary of Hypotheses Decisions:

Table Nº12: Summary of Hypotheses Decisions

Hypothesis	Decision	Justification
H1: Algerian accounting professionals generally perceive artificial intelligence as a supportive tool rather than a full replacement for accountants.	Supported	Participants generally viewed AI positively and described it as a supportive tool that can improve accounting work, save time, reduce errors, and support decision-making. At the same time, they emphasized

		that AI cannot fully replace accountants because human judgment, accounting expertise, legal interpretation, and professional responsibility remain necessary.
H2: Weak digital infrastructure negatively affects AI adoption in Algerian accounting practices.	Partially supported	Infrastructure was not perceived as completely absent, but it remains uneven across organizations. Existing systems often reflect basic digitalization rather than full AI readiness, especially where AI is confused with ordinary digital tools.
H3: The lack of adequate skills and digital competencies among Algerian accountants limits the effective adoption of AI.	Supported	Skills appeared as a central condition for AI adoption. Participants emphasized technological skills, analytical and decision-making skills, and accounting expertise, while lack of training and weak digital competencies were identified as adoption barriers.
H4: Resistance to change and low trust in advanced technologies reduce the acceptance of AI in the Algerian accounting profession.	Partially supported	Mindset challenges and cautious attitudes were present, but they did not represent a general rejection of AI. Participants showed cautious acceptance, especially when AI was presented as a supportive tool used under human supervision.

Source: Prepared by the researcher based on NVivo 15.

The discussion of the hypotheses confirms the overall conclusion that the Algerian accounting profession is at a partial readiness stage. Participants generally perceive AI as a supportive tool and recognize its potential benefits. However, full readiness is still limited by gaps in training, infrastructure, regulatory clarity, practical experience, and conceptual understanding of AI. Consequently, AI

adoption in Algerian accounting should be approached gradually, with strong emphasis on skills development, institutional support, professional regulation, and human supervision.

3.3 Relationship Analysis between Key Theme:

In to thematic coding and matrix coding queries, NVivo relationships were used to clarify how selected themes interact with each other. The purpose of this step was not to create new themes, but to strengthen the interpretation of the existing findings by showing how key dimensions of readiness are connected.

Two relationships were created from the existing codebook. The first relationship links **Barriers** to **Personal Readiness**, while the second links **Skills** to **Personal Readiness**. These two relationships were selected because they directly support the central conclusion of the study: the readiness of the Algerian accounting profession for AI adoption is partial and conditional.

The number of files, references, and coverage percentages were used as descriptive NVivo indicators. The coverage percentage was not treated as a statistical measure, but as an indication of the relative size of each coded reference within its source interview.

Figure Nº31: Relationship Analysis between Barriers, Skills, and Personal Readiness

From Nam	Type	To Name	From Folder	To Folder	Direction	Files	References
Barriers	Limits	Personal Readiness	Codes	Codes	→	6	6
Skills	support	Personal Readiness	Codes	Codes	→	6	8

Source: Prepared by the researcher based on NVivo 15.

Table Nº13: NVivo Relationship Coverage between Key Readiness Themes

Relationship	Files	References	Coverage range	Interpretation
Barriers limit Personal Readiness	6	6	2.86% – 5.37%	Barriers such as lack of training, limited resources, tool complexity, resistance to change, and weak alignment with the accounting framework reduce accountants' readiness to adopt AI.
Skills support Personal Readiness	6	8	0.43% – 3.81%	Technological, analytical, decision-making, accounting software, and accounting knowledge skills strengthen accountants' ability to adopt AI responsibly.

Source: Prepared by the researcher based on NVivo 15.

The first relationship, **Barriers limit Personal Readiness**, was supported by six coded references across six interview files, with coverage ranging from 2.86% to 5.37%. The coded references show that participants linked limited readiness to lack of specialized training, limited experience with modern tools, resistance to change, difficulty using AI tools, limited technical resources, and uncertainty regarding regulations and professional standards. This indicates that personal willingness alone is not sufficient for AI adoption. Even when accountants are open to AI, their readiness may remain limited if the professional and organizational environment does not provide training, resources, regulatory clarity, and accessible tools.

The second relationship, **Skills support Personal Readiness**, was supported by eight coded references across six interview files, with coverage ranging from 0.43% to 3.81%. The coded references show that participants associated readiness with basic IT skills, analytical skills, use of AI-related tools, financial analysis, accounting software skills, mastery of accounting laws, decision-making ability, and critical thinking. This confirms that AI readiness is not only a matter of attitude or openness; it also depends on whether accountants possess the competencies

required to understand, use, and evaluate AI outputs.

Together, these two relationships reinforce the main interpretation of the study. Barriers reduce the possibility of full readiness, while skills increase the possibility of effective and responsible AI adoption. Therefore, the Algerian accounting profession cannot be considered fully ready merely because participants hold a positive perception of AI. Readiness requires removing barriers and strengthening the skills that allow accountants to use AI critically, safely, and in accordance with professional requirements.

The relationship analysis therefore supports the overall conclusion that AI readiness in Algerian accounting is **partial**. Positive perception and willingness exist, but they must be supported by training, resources, professional competence, technological skills, and clearer institutional conditions.

3.4 Overall Readiness Assessment:

Based on the empirical findings, the readiness of the Algerian accounting profession for artificial intelligence adoption can be assessed as **partial readiness**. The profession is not completely unprepared, because participants showed awareness of AI, recognized its potential benefits, and generally accepted it as a supportive tool for accounting work. However, this readiness remains incomplete because the conditions required for effective and responsible adoption are not yet fully developed.

The results indicate that AI adoption in Algerian accounting is possible, but it should be gradual and controlled. Positive perception and willingness to learn must be supported by practical training, stronger technological infrastructure, clearer regulation, cybersecurity measures, and continuous human supervision. In this sense, the Algerian accounting profession appears to be in an early transitional stage, moving from basic digitalization toward potential AI integration, but not yet fully ready for advanced or large-scale adoption.

Therefore, the overall conclusion is that AI readiness exists mainly at the level of awareness and acceptance, while practical readiness remains limited by skills gaps, uneven infrastructure, regulatory uncertainty, and limited direct experience with AI tools. Full readiness will depend on the ability of professional bodies, educational institutions, public organizations, and private firms to transform this initial openness into structured and responsible implementation.

CONCLUSION

- **General Overview of the Study:**

Artificial intelligence has become one of the most significant technological developments affecting the accounting profession. Its applications in data processing, financial reporting, auditing, error detection, and decision support have created new opportunities for improving the quality and efficiency of accounting work. At the same time, AI adoption raises several concerns related to skills, infrastructure, regulation, data protection, professional judgment, and accountability.

This study aimed to assess the readiness of the Algerian accounting profession for the adoption of artificial intelligence technologies. The objective was not only to determine whether AI can be useful in accounting, but also to examine whether the Algerian accounting environment possesses the necessary human, technical, organizational, and regulatory conditions for effective and responsible adoption.

The theoretical part of the study presented the concept of artificial intelligence, its evolution, its main technologies, and its applications in accounting. It also discussed the transformation of accounting functions under AI-driven technologies and highlighted the opportunities and risks associated with this transformation. The empirical part relied on a qualitative approach based on semi-structured interviews with thirteen participants from the private sector, public sector, and higher education. The collected data were analyzed using NVivo 15 through thematic analysis.

- **Methodological Summary:**

The empirical part of the study was based on a qualitative approach using semi-structured interviews with thirteen participants from different professional backgrounds. The sample included accountants from the private sector, accounting managers from public institutions, and university lecturers specialized in accounting. This diversity allowed the study to capture different perspectives from

the Algerian accounting ecosystem.

The data were analyzed using NVivo 15 through thematic analysis. The main themes included AI perception, personal readiness, adoption factors, required skills, barriers, infrastructure, regulation, benefits, and risks. This methodological choice allowed the study to move beyond general assumptions and examine the issue of AI readiness through direct professional perceptions and contextual interpretation.

- **Main Empirical Findings:**

The empirical findings show that participants generally hold a positive but cautious perception of artificial intelligence. AI was mainly viewed as a supportive tool that can assist accountants, improve performance, and enhance accounting tasks. Most participants did not perceive AI as a full replacement for accountants, but emphasized that human judgment, legal knowledge, and professional responsibility remain essential.

The study also found that personal readiness exists, but remains uneven. Some participants had already used AI-related tools, while others had limited or no practical experience. The dominant attitude was careful adoption, meaning that participants were open to AI but preferred gradual and controlled integration supported by training and verification of outputs.

Skills appeared as a central condition for AI adoption. Participants emphasized the need for technological skills, analytical and decision-making skills, and strong accounting knowledge. This indicates that the future accountant must combine digital literacy with professional expertise in order to use AI tools effectively and responsibly.

The findings also revealed several barriers limiting AI adoption, especially lack of training, resource challenges, organizational constraints, tool complexity, mindset challenges, weak technological skills, and insufficient advanced accounting competence. These barriers show that positive perception alone is not enough to

achieve real readiness.

Infrastructure readiness was found to be partial and uneven. Some organizations already use computers, accounting software, internal systems, and digital platforms, but this does not necessarily mean that they are ready for advanced AI integration. The study also found that some participants confused AI with basic digital tools, which suggests that digitalization should not be automatically considered AI readiness.

The regulatory framework also represents a key condition for adoption. While some participants considered the Algerian accounting framework compatible with AI in principle, others emphasized the need for updates to address issues such as responsibility, cybersecurity, data protection, transparency, and validation of AI-generated outputs.

The strongest perceived benefits of AI were improved accuracy, time saving, and error reduction. However, participants also identified important risks, including over-reliance on AI outputs, output quality problems, cybersecurity threats, inconsistent regulations, and uneven adoption across sectors.

Overall, the findings indicate that the Algerian accounting profession demonstrates partial readiness for AI adoption. There is awareness and willingness, but full readiness is limited by gaps in training, infrastructure, regulation, practical experience, and conceptual clarity.

- **Overall Readiness Assessment:**

Based on the overall findings, the study concludes that the Algerian accounting profession demonstrates partial readiness for AI adoption. The profession is not fully unprepared, because participants show awareness, interest, and recognition of AI's potential benefits. In particular, participants generally perceive AI as a supportive tool rather than a full replacement for accountants. However, positive perception alone does not mean full readiness, because important gaps remain in

training, infrastructure, regulation, practical experience, AI literacy, and institutional support.

- **Hypotheses Results:**

The empirical findings allowed the study to discuss the hypotheses qualitatively.

H1: Algerian accounting professionals generally perceive artificial intelligence as a supportive tool rather than a full replacement for accountants.
This hypothesis was supported. The findings showed that participants generally had a positive perception of AI and viewed it as a tool that can assist accountants, improve efficiency, save time, reduce errors, and support decision-making. However, they did not consider AI a full replacement for accountants, because human judgment, professional responsibility, accounting expertise, and legal interpretation remain necessary.

H2: Weak digital infrastructure negatively affects AI adoption in Algerian accounting practices.
This hypothesis was **partially supported**. Infrastructure is not completely absent, but it remains uneven and often closer to basic digitalization than to real AI readiness.

H3: The lack of adequate skills and digital competencies among Algerian accountants limits the effective adoption of AI.
This hypothesis was **supported**. Skills and training appeared as central requirements for AI adoption, especially technological, analytical, and accounting competencies.

H4: Resistance to change and low trust in advanced technologies reduce the acceptance of AI in the Algerian accounting profession.
This hypothesis was **partially supported**. Some cautious attitudes and mindset challenges exist, but participants generally perceived AI positively when it was

framed as a supportive tool

- **Recommendations:**

Based on the findings, several recommendations can be proposed.

First, professional training programs should be developed to improve accountants understanding of AI tools and their practical use in accounting. These programs should focus not only on software use, but also on data analysis, output verification, cybersecurity awareness, and professional responsibility.

Second, accounting education should be updated to include AI literacy, digital accounting tools, data analytics, and emerging technologies. Universities and training institutions have an important role in preparing future accountants for an AI-driven professional environment.

Third, Algerian organizations should improve their technological infrastructure before adopting advanced AI tools. This includes modernizing accounting systems, improving data management, strengthening cybersecurity, and ensuring reliable digital platforms.

Fourth, AI adoption should be gradual. Organizations may begin with limited applications such as invoice processing, report preparation, error detection, and data analysis before moving toward more advanced uses. This would allow accountants to gain experience while reducing implementation risks.

Fifth, the Algerian regulatory framework should be updated to address AI-specific issues in accounting. Professional bodies and policymakers should clarify how AI tools may be used, who remains responsible for AI-generated outputs, and how data should be protected.

Finally, AI should be promoted as a supportive tool rather than a replacement for accountants. Human supervision, professional judgment, and accountability must remain central in all AI-assisted accounting practices.

- **Future Research Directions:**

Future research may extend this study by using a larger quantitative sample in order to measure AI readiness statistically among Algerian accountants. Comparative studies could also examine differences between public and private organizations, large and small firms, or different regions of Algeria.

Further research could focus on specific applications of AI in accounting, such as auditing, taxation, financial reporting, management accounting, or fraud detection. It would also be useful to study organizations that have already adopted advanced digital or AI-based tools in order to identify practical challenges and success factors.

Another important direction would be to examine the role of accounting education in preparing students and young professionals for AI-driven accounting work. This would help clarify how universities and professional institutions can contribute to developing AI-ready accountants.

- **Final Statement:**

In conclusion, artificial intelligence represents both an opportunity and a challenge for the Algerian accounting profession. It offers the possibility of improving accuracy, saving time, reducing errors, and supporting better decision-making. However, these benefits cannot be achieved automatically. They require preparation, training, regulation, infrastructure, and responsible professional use.

The Algerian accounting profession is moving toward digital transformation, but AI adoption remains at an early and partial stage. The future of AI in Algerian accounting will depend on the ability of professionals, institutions, educators, and policymakers to transform awareness into real readiness, and cautious acceptance into effective implementation.

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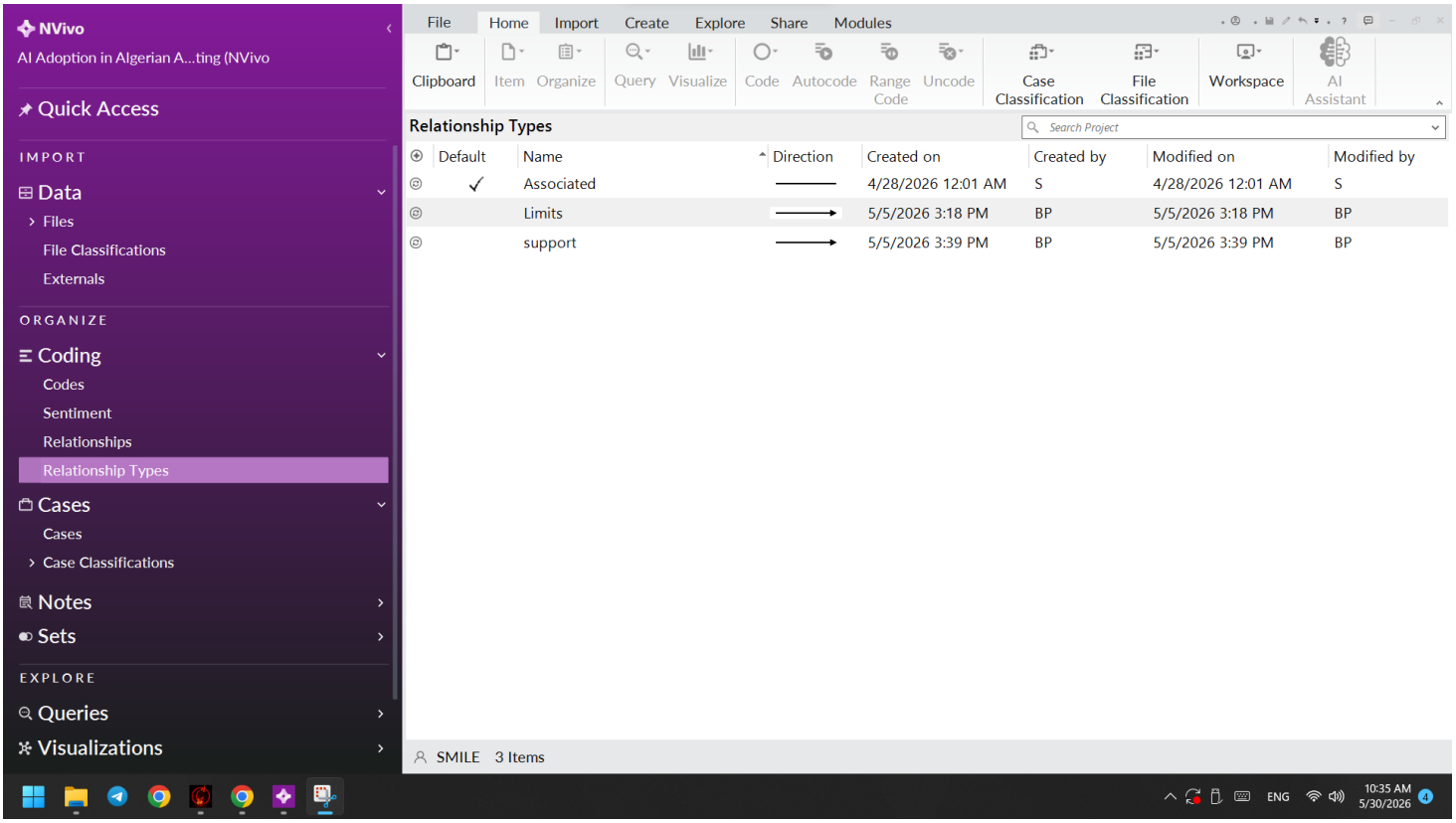
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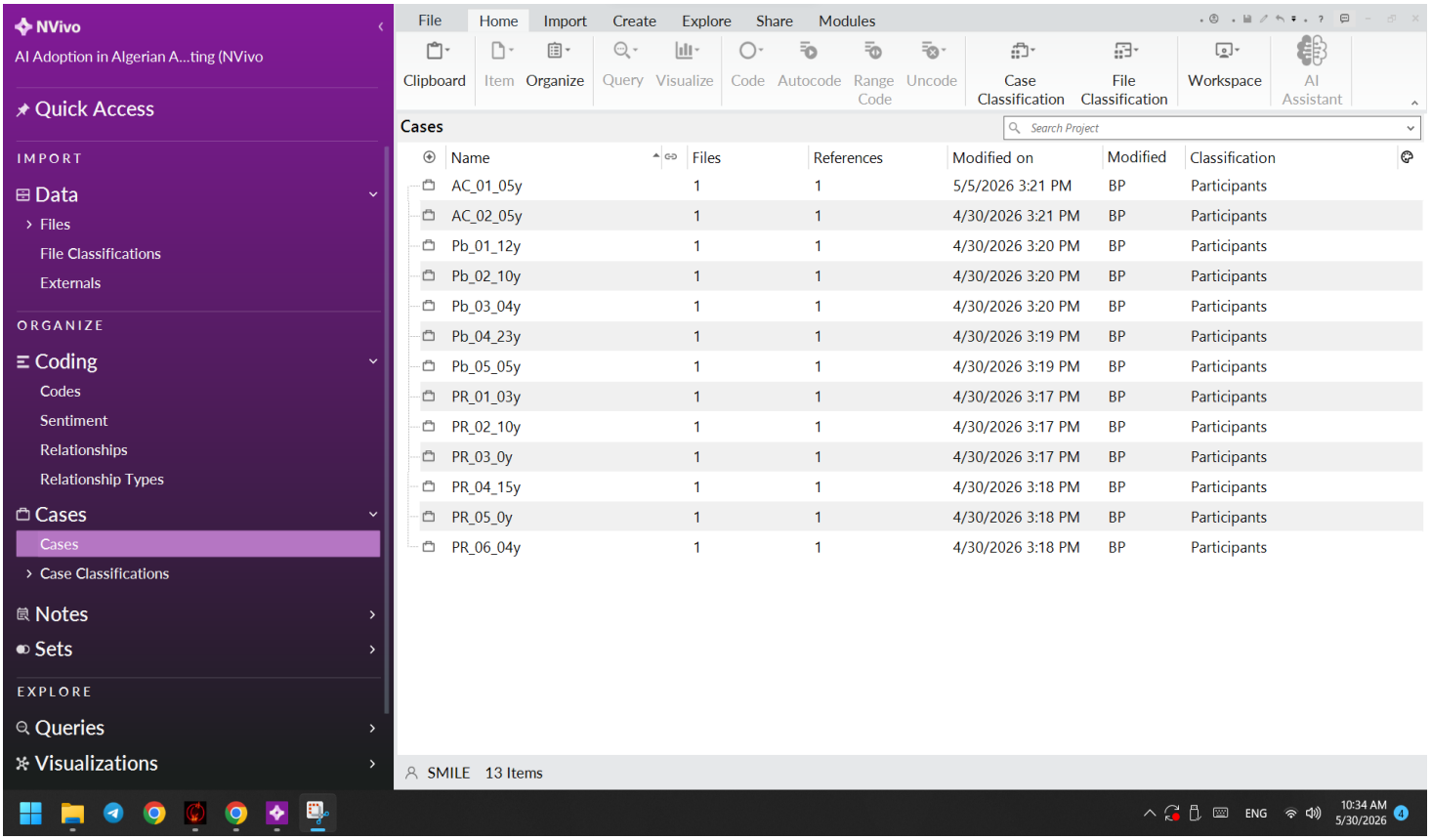
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ANNEXES

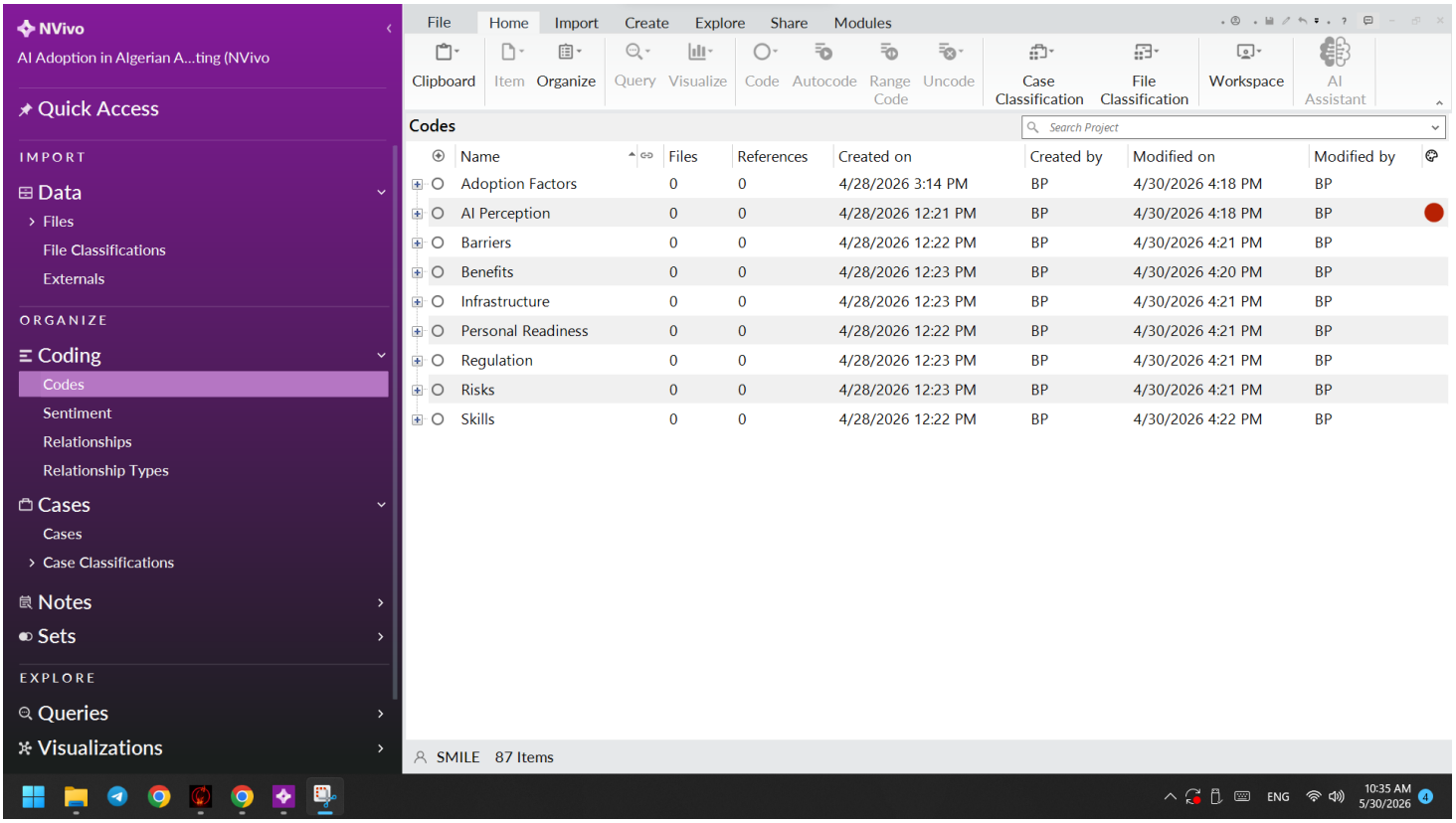
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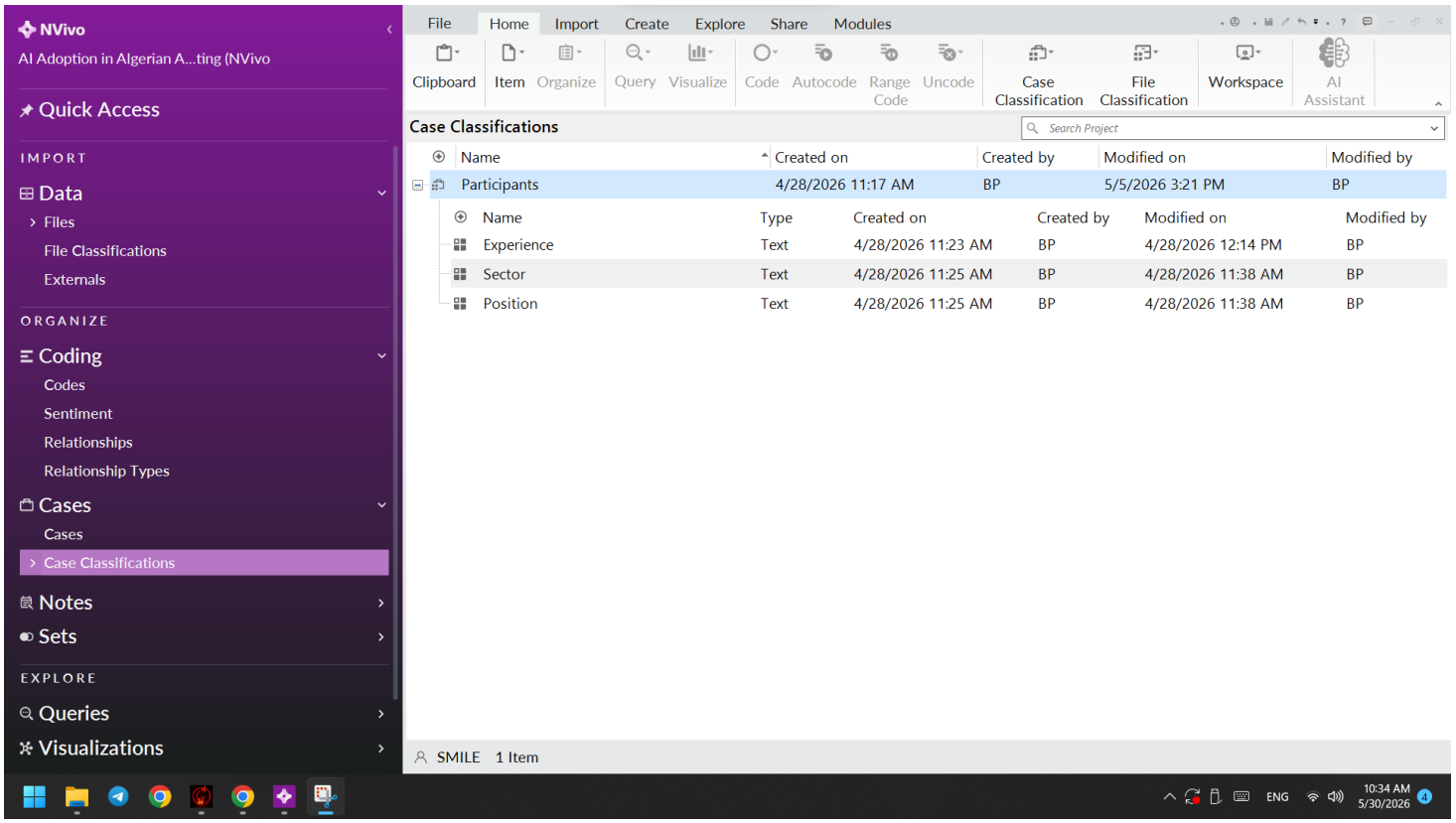
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