



The impact of artificial intelligence applications on the development of the accounting profession: A case study on the Libyan Iron and Steel Company – Misrata

Naiema M. A. Mohamed

Faculty of Information Technology
Sirte University-Libya
Naima.musa@su.edu.ly

Abdelmuttalab. M. Amraaiyid

Faculty of Economic
Sirte University-Libya
A-Amraaiyid@su.edu.ly

Abstract:

The aim of this study is to examine the impact of artificial intelligence (AI) in enhancing financial accounting practices within the Libyan Iron and Steel Company. To achieve this objective, the study employed a structured questionnaire distributed randomly to 35 employees working in financial departments, of which 34 valid responses were returned and analyzed. The findings revealed a statistically significant effect of AI awareness on the development of financial accounting practices, indicating that higher levels of knowledge and understanding of AI tools positively influence employees' ability to adopt and apply these technologies. The results also confirmed that artificial intelligence contributes effectively to improving the accuracy, speed, and overall quality of accounting processes within the company. However, the study identified several technical, human, and administrative challenges—such as limited technological infrastructure, insufficient training, and resistance to change that impede the broader integration of AI in the accounting environment. The study recommends increasing awareness and training programs on artificial intelligence for financial employees, investing in modern digital systems and infrastructure that support AI applications, and adopting organizational strategies aimed at overcoming institutional and human barriers. These steps are essential for enabling the company to fully benefit from AI technologies and to enhance the effectiveness, reliability, and future readiness of its financial accounting operations.

Keywords:

Artificial intelligence,
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أثر تطبيقات الذكاء الاصطناعي على تطوير مهنة المحاسبة دراسة حالة عملية على الشركة الليبية للحديد والصلب – مصراتة

أ. عبد المطلب مُحمد موسى امريض

كلية الاقتصاد/ جامعة سرت - ليبيا
A-Amraaiyid@su.edu.ly

أ. نعيمة موسى أمريض مُحمد

كلية تقنية المعلومات/ جامعة سرت - ليبيا
Naima.musa@su.edu.ly

الكلمات المفتاحية:

الملخص:

تهدف هذه الدراسة إلى بحث دور الذكاء الاصطناعي في تحسين ممارسات المحاسبة المالية في الشركة الليبية للحديد والصلب. ولتحقيق هذا الهدف، استخدمت الدراسة منهجاً كمياً من خلال استبيان مُهيكل وُزِع عشوائياً على 35 موظفاً يعملون في الإدارات المالية، وقد تم استلام 34 ردًا صالحًا وتحليلها. كشفت النتائج عن تأثير ذي دلالة إحصائية للوعي بالذكاء الاصطناعي على تطوير ممارسات المحاسبة المالية، مما يشير إلى أن ارتفاع مستوى المعرفة والفهم لأدوات الذكاء الاصطناعي يؤثر إيجاباً على قدرة الموظفين على تبني هذه التقنيات وتطبيقها. كما أكدت النتائج أن الذكاء الاصطناعي يُسهم بفعالية في تحسين دقة وسرعة وجودة العمليات المحاسبية داخل الشركة. ومع ذلك، حددت الدراسة العديد من التحديات التقنية والبشرية والإدارية، مثل محدودية البنية التحتية التكنولوجية، وعدم كفاية التدريب، ومقاومة التغيير، والتي تعيق التكامل الأوسع للذكاء الاصطناعي في بيئة المحاسبة. توصي الدراسة بزيادة برامج الوعي والتدريب على الذكاء الاصطناعي للموظفين الماليين، والاستثمار في الأنظمة والبنية التحتية الرقمية الحديثة التي تدعم تطبيقات الذكاء الاصطناعي، وتبني استراتيجيات تنظيمية تهدف إلى التغلب على العوائق المؤسسية والبشرية. تُعد هذه الخطوات ضرورية لتمكين الشركة من الاستفادة الكاملة من تقنيات الذكاء الاصطناعي، وتعزيز فعالية وموثوقية عمليات المحاسبة المالية، ورفع مستوى جاهزيتها للمستقبل.

الذكاء الاصطناعي، مهنة المحاسبة، ليبيا، اعتماد التكنولوجيا.

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Introduction

In today's world, artificial intelligence and big data analytics techniques are extensively employed across various domains to address challenges encompassing classification, planning, prediction, optimization problems, diagnostics, and complex computations (Hanetseder et al., 2021; Emetaram and Uchime, 2021; Holmes and Douglass, 2021). Furthermore, they are utilized in the collection and analysis of customer information, the extraction of insights into customer wants and needs, and the subsequent application of these insights to business development (Kommunuri, 2022).

Leveraging artificial intelligence (AI) and big data technologies, the efficient extraction and processing of data have become feasible for achieving diverse objectives across numerous domains. These objectives encompass addressing challenges in classification, planning, prediction, optimization, diagnosis, and computation, as well as gaining an in-depth understanding of customers through the collection and analysis of their information and the extraction of actionable insights to meet their needs (Alaisawi & Khalifa, 2020).

Artificial intelligence (AI) is revolutionizing accounting and finance, encompassing data processing, financial operations, and auditing. AI includes technologies such as machine learning (ML), which mimics human learning to analyze data and predict; natural language processing (NLP), which understands human language, creates documents, and verifies accounts; and optical character recognition (OCR), which converts images of text into readable data, generates reports, and matches documents. In financial accounting and bookkeeping, machine learning can be used for financial forecasting, fraud detection, and risk analysis. Natural language processing (NLP) is used to create documents and verify accounts. OCR is used to generate reports, enter data, and reconcile invoices (Bojańczyk, 2024).

The fields of accounting and finance are undergoing a radical transformation thanks to the increasing reliance on data-driven decisions (Wang, 2011). Big data has enabled professionals in these fields to analyze vast amounts of information and make more accurate decisions. The use of this data in accounting and finance is seen as a transformative force. For example, big data and artificial intelligence (AI) technologies can be leveraged to enhance the accuracy and reliability of accounting processes and reduce

operational costs. Furthermore, big data contributes to improved financial decision-making, such as more efficient investment portfolio management. However, research into practical ways to apply big data and AI to improve accounting and finance performance remains relatively limited. Therefore, exploring the potential of these technologies in the accounting and finance professions is of paramount importance (Saleem et al. 2023).

Conceptual framework:

The business sector is witnessing a growing shift towards adopting artificial intelligence (AI) across all its operations, and auditing is no longer immune. The integration of AI enables companies to enhance their efficiency by reducing errors, managing risks efficiently, gaining a competitive edge, and enhancing employee performance. The introduction of AI into the accounting and auditing fields is expected to bring about radical changes in this profession, and its impact will become more profound with the continued advancement of information technology.

AI is designed to perform tasks that were previously limited to human mental capabilities. It allows computers to predict based on available data and adapt to different situations. AI aims to build computer systems capable of operating intelligently and autonomously, allowing accountants to invest their time in examining the integrity and accuracy of financial data and become trusted advisors to businesses. In a profession that relies on routine tasks like accounting, AI is seen as an alternative to human effort to improve performance.

It is clear that the role of accounting and finance in economic development has increased at various levels. Accounting is the primary business language for decision-making and accountability assessment and has expanded beyond traditional reporting to encompass areas of forecasting, analysis, and control. Finance, on the other hand, enables access to capital and enhances the efficiency of resource allocation.

However, the sector faces challenges related to inefficient data processing, its suboptimal use, and the difficulty of extracting information from text. Some accounting and financial decisions rely on subjective estimates and vague information, and traditional solutions lack the efficiency to solve complex problems in the era of big data.

Therefore, the need for emerging technologies such as artificial intelligence (AI) is emerging, as it has emerged as a pivotal technology and offers significant opportunities for accounting and finance in improving operations and enhancing efficiency, as seen in large companies. AI technologies are essential for automating financial processes and capturing complex relationships in data, enabling the efficient resolution of nonlinear problems and analysis of big data (Yi. et al., 2023; Zamain and Subramanian, 2024).

It is believed that the use of artificial intelligence has significantly transformed the performance of tasks in the accounting and auditing profession. It has enabled accountants and auditors to streamline their work processes and enhance their efficiency. Data analysis is a key area where the impact of AI has been clearly evident. Given the massive amounts of data professionals deal with, AI algorithms are able to analyze and process this data with superior speed and accuracy, eliminating manual entry and reducing the likelihood of human error. These applications can also perform complex calculations and detect patterns in data, helping accountants and auditors make informed decisions based on accurate and reliable information.

Furthermore, AI-powered applications have revolutionized financial statement preparation. Whereas accountants used to spend a long time manually reconciling accounts and preparing financial reports, these complex tasks have now been automated thanks to AI. This frees up valuable time for accountants and allows them to focus on more strategic activities. Intelligent software can extract financial data from diverse sources, integrate it, and prepare financial reports with minimal human intervention. By integrating AI applications into the accounting and auditing field, accounting firms have achieved numerous benefits, including improved efficiency, increased accuracy, and enhanced decision-making capabilities (El-Mousawi, 2023).

As indicated above, the impact of artificial intelligence should be seriously addressed by accountants, even though it cannot totally replace accounting. As a result, accountants should never stop learning to advance their careers and, likewise, engage in management in order to become successful, skilled accountants (Liucang, 2017).

Professional ability is the first. In other words, the most crucial of the various skills that accountants possess is their ability to manage every aspect of accounting, financial statements, and taxes. As an

accountant, it is problematic if your professional quality is unqualified due to a lack of strong professional abilities. As a result, accountants ought to continue studying and developing their skills (Mengyu, 2017).

The second is managerial abilities. That is, to become proficient in team management and provide a solid basis for future development. Accounting professionals may not immediately benefit much from developing management abilities, but they will

recognize their value when they advance to finance manager or higher roles (Li & Zheng, 2018).

Computer skills come in third. The defining feature of the big data era today is cloud computing. Computerized accounting, the current paperless workplace, and paper accounting all demonstrate the value of computers. Thus, accountants must learn specific computer programming techniques in addition to some basic computer operations in order to improve their own data processing skills.

Fourth, the capacity for analysis. That is, the capacity to quickly read statements and manage risks. The accounting statement provides accountants with a wealth of financial data for analysis. As a result, it is crucial to precisely and sensibly assess and analyze risks. The fifth is decision-making ability, which is the capacity to swiftly and accurately assess a project's quality. Financial staff must be in charge of financial management while at work. They must use the economic environment to assess the state of the competition in addition to their own finances, which serves as a guide for businesses' short-term and long-term project decisions and opinions (Mengyu, 2017).

Sixth, the capability to forecast, which is the expense of overall planning, and the ease of managing tax and fiscal resources. Keep an eye on expenses, offer insightful guidance to help businesses save costs, and forecast future economic trends and business risk. The seventh is the capacity for thought. The ability must be improved and summarized. Consider, for instance, how the business might effectively avoid paying taxes, how to increase the effectiveness of fund usage, and so forth. Managers will be able to recognize your value to the company as a result.

Accounting data will significantly alter an organization's internal operations as well as its external survival and growth. The transition from finance and accounting to management and accounting jobs must

be finished by developing the skills of compound finance and accounting in order to respond to the advancement of artificial intelligence.

Accounting talent should be knowledgeable about accounting theory and practice, have strong IT skills, and be proficient in capital operation, internal control, management, accounting, tax, finance, insurance, and other areas related to accounting in the field of one or more professional knowledge and practical operation. The work involved in all aspects of the advanced strain and disposal ability can be seen in the field of accounting control as the center of a wide range (Mengyu, 2017). In principle, according to Li & Zheng (2018), the following preventative actions should be taken going forward by basic accounting staff and the accounting sector as a whole:

First, recognize the shift from traditional accounting to management accounting and adjust to the evolving accounting work environment: In the era of artificial intelligence, robots can efficiently and accurately supply a vast amount of financial data, necessitating the acquisition of professional financial analysis skills by the accounting staff. The financial information extracted from massive amounts of data is valuable to the company's future development. As a result, accountants need to actively alter their way of thinking, give up the accounting role of traditional accounting, and accurately predict the present and future financial prospects of businesses. Develop the capacity for management analysis, raise knowledge of enterprise management, actively participate in economic activities, accomplish management tasks, and offer insightful recommendations and choices for businesses.

Second, adjust to scientific and technological advancements while determining their own worth and work target positioning: The accounting sector has a much greater need for interdisciplinary talent due to the quick growth of artificial intelligence. In addition to being able to use artificial intelligence, accounting staff members must also be proficient in the analysis of financial data and have a thorough understanding of the business, combining big data with AI with practical work. Therefore, as accounting staff members, they should actively contribute to the advancement of artificial intelligence and management accounting, enhance their professional quality, encourage management performance, improve their overall planning and professional competence, and enhance their capacity to handle pressure in real-world tasks (Li & Zheng, 2018).

Finally, learning computer and artificial intelligence-related technologies and adjusting to the advancement of information: Artificial intelligence will increase the value of accountants' labor rather than limiting it to routine accounting tasks. Accountants should be able to fully utilize artificial intelligence and pick up new information rapidly. They ought to realize that scientific and technological advancements are unavoidable. The employment of robots is not only useful to the advancement of the accounting profession, but the accounting industry is also in need of artificial intelligence as it develops. As a result, accounting staff members must actively adjust to new developments and modify their own knowledge bases and ways of thinking (Li & Zheng, 2018).

The study problem:

The world is witnessing a rapid shift towards the use of artificial intelligence (AI) technologies in the financial and accounting fields due to their accuracy, speed, and high capacity for data analysis (Halim, 2023). However, the readiness of Libyan industrial institutions, such as the Libyan Iron and Steel plant, to adopt these technologies remains unclear. There is also a lack of accurate information regarding accountants' awareness of these technologies and their understanding of their role in improving the quality of accounting processes. Furthermore, there are indications of technical, human, and administrative challenges that may hinder their implementation (Alhammali, 2025).

Therefore, the research problems are formulated as the following:

- 1-To what extent do accountants in the iron and steel complex have awareness and knowledge of artificial intelligence tools?
- 2-How is the artificial intelligence help to enhance accounting procedures?
- 3-What are the obstacles preventing the use of artificial intelligence?

The study hypothesis:

Based on the theoretical framework and prior research, three key hypotheses are formulated. The first hypothesis (H1) postulates that there is no statistically significant effect of the level of awareness of artificial intelligence on the financial accounting profession in the iron and steel plant.

The second hypothesis (H2) suggests that artificial intelligence does not contribute effectively to improving

the quality and efficiency of accounting processes within the iron and steel plant.

The third hypothesis (H3) posits that technical, human, and administrative challenges do not pose an obstacle to the application of artificial intelligence in financial accounting at the iron and steel plant. A structured research technique is used to explore these predictions, offering empirical insights into how AI affects financial practices. A questionnaire survey was administered to a random sample of thirty-five financial personnel as part of the study's descriptive analytical methodology.

The study objectives:

Assessing the impact of artificial intelligence on the financial accounting profession in the iron and steel complex in Libya, identifying the impact of awareness, the challenges affecting it, and the extent of its relationship to the performance and effectiveness of accounting operations.

The importance of the study:

This study is important because artificial intelligence is playing an increasingly important role in the development of the financial accounting profession, especially in large industrial sectors like the Libyan iron and steel complex. In light of the global trend toward automation and digital transformation, it is now crucial to evaluate Libyan institutions' awareness of implementing these technologies, ascertain the degree of employee awareness of them, and identify the obstacles to their adoption.

Research methodology:

This study was designed using a descriptive and analytical technique based on the research questions and objectives. As a result, a theoretical framework for all ideas linked to the significance of planning was presented as part of the research. The analytical component depended on the questionnaire's design.

Based on the aforementioned, books and references associated with the research issue served as the secondary sources for the study in order to clarify the research literature from previous concepts and studies. A questionnaire was created to gather primary data in order to evaluate the research hypotheses and connect the theoretical framework to find answers to the research questions.

Statistical methods:

1 – Standard deviation and arithmetic mean.

2 – Cronbach's alpha and reliability coefficient.

3 – T-TEST.

Questionnaire forms and distribution results were as follows:

Table (1) shows the distribution of the questionnaire

Response rate	Forms not returned	Received forms	Forms sent
%97	1	34	35

This table displays the number of questionnaires distributed to the study sample, which consists of staffs of the Iron and Steel Company, the number of questionnaires received, and the number of questionnaires that were valid for analysis.

Methods:

This study uses a survey approach and a quantitative research design to methodically evaluate AI's impact on financial accounting at Libyan Iron and Steel Company. Examining correlations between quantifiable variables using a quantitative approach allows for statistical validation of AI's effects on operational effectiveness, financial accuracy, and regulatory compliance (Ukpong et al., 2019). In order to ensure that the results represent industry trends and particular problems for applying AI technologies in the accounting profession, the descriptive survey method makes it easier to gather structured data from auditing and accounting experts (Al Jaber, 2020).

Data collection tool (questionnaire):

To accomplish the goals of the study, a questionnaire covering every facet of the issue and its variables was created. A statement outlining the goal of the study and guaranteeing that participants' information would be kept private and not shared with outside parties was provided at the start of the questionnaire. The survey comprised two sections:

- 1- Section One, "Personal information of participants" describes the characteristics of the study sample.
- 2- Section Two: This has been divided up into a number of paragraphs and theories. These paragraphs were measured using a five-point Likert scale in order to assess and test the research variables:

Table No. (2) Grades for alternative answers to the questionnaire items

I strongly agree	I agree	Neutral	I disagree	I strongly disagree	Answer
5	4	3	2	1	Degree

Where the hypothetical arithmetic mean (for the measurement tool) was, extracted using the following mathematical equation: $(1+2+3+4+5)/5=3$

Validity of the questionnaire:

The questionnaire was sent to a group of arbitrators, members, and faculty members in order to verify the correctness of its phrasing and the suitability of the terminology employed, i.e., the validity and reliability of the model. The test value for every item in the questionnaire exceeded the test's minimal acceptable level, indicating that the research tool (the questionnaire) is stable. This implies that the researchers would get the same answers and estimated rate if the questionnaire were given to the same research sample again.

Table 3: Cronbach's alpha coefficient results for measuring stability and reliability Reliability statistics

	Questionnaire topics	Number of paragraphs	Value of Cronbach's alpha
1	Awareness of artificial intelligence	5	.730
2	The role of artificial intelligence in financial accounting	6	.955
3	Challenges and obstacles	6	.540
Total – Average		17	.742

Table (4) shows the characteristics of the research sample.

Personal Information	Statement	Frequency	Percentage
Sex	Male	31	%91.2
	Female	3	%8.8
Academic qualification	Less than 30	1	%2.9
	From 30 to 39	7	%20.6
	From 40 to 49	8	%23.5
	50 and above	18	%52.9
Years of experience in accounting	Diploma	6	%17.6
	Bachelor's degree	22	%64.7
	Master's degree	5	%14.7
	Doctorate	1	%2.9
Section	Less than 5 years	6	%17.6
	From 5 to 10 years	4	%11.8
	From 11 to 15 years old	1	%2.9
	More than 15 years	23	67.6%

Normal distribution test:

Table (5) Research sample answers based on the mean and standard deviation for the paragraph on awareness of artificial intelligence.

Paragraphs	One-Sample Statistics										Average	Standard deviation	Ranking of importance
	I strongly disagree		I disagree		Neutral		I agree		I strongly agree				
	%	T	%	T	%	T	%	T	%	T			
I do not have sufficient knowledge of the concept of artificial intelligence.	2.9	1	23.5	8	20.6	7	50	17	2.9	1	3.26	.963	3
The company does not have any programs or applications based on artificial intelligence in accounting	0	0	17.6	6	26.4	10	44.1	15	8.8	3	3.44	.894	1
There are no workshops or training courses on artificial intelligence in the company	0	0	23.5	8	23.5	8	44.1	15	8.8	3	3.38	.954	2
I do not follow any recent developments related to artificial intelligence	2.9	1	50	17	11.8	4	29.4	10	5.9	2	2.85	1.077	4
I do not see artificial intelligence as relevant to the accounting profession	11.8	4	52.9	18	32.4	11	0	0	2.9	1	2.29	.799	5
Average – Total											3.04	0.94	

The distribution of the research population, which includes roughly 34 samples pertaining to the investigation of artificial intelligence's effects on the accounting profession, is displayed in the table above. The following is the distribution of the research sample's gender-related questionnaire responses: men account for around 31% of the population, while women make up about 3%.

The research sample's age-related responses are distributed as follows: less than 30 years old (2.9%), 30 to 39 years old (20.6%), 40 to 49 years old (about 23.5%), and 50 years old and above (52.9%).

The distribution of responses about the research sample's educational backgrounds is as follows: diploma (17.6%), bachelor's degree (64.7%), master's degree (14.7%), and PhD (2.9%).

The research sample's answers to the questionnaire about years of professional accounting experience are as follows: fewer than five years (17.6%), five to ten years (11.8%), eleven to fifteen years (about 2.9%), and fifteen years or more (67.6%).

The distribution of the research sample department's questionnaire responses is as follows: purchasing (17.6%), financial accounting (47.1%), and others (35.3%).

The percentage of responses from the research sample about the study of the impact of artificial intelligence on the accounting profession is shown in the above table based on the results of the overall average (3.04) and standard deviation (0.94) for the paragraph on awareness of artificial intelligence. The arithmetic means for the following paragraphs were clearly higher than the hypothetical means for the measurement tool (3) based on the replies of the research sample.

1 - The research sample's responses to the sentence "The company does not have programs or applications based on artificial intelligence in accounting" were as follows: 8.8% strongly agreed, 44.1% agreed, 26.4% were neutral, 17.6% disagreed, and 0% strongly disagreed. The standard deviation was 0.894, and the average response was approximately 3.44.

2 - The research sample's responses to the assertion that "there are no workshops or educational programs on artificial intelligence offered by the company". The percentages were 44.1% agreed and 8.8% highly agreed. In contrast, 0% strongly disagreed, 23.5% disagreed, and 23.5% were neutral. The standard

deviation was 0.954, and the average response was roughly 3.38.

3- As shown in the table above, the research sample's responses to the statement "I do not have sufficient knowledge of the concept of artificial intelligence" were as follows: 2.9% strongly agreed, 50% agreed, 20.6% were neutral, 23.5% disagreed, and 2.9% strongly disagreed; the average response was roughly 3.26, and the standard deviation was 0.963.

4 - Four members of the research sample agreed (29.4%) and highly agreed (5.9%) with the statement "I do not follow any recent developments related to artificial intelligence," while 11.8% were indifferent, 50% disagreed, and 2.9% strongly disagreed. The standard deviation was 1.077, and the average response was almost 2.85.

5 - 32.4% of the research sample were indifferent, 52.9% disagreed, and 11.8% strongly disagreed with the statement "I do not see artificial intelligence as being related to the accounting profession," while 2.9% strongly agreed and 0% agreed. With a standard deviation of 0.799, the average response was almost 2.29.

Table (6) Research sample responses based on the mean and standard deviation for the impact of artificial intelligence on financial accounting

One-Sample Statistics													
Paragraphs	I strongly disagree		I disagree		Neutral		I agree		I strongly agree		Average	Standard deviation	Ranking of importance
	%	T	%	T	%	T	%	T	%	T			
Artificial intelligence does not contribute to improving the accuracy of financial data recording.	11.8	4	41.2	14	44.1	15	2.9	1	0	0	2.38	.739	2
It does not help in quickly detecting errors or financial manipulation.	14.7	5	44.1	15	41.2	14	0	0	0	0	2.26	.710	4
It does not provide more accurate and transparent financial reports.	11.8	4	47.1	16	38.2	13	2.9	1	0	0	2.32	.727	3
It does not contribute to speeding up the preparation of budgets and financial statements.	11.8	4	44.1	15	38.2	13	5.9	2	0	0	2.38	.779	2
Does not reduce repetitive human effort in accounting tasks	11.8	4	52.9	18	32.4	11	2.9	1	0	0	2.26	.710	4
Does not enhance artificial intelligence in internal control	8.8	.3	41.2	14	44.1	15	5.9	2	0	0	2.47	.748	1
Average – Total											2.35	0.74	

Based on the total average findings (2.35) and the standard deviation (0.74), the table above displays the percentage of responses from the research sample regarding the study of the impact of artificial intelligence on the accounting profession and the role of artificial intelligence in financial accounting, where the arithmetic means for those paragraphs exceeded the hypothetical mean for the measurement tool (3), as

is evident from the research sample's responses to the following paragraphs.

1 - The research sample's responses to the statement that "Artificial intelligence does not enhance internal control" were 5.9% agree and 0% strongly agree.

- 2 - According to the research sample, 5.9% of respondents agreed and 0% strongly agreed with the assertion that "artificial intelligence does not promote internal control." In contrast, 8.8% strongly disagreed, 44.1% disagreed, and 26.4% were indifferent. The standard deviation was 0.748, and the average answer was almost 2.47.
- 3 - In the study's sample, 0% highly agreed and 2.9% agreed with the assertion that "artificial intelligence does not contribute to improving the accuracy of financial data recording," whereas 44.1% were neutral, 41.2% disagreed, and 11.8% strongly disagreed. With a standard deviation of 0.954, the average answer was almost 3.38.
- 4 - A small portion of the study sample agreed (5.9%) and strongly agreed (0%) with the assertion that "does not contribute to speeding up the preparation of budgets and financial statements," whereas 38.2% were indifferent, 44.1% disagreed, and 11.8% strongly disagreed. With a standard deviation of 0.779, the average answer was almost 2.38.
- 5 - The proportion of the research sample that strongly agreed (0%) and agreed (2.9%) with the

- assertion "Does not deliver more precise and transparent financial reports" was 4%, whereas 38.2% remained neutral, 47.1% disagreed, and 11.8% strongly disagreed. The mean response was about 2.32, and the standard deviation was 0.727.
- 6 - The proportion of the research participants who expressed strong agreement (0%) and agreement (0%) with the assertion that "it does not facilitate the rapid identification of errors or financial discrepancies" was (0%), whereas (41.2%) maintained a neutral position, (44.1%) expressed disagreement, and (14.7%) articulated strong disagreement. The mean response was approximately (2.26) and the standard deviation was calculated to be (0.710).
- 7 - The proportion of the research sample that expressed strong agreement (0%) and agreement (2.9%) with the assertion "It does not mitigate repetitive human effort in accounting tasks" was (32.4%) neutral, (52.9%) in disagreement, and (11.8%) in strong disagreement. The mean response was approximately 2.26, accompanied by a standard deviation of 0.710.

Table (7) Research sample responses based on the mean and standard deviation for the section on challenges and obstacles

Paragraphs	One-Sample Statistics										Average	Standard deviation	Ranking of importance
	I strongly disagree		I disagree		Neutral		I agree		I strongly agree				
	%	T	%	T	%	T	%	T	%	T			
Weak technological infrastructure hinders the use of artificial intelligence.	0	0	0	0	20.6	7	61.8	21	17.6	6	3.97	.627	1
The lack of training and skills among accountants does not affect the effectiveness of artificial intelligence.	0	0	23.5	8	26.5	9	44.1	15	5.9	2	3.32	.912	2
The high cost of implementing smart systems is not an obstacle.	8.8	3	26.5	9	29.4	10	32.4	11	2.9	1	2.94	1.043	4
There is no fear that artificial intelligence will replace human accountants.	2.9	1	11.8	4	47.1	16	38.2	13	0	0	3.21	.770	6
Lack of administrative support does not hinder the introduction of artificial intelligence technologies.	8.8	3	32.4	11	35.3	12	23.5	8	0	0	2.74	.931	5
Legislation and laws do not represent an obstacle to the application of artificial intelligence in accounting.	0	0	11.8	4	52.9	18	32.4	11	2.9	1	3.26	.710	3
Average – Total											3.24	0.83	

The table above shows that the percentage of responses from the research sample regarding the impact of artificial intelligence on the accounting profession for the section on challenges and obstacles, according to the overall average results (3.24), and the standard deviation (0.83), where the arithmetic means for those paragraphs exceeded the hypothetical mean for the measurement tool (3), which is illustrated by

the responses of the research sample to the following paragraphs.

- 1 - The proportion of responses from the research sample indicated a strong agreement (17.6%) and agreement (61.8%) regarding the assertion that a deficient technological infrastructure impedes the effective utilization of artificial intelligence, whereas (20.6%) expressed neutrality, and neither (0%)

strongly disagreed nor (0%) disagreed. The mean response was calculated to be approximately (3.97), accompanied by a standard deviation of (0.627).

2 - Most participants in the research sample agreed or strongly agreed that the lack of training and skills among accountants does not impact how well artificial intelligence works. About 5.9% strongly agreed, and 44.1% agreed. Around 26.5% were neutral, 23.5% disagreed, and no one strongly disagreed. The average score was about 3.32, and the standard deviation was 0.921.

3- Most participants said that laws and regulations don't stop the use of artificial intelligence in accounting. About 2.9% strongly agreed, and 32.4% agreed. Around 52.9% were neutral, 11.8% disagreed, and no one strongly disagreed. On average, people scored about 3.26, with a spread of scores showing a standard deviation of 0.710.

4 - According to the majority of those surveyed, expensive costs of smart systems are not a significant concern. Specifically, 2.9% strongly agreed, and 32.4% agreed. Then, 29.4% were neutral, with 26.5% disagreeing and 8.8% strongly disagreeing. On average, the responses were about 2.94, and the spread of the answers was around 1.043.

5 - The research sample showed that a significant percentage of people strongly agreed that the absence of administrative support does not prevent the use of artificial intelligence technologies. A large number were neutral (35.3%), while about a third disagreed (32.4%) and a smaller group strongly disagreed (8.8%). The average score was around 2.74, and the standard deviation was 0.931.

6 - In the research sample, 0% of participants expressed strong agreement that artificial intelligence could replace human accountants, and 23.5% believed it was not at all likely to do so. 35.3% were neutral, 32.4% disagreed, and 8.8% strongly disagreed. The average response was around 2.74, and the standard deviation was 0.931.

Hypothesis testing:

Null hypothesis H0: There is no statistical evidence to suggest that the degree of awareness of artificial intelligence affects the role of the financial accountant in the iron and steel complex.

Alternative hypothesis H1: There is a strong correlation between the level of awareness of artificial intelligence and its effects on the financial accounting profession in the iron and steel sector.

Table (8) shows the One-Sample hypothesis test.

One-Sample Test							
Test Value = 0							
Mean	Std. Deviation	t	Df	Sig. (2-tailed)	Upper	Lower	Result of the null hypothesis
3.05	.653	27.196	33	.000	3.28	2.82	rejection

Statistically significant at a level of ≤ 0.05

The average score of the paragraphs on how artificial intelligence could alter the accounting profession at the Libyan Iron and Steel Company is 3.05, above the expected average. The difference is 0.653, with 33 degrees of freedom, a T value of 27.196, and a significance level (Sig. 2-tailed) of 0.029, which is lower than the standard 0.05 level. This shows that the result is statistically significant. It also means that the electronic payment system has a significant effect on satisfaction. Therefore, the statistical test shows that we should reject the null hypothesis (H0) and accept the alternative hypothesis (H1), which says that there is a significant effect of awareness about artificial intelligence on the financial accounting profession in the iron and steel industry.

Hypothesis Testing

Null hypothesis H0: Artificial intelligence is not aiding in any significant improvements or speeding up accounting tasks for the iron and steel industry.

Alternative hypothesis H1: Artificial intelligence enhances and expedites accounting tasks in the iron and steel sector.

Table (9) shows the One-Sample hypothesis test.

One-Sample Test							
Test Value = 0							
Mean	Std. Deviation	t	Df	Sig. (2-tailed)	Upper	Lower	Result of the null hypothesis
2.35	.665	20.601	33	.000	2.12	2.58	rejection

Statistically significant at a level of ≤ 0.05

The table above demonstrates that the mean of the paragraphs about the impact of artificial intelligence on the accounting profession at the Libyan Iron and

Steel Company is 2.12, which is less than the hypothetical arithmetic mean, which would be (3) with 0.665 difference. The analysis involves a degree of freedom of (33), a T value of (20.601), and a significance level of (0.05). It is also evident that the statistical function level shows a significant effect of the electronic payment system on satisfaction. The findings confirm the rejection of the null hypothesis (H₀) and the acceptance of the alternative hypothesis (H₁), which suggests that artificial intelligence significantly enhances the quality and efficiency of accounting operations within the iron and steel complex.

Hypothesis Testing

Null hypothesis H₀: Technical, human, and administrative challenges in the iron and steel industry do not prevent the use of artificial intelligence in financial accounting.

Alternative hypothesis H₁: Technical, human, and administrative challenges are preventing the use of artificial intelligence in financial accounting for the iron and steel industry. The technology is not yet ready for commercial use.

Table (10) shows the One-Sample hypothesis test.

One-Sample Test							
Test Value = 0							
Mean	Std. Deviation	t	Df	Sig. (2-tailed)	Upper	Lower	Result of the null hypothesis
3.24	0.465	40.670	33	.000	3.08	3.08	rejection

Statistically significant at a level of ≤ 0.05

As per the table above, the mean value of the paragraphs that discuss the role of artificial intelligence in the accounting profession at the Libyan Iron and Steel Company is (3.24), which differs from the hypothetical arithmetic mean of (3) by The analysis includes a degree of freedom of (33), a T value of (40.670), and a statistical significance level of (0.05). It is also evident that the statistical function level suggests a statistically significant effect of the electronic payment system on satisfaction. The conclusion from the statistical test confirms the rejection of the null hypothesis (H₀) and the acceptance of the alternative hypothesis (H₁), which posits that technical, human, and administrative challenges act as obstacles to the implementation of artificial intelligence in financial accounting at the Iron and Steel Complex.

Recommendations:

The following suggestions are made in light of the study's findings, which show a favorable correlation between accountants' awareness and expertise of AI tools, the application of AI, and the improvement of accounting practices at the Iron and Steel Complex:

Strengthening Accountants' Awareness and Knowledge of Artificial Intelligence:

Given that the results show a significant correlation between improved accounting processes and accountants' awareness and expertise of artificial intelligence capabilities, It is recommended that the business establish ongoing professional development initiatives. To further improve accountants' skills and optimize the advantages of AI adoption, these projects should concentrate on useful AI applications in accounting, such as automated bookkeeping, data analytics, and intelligent reporting systems.

Expanding the Use of Artificial Intelligence to Enhance Accounting Procedures:

The business should increase the integration of AI technology across key accounting operations since the findings show that AI greatly enhances the effectiveness, accuracy, and dependability of accounting processes. To further highlight the beneficial effects of AI on accounting performance, this covers transaction processing, financial reporting, cost accounting, and internal control systems.

Reducing Obstacles to Artificial Intelligence Adoption:

The study found a favorable correlation, but it also showed that several barriers prevent artificial intelligence from being fully utilized. As a result, it is advised that management overcome these obstacles by modernizing IT infrastructure, providing adequate funding, and creating precise implementation plans. Additionally, management support and awareness campaigns should be utilized to lessen resistance to change in order to facilitate a more smooth transition to AI-driven accounting solutions.

Conclusion:

By using artificial intelligence, the study demonstrates that accounting tasks at the Libyan Iron and Steel Company can be significantly improved. The most effective way to utilize this change is through

educating employees, investing in enhanced digital tools, and managing any issues with the current system. Making these improvements can help create a better, faster, and more prepared accounting system that supports the company's long-term goals and helps the company to stay competitive.

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