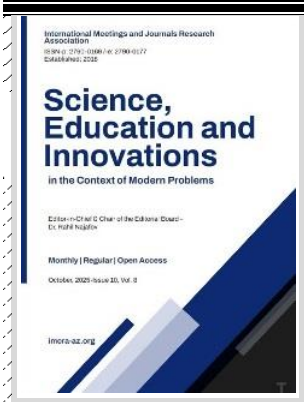

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Title of research article

From Automation to Inclusion: Transforming the Accountant's Role through Artificial Intelligence in the Digital Economy

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Keywords Accounting automation, artificial intelligence, digital economy, accounting inclusion, SME competitiveness, accountant's role

Abstract

The rapid acceleration of digital technologies is reshaping the global economy, with accounting standing at the forefront of this transformation. Traditionally confined to manual bookkeeping and compliance functions, accounting has evolved into a strategic discipline that enables organizations to optimize performance, innovate, and expand sustainably. Despite these advances, small and medium-sized enterprises (SMEs) have historically been excluded from high-quality accounting services due to financial and infrastructural barriers. The emergence of artificial intelligence (AI) and automation technologies has significantly altered this dynamic by democratizing access to accounting tools, fostering what can be termed 'accounting inclusion.'

This article examines how accounting automation, driven by AI, redefines the role of accountants from transactional record-keepers to strategic advisors and partners in decision-making. Through this transformation, accountants are empowered to provide predictive analytics, enhance risk management, and contribute directly to innovation and competitiveness. The study highlights the dual impact of AI: streamlining repetitive tasks while simultaneously expanding the scope of accountants' intellectual and advisory responsibilities.

Findings demonstrate that automation not only increases efficiency but also reduces barriers for SMEs, enabling broader participation in the formal economy and leveling the competitive playing field. The concept of accounting inclusion has profound implications for sustainable economic development, professional ethics, and the future of financial governance. The paper concludes that embracing AI is not a threat to accountants, but an opportunity to reposition their role in ways that reinforce their relevance in the digital economy.

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Introduction:

Tech innovation isn't just for fun; it's changing how professionals in fields like accounting do things. The digital change is really shaking up accounting, going way beyond just using computers. Artificial intelligence is changing the game.

Accountants used to spend a lot of time on boring stuff like entering data and matching invoices. Now, artificial intelligence can do that faster, better, and more accurately. This doesn't mean accountants are becoming obsolete, but that their jobs are changing. Accountants now need to change, stepping up from just recording data to becoming strategic partners. This means focusing on things like analysis, predicting trends, and giving advice based on data. That way, they can give more to management when they make choices. (Stein, 2024, p. 91)

Also, artificial intelligence is making accounting more accessible to others. Small and medium-sized businesses can get up-to-date financial statements and real-time reports at a reasonable cost. This helps these businesses know where they stand financially, make good choices, and get ready to grow. So, artificial intelligence isn't just making accounting easier. It's helping to build a fairer business world where every business owner can have the financial tools they need to succeed.

The research questions:

How is artificial intelligence changing the role of accountants in the digital age, and what impact will this change have on achieving corporate accounting inclusion?

- What AI tech is most obviously being used to automate normal accounting tasks?
- How does freeing up an accountant from boring tasks allow them to take on jobs that hold more strategy and value?
- What are the main problems and chances for the accounting field as new tech is adopted?
- How can small and medium-sized businesses use accounting automation to make their financial standing and competition better?

Study hypotheses:

• Hypothesis 1: Artificial intelligence significantly enhances the automation of routine accounting processes, minimizing errors and increasing process efficiency.

• Hypothesis 2: Liberating the accountant from manual activities redefines his role as a strategic adviser and financial analyst, thus enhancing his value to the business.

• Hypothesis 3: Artificial intelligence is a potential for accounting inclusion by making available low-cost tools to small and medium enterprises, but it has to overcome opposition in the form of resistance to change and cost of implementation.

The methodology followed: I'll use the descriptive analytical method, which involves two parts:

1. Descriptive Part: I'll explain what accounting automation and AI are, and I'll talk about the accountant's role in the digital age.

2. Analytical Part: I'll look at how accounting automation and the accountant's job have changed. I'll also see how automation helps with accounting inclusion, and I'll think about the good and bad things about this change.

This study is split into four main topics. The first is about accounting automation and how AI is used for normal accounting tasks. The second is about how the accounting profession has changed. The third is about the good and bad sides of using AI in accounting. The fourth looks at how AI can help make accounting more inclusive.

Axis 1: The notion of accounting automation and the utilization of artificial intelligence in standard operations

Accounting automation isn't just about doing things mechanically; it's about using smart tech to make things easier. It aims to smooth out those repetitive accounting tasks we all hate. It does this by using AI, like machine learning (which finds patterns in data), natural language processing (which reads accounting documents), optical character recognition (which pulls data from documents), and robotic process automation (which handles simple tasks automatically). (Majeed, 2024)

These methods help with everyday stuff like entering data, dealing with bills, matching up accounts, and handling who owes what. They can process bills and payments completely and even make basic reports automatically. This cuts down on mistakes and makes everything work better.

1. What is accounting automation?

1.1 Automation in accounting:

Accounting automation is a sophisticated phase of technological advancement, vastly different from the mechanization that was widespread during the 1980s and 1990s. While mechanization has mostly involved translating manual processes into electronic forms using basic software such as Microsoft Excel, contemporary automation, which became popular post-2010, employs artificial intelligence to do more than simple recording of information. It was estimated that in 2015, only 10% of companies were automating invoice entry, a figure projected to increase more than 60% by 2025. This new trend has taken the time spent to enter one invoice from several minutes to seconds, showing the convenience that artificial intelligence has brought.

1.2 Artificial Intelligence Technologies: Instruments of Transformation

Machine Learning (ML): Machine learning has now become the mainstream financial forecasting tool, replacing conventional methods relying on experience and historical figures. It is possible for machine learning algorithms to examine enormous volumes of intricate financial data from the past few years, in addition to external data such as market trends, to forecast cash flows with up to 95% accuracy. In 2018, a large firm deployed a machine learning solution that was applied to forecasting client credit risk and lowered bad debt by 15% over two years. (Kingdon, 2012)

3.1 Natural Language Processing (NLP): Natural language processing (NLP) has come a long way from just helping search engines. Now, it's key to understanding legal and financial documents.

Around 2020, financial advisors and law firms began using NLP to quickly go through hundreds of pages of leases. They could find important financial details like rental prices, payment dates, and penalty clauses in minutes. Before, this would take a lawyer several hours.

Also, Optical Character Recognition OCR tech has gotten way better. Back in the early 2000s, it was only about 70% accurate. Now, most specialized programs have an accuracy rate of over 99%. This allows for exact data extraction from both new and old receipts and invoices. Robotic Process Automation (RPA) software is also doing a great job helping employees avoid repetitive tasks. For example, an insurance company started using RPA in 2017 to automatically

match bank payment details with customer accounts. This cut the time spent on this from 50 hours a week to just 5, saving over 2,000 work hours each year.

2. Utilization of artificial intelligence in quotidian activities

1.2 Data Input and Transaction Processing

A 2019 study indicated that accountants allocate over 60% of their time to repetitive administrative duties, including data input and reconciliation. (Zakaria, 2025) However, automation can considerably diminish this duration. In 2021, a firm showcased its automation system, which processed 1,000 invoices monthly, thereby save around 160 hours of labor for the accounting staff, equivalent to the output of a full-time person.

2.2 Reconciliation and Settlement

The bank settlement process, which used to take accountants several days at the end of each month, is now performed in minutes using automation. A company in 2022 installed an automated matching system that sped up average monthly settlement time from three days to merely two hours. The system automatically matches 90% of transactions, leaving just 10% for manual intervention, thereby illustrating the huge efficiency of such technology. (OECD, 2024)

2.3 Invoice and Payment Processing

Late payment of bills is a big problem with organizations, and they pay fines and jeopardize their relationships with suppliers. Automation has been an acceptable solution to the issue. In 2020, a manufacturing firm implemented an automated platform to deal with the billing cycle comprehensively. The process has been extremely effective, with 98% of the bills being paid promptly. The benefit of this was not only in not having to pay late fees, amounting to $50,000 per year, but also a major improvement in the company's relationship with its supply base as well as to its reputation in the marketplace as a reliable business partner. This illustration demonstrates how automation improves internal efficiency as well as offering considerable monetary as well as strategic advantage.

2.4 Compiling Fundamental Reports

In 2023, organizations experienced a paradigm shift in financial reporting, with them adopting artificial intelligence programs that were capable of producing reports in real time. (Odonkor, 2024) These programs not only integrate data but also display this in the form of interactive control panels (Dashboards) that show earnings, losses, and expenditure in real time. This real-time monitoring capability provided management with a tremendous advantage by facilitating proactive decision-making rather than reactive feedback. For instance, using the tools, one retailer was in a position to recognize a certain product that was generating losses on the very day it was launched. Due to this real-time information, the company ceased the sale of the product instantly, averting massive losses that would have been realized in the monthly statements, thereby demonstrating the valuable role played by artificial intelligence in improving financial management's effectiveness and efficiency.

The second axis: The evolution of the accountant's position in the digital era

AI-powered automation has changed how accounting works. Accountants now handle more than just basic tasks like data entry and record-keeping. Because automation takes care of the easy stuff, accountants can focus on more important and difficult duties. (Springer, 2021)

Instead of just crunching numbers, they act as analysts, understanding complex info, spotting trends, advising on chances, and helping with big decisions. They also manage risk, looking at financial and business risks and checking the AI systems used to spot and measure risk.

This shift means accountants need to learn new skills, like examining and explaining data, understanding tech and big data, communicating insights clearly, and solving modern problems. Recent studies suggest accounting is changing fast.

According to the Institute of Chartered Accountants of England and Wales (ICAEW), computers will probably handle 82% of standard accounting tasks soon. This doesn't mean accountants will disappear, but their jobs will be very different. **1. Time Efficiency**: Automation of routine accounting tasks enables new accountants to concentrate on more vital tasks, potentially boosting efficiency by up to 70% and saving as much as 28 hours a month. (Eziefule, 2022) This time freed up enables them to deliver analytical insights into financial accounts, prepare future growth goals, and consider areas of compliance and risk management.

This step enables new accountants to concentrate on delivering informed data on financial reporting. Projecting and formulating strategies for growth. Examine risk management and compliance processes.

2. The transformation of the accountant's role: from "registrar" to "strategic partner"

The accountant's function has essentially shifted from that of a mere "recorder" of financial records to that of a "strategic partner" to management. His function has also evolved beyond the activity of financial statement preparation; now directly involved in the making of decisions and attaining competitive edge. This evolution is articulated in various new functions performed by the accountant. He initially served as a financial data analyst, applying artificial intelligence techniques to examine large volumes of data. A report by PwC also indicates that 90% of CEOs consider data-driven financial analysis to be key to success. An accountant can forecast future cash flows with accuracy of up to 95% and identify less profitable products, enabling the management to take appropriate decisions. Secondly, (Adelakun, 2023)the accountant evolved into a strategic advisor, moving from being just a provider of numerical numbers to an interpreter who offered actionable advice from those numbers. An Accenture study reveals that companies that use financial information in their decision-making process enjoy a 15% higher sales growth rate compared to their counterparts. By looking at expenditure and sales reports, the accountant can suggest to management that an additional outlet be opened or funds be invested in a particular advertising campaign and substantiate his suggestion with quantitative analysis. Thirdly, the accountant has emerged as a risk manager as sophisticated AI algorithms detect fraud. Fraud losses must fall between 1% and 5% of revenue, but these can be significantly minimized by artificial intelligence by tracking financial activity. For instance, if the system flags an abnormal trend, it immediately alerts the accountant to investigate, thus avoiding possible losses. The accountant later became a supervisor of intelligent systems, responsible for the verification of the accuracy and integrity of data in computerized systems, thus ensuring the reliability of information that informs decision-making.

3. Essential Skills Required for an Accountant

Today the whole gamut of areas an accountant needs to acquire skills beyond conventional accounting knowledge. Now analysis and critical thinking have become essential skills as the domain has shifted towards interpreting the numbers-how do they matter and what implications do they bear- from mere mathematical operations. A LinkedIn Learning survey found that in today's job market, these skills top the demand list. For instance, a well-trained accountant does not simply put together an expense report, but studies the figures to find the reasons for variations and recommends ways to control expenditures more efficiently. Secondly, an accountant must have a clear understanding of general technologies and big data and be able to use BI tools such as Tableau or Power BI to prepare interactive dashboards that communicate information about financial performance both effectively and clearly. Thirdly, communication and interpersonal skills are a must. This is due to the fact that the accountant must first convert complex, intricate facts into clear, widely accepted, and convincing conclusions. Instead of producing a report filled with figures, however, an accountant can explain to management why sales went down in a particular quarter, backed up with data and visual presentation. Lastly, this shift shows that accounting as such is not dying but is rather evolving to become increasingly important and powerful in the future of business.

The third axis: Challenges and possibilities in the adoption of artificial intelligence within the accounting profession:

In this part, we look at the pros and cons of using AI in accounting. Even though AI has lots of potential, getting it into accounting isn't always easy.

One of the biggest problems is that people don't like change. Some accountants and companies stick to old ways, which slows things down. It also costs a lot to get started with AI because you have to buy new tech and train people. It's super important to teach accountants how to use these new systems. Plus, we have to worry about keeping financial info safe and private. There are also questions about who's to blame if an AI system makes a mistake.

But, the good stuff about AI is way bigger than these problems. AI can make things way faster and more accurate. It cuts down on mistakes and saves time. It also helps people make better choices by giving them really good insights. AI can make accountants more important by turning accounting into something that helps companies grow and come up with new ideas, not just a job that supports other things. This change can create new jobs in AI accounting and help companies that use these tools do better than the rest.

1. The Idea of Accounting Automation and the Use of AI in Standard Operations:

1.1 Accounting Automation: From Simple Machines to Smart Systems

Automation is more than just using computers. It's a big step forward. It has two main stages. The first stage, using machines, was big in the 70s and 80s. (kour, 2025)Companies started using programs like Lotus 1-2-3 and Excel to do calculations faster and make fewer mistakes. But, people still had to enter all the data themselves. The second stage, using smart automation, started around 2010 because AI got better. Now, systems can do more than just process info. They can think and learn, so they can make simple decisions and do hard jobs without someone watching them all the time. This change means people don't have to do boring things like entering invoices and matching bank accounts, so accountants can focus on more important things.

1.2 Artificiel Intelligence Technologies: Instruments of Transformation

Each of these technologies has a clear job to do in the accounting automation system. Machine learning (ML) is really helpful for predicting things and managing risk. Its programs can look at old financial data and guess how much money will come in with about 95% accuracy. It also watches for weird things happening in financial activities, like payments to new suppliers, which helps catch fraud and mistakes. Natural language processing (NLP) can understand text, so it can quickly read and summarize legal contracts, saving a lot of time. Optical Character Recognition (OCR) helps with entering data by turning paper invoices into digital data with over 99% accuracy, which is very reliable. Robotic Process Automation (RPA) acts like a worker by doing things across different programs, like opening them, logging in, and moving data, which saves time and reduces mistakes. When you put all these technologies together, you get a smart automated accounting system.

2. The evolution of the accountant's position in the digital era

This shows how the job of an accountant is changing from doing things by hand to using their brain.

2.1 Freeing the Accountant from Manual Responsibilities

Research shows that accountants spend over 60% of their time doing boring, repetitive tasks. But automation has changed that a lot, making that time shorter. (Accounting Insight News, 2023)For example, making a weekly spending report used to take about 4 hours. Now, with automated tools, the system can collect receipts, match them to statements, and make the report in less than 30 minutes. This saves accountants a lot of time, so they can use it for more valuable tasks like thinking and planning.

2.2 The accountant's function has transformed into that of a strategic partner: Because of the time saved, the accountant can take on new tasks:

Financial data analyst: An accountant uses info gathered by AI to analyze things. They can see if spending more on marketing leads to more sales and suggest the best ways to spend money.

Strategic Advisor: An accountant can use their analysis to advise the managers. They can help with making budgets, deciding if a new project is worth it, or even suggesting merging two companies.

Risk Manager: Instead of just writing down losses after they happen, an accountant can use AI to predict risks ahead of time. For example, they can guess which customers will pay late or spot transactions that might be fraud, and then take steps to prevent problems.

Intelligent Systems Supervisor: As more things become automated, the accountant needs to watch over these systems. This means checking if they're working right, making sure the data is correct, and confirming that the systems are doing what they're supposed to do.

3. Obstacles and prospects for the integration of artificial intelligence in the accounting profession:

3.1 Principal Challenges: Barriers to Transformation

Getting AI into accounting has its problems. One big one is that people don't want to change. A study says that 75% of companies have trouble when they try to introduce automation because many accountants don't want to give up old habits. Also, it's expensive to get started. A full accounting automation system can cost from \$20,000 to \$100,000 each year, which is hard for small businesses. Data security and privacy are also big worries. When data goes to the cloud, there's a bigger chance of hacking. Estimates say that 72% of companies worry about cyber-attacks on their financial systems. And finally, who's responsible if something goes wrong? If there's a mistake, we need to know if it's the accountant's fault or the system's, so we need new rules for this.

3.2 Possible good things:

Better and faster work: Automated systems can cut down on mistakes in financial reports by up to 90%, saving time and money.

Better decision-making: By quickly analyzing data, accountants can give advice that helps managers make good choices, like coming up with a new pricing plan or expansion strategy.

Accountants becoming more important: Automation lets accountants become key players in helping the company do well, instead of just entering data.

New job opportunities: This change leads to new jobs like financial data analyst and accounting automation specialist.

Axis Four: The use of artificial intelligence in making accounting more available

In the past, accounting was hard and expensive, needing a special team and pricey software. But AI is changing that by:

4.1. Making tools easier to use for everyone:

Small businesses can use AI now through cloud programs, so they don't have to buy expensive software. They can pay a reasonable price to automate important tasks. These systems can do complicated things automatically. By using technology that recognizes text, they can read bills and receipts, pull out the info, and put it into the system. This means people don't have to enter data by hand, which cuts down on mistakes and lets small business owners manage their accounts well, even if they don't know a lot about accounting.

4.2. Giving financial knowledge: AI gives small businesses two big things that used to be only for big companies. First, they can quickly see how they're doing financially. Instead of waiting until the end of the month for a report, these systems can give quick, easy-to-understand reports. This gives small business owners a clear view of their finances, helping them make better decisions. Second, they can predict future finances because AI can look at old data and guess how

much money will come in and give advice on spending. These tools used to need special teams, but now small businesses can use them to get better.

4.3. Accountant as Consultant: AI frees up accountants from boring tasks, letting them become financial advisors. Now, they can spend time helping small businesses understand their finances and give advice on how to make more money and plan for growth, instead of just processing invoices. In this new job, the accountant connects technology with what the business needs, turning financial data into advice that business owners can use to reach their goals.

4.3.1 Problems with making accounting more available: Even with the potential, there are still problems to solve:

Cost: Even though it's cheaper, there's still some cost to get the technology and training, which can be hard for very small businesses.

Awareness: Many small business owners don't realize how important good accounting is or how automation can help them, so they don't want to use these tools.

Skills: Accountants need to learn about data analysis and technology to use AI well.

Basically, AI is a helpful tool for breaking down the barriers that have kept small businesses from getting professional accounting help. By making things simpler, making tools available to everyone, and turning accountants into advisors, AI helps make accounting more inclusive, leading to a fairer economy.

4.3.2 Benefits of accounting automation regarding the comprehensiveness of accounting practices:

1. How AI helps make things easier and cheaper:

The high cost of accounting software and people has been a barrier to accounting inclusion, but AI has helped with that. New tech, like OCR and machine learning, has automated data entry, letting systems read bills, receipts, and bank statements automatically, cutting the time needed for these tasks by up to 70%. This lets small business owners take a picture of a receipt, and the system will record it, even if they don't know much about accounting. AI has led to cheaper cloud programs that offer things that used to be available only with expensive software, letting small businesses use automation without spending a lot. Also, automation cuts down on mistakes because AI systems can match transactions with great accuracy, making sure the financial data is correct. This is really important for small businesses that don't have good auditing (Pasaribu, 2025)

2. Improving understanding and decision-making:

Accounting inclusion is more than just recording numbers; it's about understanding and using them, which AI helps with a lot. Smart tech has turned financial data into easy-to-understand reports with dashboards and graphs that show cash flow, profits, and expenses. This helps small business owners understand their finances without needing a lot of accounting knowledge. AI helps with predicting trends, using machine learning to look at old data and guess how much money will come in or sales for the future. This used to be only for big companies, but now anyone can use it for planning and preventing financial problems. The system can also give advice, like warning users about rising supply costs and suggesting they look at their supplier contracts. This kind of advice used to need a professional advisor.

3. The accountant's job changed from recorder to teacher and consultant:

Accountants have gone from just entering data to being important links between technology and small businesses. Now, they spend their time looking at information from AI systems rather than checking receipts, which lets them help small businesses understand why their costs are high or revenues are down, and offer good solutions. AI lets accountants give helpful advice, including help with budgeting, growth strategy, and managing risk. This makes them more valuable and positions them as key partners for small businesses. Also, the AI-driven accountant helps make finances more accessible by giving accurate and clear financial information, which makes banks and investors trust small businesses more,

making it easier for them to get funding and grow. AI breaks down the barriers that used to keep small businesses from getting professional accounting help, turning accounting into a tool for economic growth.

5. Conclusion:

The digital change in accounting is a big deal that's making the job of accountant different and more important. AI-driven automation has created new opportunities, turning accounting from a manual job into a tool for growth. AI makes accounting more inclusive by simplifying complicated tasks, like entering data and matching accounts, while offering strong analytical tools that anyone can use.

This change isn't the end of accounting. Instead, it makes it better, letting accountants overcome the problems, like resistance to change and high costs, while focusing more on valuable activities. The accountant in the digital age is more than just a number keeper. They're a strategic partner, data analyst, and financial counselor, with the skills to give advice that helps managers make good decisions. The accountant helps small businesses succeed and makes sure decisions are based on facts, leading to a more efficient economy for everyone. So, accounting isn't going away. It's changing and becoming more important than ever.

Outcomes of the hypothesis investigation: based on what we've seen, here's what we can confirm:

Hypothesis 1: says that AI helps automate routine accounting tasks, cutting down on mistakes and making things more efficient. This is true. AI tech, like OCR and RPA, has been shown to automate tasks like data entry, matching accounts, and processing invoices. (Stein, 2024) This has cut down on mistakes and made things more efficient.

Hypothesis 2: Letting accountants get away from manual tasks makes them financial analysts and strategic advisors, making them more valuable to the company. This is true, letting accountants focus on jobs that matter more. Now, accountants use AI to look at data and give strategic advice.

Hypothesis 3: Using AI can make accounting more available to small businesses but faces issues like resistance to change and costs.

This is right, as AI is a real chance for accounting inclusion. AI cloud programs are now available to small businesses at good prices, giving them tools that only big companies had before. These tools let small business owners manage their money and make choices based on facts.

6. Recommendations:

- Accountants need to improve their data analysis skills and understanding of AI to stay competitive.
- Accountants should focus on giving advice that helps managers make decisions, instead of just making reports (be a strategic partner).
- Companies should use automation and AI to make things more efficient and reduce mistakes.
- Accountants and companies need to protect financial data and get training on how to prevent cyber-attacks.
- Accountants should be part of the discussion about who's responsible for what when using AI and make sure everyone follows the rules.

Method and Methodology

The research employs a qualitative, exploratory methodology supported by a systematic literature review and case study analysis. Literature was collected from international peer-reviewed journals, institutional reports, and global accounting bodies (e.g., IFAC, IASB, AICPA). Case studies of SMEs implementing AI-driven accounting software were analyzed to illustrate real-world applications of accounting inclusion. Data interpretation followed a thematic analysis approach, identifying patterns in how automation alters both business outcomes and professional roles.

Findings

1. Redefinition of Professional Roles – Accountants are increasingly transitioning from routine data entry and compliance tasks to higher-value functions such as strategic advising, forecasting, and financial risk analysis.
2. Enhanced Accessibility for SMEs – AI-based tools significantly lower the cost and complexity of accounting services, allowing small firms to access professional-grade financial insights that were previously exclusive to large corporations.
3. Efficiency and Accuracy Gains – Automation reduces errors in bookkeeping and reporting, accelerates closing cycles, and ensures regulatory compliance.
4. Strategic Integration – Accountants equipped with AI tools contribute directly to corporate innovation, sustainability reporting, and governance frameworks.
5. Socio-Economic Impact – By promoting accounting inclusion, digital tools foster equitable growth, support entrepreneurship, and encourage wider participation in formal financial systems.

Actuality of the Study

This research is highly relevant given the global shift toward digital economies, where data-driven decision-making is essential for survival and growth. In Algeria and many emerging economies, SMEs constitute the backbone of economic activity yet remain disadvantaged by lack of access to financial expertise. AI-powered accounting inclusion represents a critical enabler for economic diversification, transparency, and competitiveness, aligning with the broader objectives of sustainable development.

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Ethical Considerations

The authors ensured compliance with academic integrity and ethical guidelines throughout the study. Secondary data was obtained exclusively from publicly accessible and ethically approved sources. No human subjects were directly involved, thus no informed consent procedures were required. All referenced works are cited appropriately to maintain intellectual property rights.

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Conflict of Interest

The authors declare that they have no conflict of interest related to the research, authorship, or publication of this article.

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