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Artificial Intelligence Literacy and Employability of Accounting Education Graduates in Gombe State: A Conceptual Review

Maryam Dahiru[1], Saidu Modibbo, Rukaiya Mansur and Amina Bello
School of Secondary Education (Business),
Federal College of Education (Technical) Gombe, Nigeria
[1]*Corresponding* author: ziwafad6@gmail.com

Abstract

The contemporary labour market has undergone unprecedented transformation due to the emergence and rapid advancement of Artificial Intelligence (AI), digital technologies, and automation systems. The accounting profession, once dominated by manual bookkeeping and traditional financial procedures, is increasingly becoming technology-driven through the integration of intelligent accounting software, cloud computing, robotic process automation, machine learning, and predictive analytics. Consequently, accounting education graduates are expected to possess not only conventional accounting competencies but also Artificial Intelligence literacy to remain employable and competitive in the evolving digital economy. This conceptual paper examines the relationship between Artificial Intelligence literacy and the employability of accounting education graduates in Gombe State, Nigeria. The paper discusses the concepts of AI literacy, employability, and accounting education while examining theoretical perspectives underpinning the study. Anchored on Human Capital Theory and Technology Acceptance Theory, the paper argues that AI literacy significantly enhances graduates' employability by improving digital competence, adaptability, innovation, productivity, and professional relevance. The study further identifies major barriers hindering AI literacy acquisition among accounting education graduates in Gombe State, including inadequate digital infrastructure, obsolete curriculum, shortage of trained personnel, poor funding, and weak institutional-industry collaboration. The paper recommends curriculum redesign, integration of AI-based accounting tools into accounting education programmes, investment in ICT infrastructure, lecturer training, and stronger collaboration between educational institutions and industry stakeholders. The paper concludes that AI literacy has become a strategic employability asset necessary for preparing accounting education graduates for sustainable participation in the twenty-first-century workforce.

Key words: *Artificial Intelligence Literacy, Employability, Accounting Education, Digital Competence, Accounting Graduates, Gombe State, Technological Innovation*

1.0 Introduction

The twenty-first century has witnessed rapid technological transformation across virtually all sectors of the global economy. Among the emerging technologies shaping contemporary society, Artificial Intelligence (AI) stands out as one of the most disruptive innovations influencing education, business operations, employment structures, and professional practices. Artificial Intelligence refers to the capability of computer systems and machines to simulate human intelligence in performing tasks such as reasoning, learning, decision-making, prediction, automation, and problem-solving (Russell & Norvig, 2021). The integration of AI into organizational processes has transformed how institutions operate and how professionals carry out their responsibilities. Globally, the accounting profession has experienced significant digital transformation due to advances in AI technologies, machine learning, cloud accounting, robotic process automation, blockchain systems, and data analytics. Accounting firms and financial institutions increasingly employ AI-powered systems to automate bookkeeping, payroll management, financial forecasting, fraud detection, auditing, taxation, and financial reporting processes (Kokina & Davenport, 2017; Moll & Yigitbasioglu, 2019). This transformation has fundamentally altered the competencies required of accounting professionals. Employers now demand graduates who possess technological proficiency, analytical skills, innovation capability, and digital literacy in addition to traditional accounting knowledge (Asonitou & Hassall, 2019). In Nigeria, the labour market continues to experience increasing graduate unemployment despite the rising number of tertiary institution graduates. One of the major reasons for graduate unemployment is the mismatch between skills acquired in educational institutions and the competencies required by employers in modern workplaces (Okolie et al., 2020). Accounting education graduates particularly face employability challenges because many educational institutions still operate outdated curricula that inadequately incorporate digital technologies and AI-related competencies into accounting education programmes. Consequently, many graduates lack the

technological capabilities necessary for functioning effectively within digitally driven accounting environments.The accounting profession is rapidly transitioning from manual and repetitive tasks toward intelligent and automated processes. Routine accounting functions such as invoice processing, account reconciliation, payroll administration, and transaction recording are increasingly being performed by AI-powered systems (Sutton et al., 2016). This implies that accounting professionals must now focus more on strategic thinking, data interpretation, financial analysis, and advisory services rather than clerical accounting functions. Therefore, graduates who lack AI literacy risk becoming professionally irrelevant in the evolving labour market. Artificial Intelligence literacy refers to the knowledge, competencies, critical thinking abilities, and ethical understanding required to effectively utilize, evaluate, and interact with AI technologies (Long & Magerko, 2020). AI literacy goes beyond general computer literacy because it specifically emphasizes the understanding of intelligent systems, machine learning applications, automated technologies, and digital decision-making tools. For accounting education graduates, AI literacy includes competence in cloud accounting systems, accounting software applications, data analytics, automated auditing tools, financial technologies, and intelligent reporting systems.In Gombe State, the issue of graduate employability has become increasingly important due to rising unemployment and changing workplace expectations. Employers now prioritize technologically competent graduates capable of adapting to digital transformation within organizations. Unfortunately, many accounting education graduates still possess predominantly theoretical and traditional accounting skills with minimal exposure to AI technologies and digital accounting tools. This situation raises concerns regarding the preparedness of accounting education graduates for participation in the contemporary labour market. Educational institutions are therefore under increasing pressure to redesign accounting education programmes to align with emerging technological realities. Integrating AI literacy into accounting education is essential for improving graduates' employability, innovation capacity, workplace adaptability, and entrepreneurial opportunities. AI literacy can also contribute significantly to national development by producing technologically competent graduates capable of participating effectively in the digital economy. Despite the growing importance of AI literacy, limited conceptual studies have examined its relationship with the employability of accounting education graduates in Gombe State. Most existing studies focus broadly on digital literacy, employability skills, or technology adoption without specifically addressing AI literacy within accounting education. This conceptual paper therefore seeks to bridge this gap by examining the nexus between Artificial Intelligence literacy and the employability of accounting education graduates in Gombe State.

The global workplace is increasingly becoming technology-driven due to advancements in Artificial Intelligence, automation, machine learning, and digital transformation. Organizations across the world now utilize intelligent systems to improve operational efficiency, productivity, accuracy, and decision-making processes. In the accounting profession, AI technologies have transformed traditional accounting operations through automation of bookkeeping, payroll management, auditing, taxation, financial analysis, and fraud detection processes (Dai & Vasarhelyi, 2016). Consequently, employers increasingly demand accounting graduates who possess digital and AI-related competencies. However, many accounting education graduates in Nigeria, particularly in Gombe State, continue to face serious employability challenges due to inadequate technological competencies and limited exposure to AI-driven accounting systems. Several tertiary institutions still emphasize traditional accounting practices while neglecting emerging technologies within accounting education curricula. This mismatch between institutional training and labour market expectations contributes significantly to graduate unemployment and underemployment (Adeosun, 2021). Furthermore, many tertiary institutions in Nigeria suffer from inadequate ICT infrastructure, poor internet connectivity, shortage of qualified instructors, and insufficient funding for technological innovation. These challenges limit students' opportunities to acquire practical AI literacy skills necessary for functioning effectively in modern workplaces. Employers increasingly prefer graduates who possess competencies in accounting software, data analytics, cloud computing, and AI-supported financial management systems (Ahmed et al., 2023). The absence of adequate AI literacy among accounting education graduates may result in reduced employability, low workplace productivity, poor adaptability to technological change, and declining professional relevance. Despite the increasing significance of AI literacy within contemporary accounting practice, there remains limited conceptual discourse regarding how AI literacy influences the employability of accounting education graduates in Gombe State. This gap necessitates scholarly investigation to provide theoretical understanding and practical recommendations for enhancing graduate employability through AI literacy development.

2.0 Conceptual Review

2.1 Concept of Artificial Intelligence

Artificial Intelligence refers to computer systems designed to perform tasks requiring human intelligence such as reasoning, learning, prediction, decision-making, speech recognition, and problem-solving (Russell & Norvig, 2021). AI

technologies include machine learning, natural language processing, robotics, expert systems, neural networks, and intelligent automation tools. According to UNESCO, AI involves systems capable of processing information, adapting to changing conditions, and making intelligent decisions based on available data. AI technologies are increasingly applied across various sectors including healthcare, banking, agriculture, education, transportation, manufacturing, and accounting. AI systems can analyze large volumes of data more efficiently than humans while minimizing errors and improving decision-making processes (Dwivedi et al., 2021). Within accounting practice, AI technologies assist in financial forecasting, auditing, fraud detection, tax computation, and automated reporting. Recent developments in AI technologies have accelerated workplace automation and transformed professional roles across industries. The World Economic Forum reported that automation and AI technologies will continue reshaping global employment structures by increasing demand for digital and analytical skills while reducing dependence on routine manual tasks (World Economic Forum, 2023).

2.2 Artificial Intelligence Literacy

Artificial Intelligence literacy refers to the competencies, knowledge, understanding, ethical awareness, and critical thinking abilities necessary for effective interaction with AI systems and technologies (Long & Magerko, 2020). AI literacy enables individuals to understand how intelligent systems function, interpret AI-generated outputs, evaluate AI applications critically, and use AI technologies responsibly. AI literacy encompasses several dimensions, including:

- understanding AI concepts and principles;
- ability to use AI-powered applications;
- awareness of ethical implications of AI;
- data interpretation and analytics skills;
- digital problem-solving abilities;
- adaptability to technological innovation; and
- critical thinking regarding automated systems.

According to Ng et al. (2021), AI literacy has become an essential competency for participation in modern digital societies because AI technologies increasingly influence workplace operations, education systems, and everyday life. AI literacy equips individuals with the capacity to interact effectively with intelligent technologies while minimizing risks associated with technological misuse. For accounting education graduates, AI literacy involves competence in accounting software applications, data analytics, cloud accounting systems, enterprise resource planning systems, automated auditing tools, blockchain technologies, and AI-supported financial management systems. AI-literate accounting graduates are better positioned to function effectively within modern accounting environments characterized by technological innovation and automation.

2.3 Employability

Employability refers to the set of skills, competencies, attributes, knowledge, and personal qualities that enhance an individual's ability to gain, maintain, and progress in employment (Yorke, 2006). Employability encompasses both technical and non-technical competencies required for successful participation in the labour market. Graduate employability has become a major concern globally due to changing workplace demands and increasing competition within labour markets. Employers now prioritize graduates who possess transferable skills such as communication ability, digital competence, innovation, teamwork, critical thinking, adaptability, and problem-solving capability (Succi & Canovi, 2020). In the context of accounting education, employability involves the capacity of graduates to apply accounting knowledge effectively while adapting to technological changes within the accounting profession. Modern employability increasingly depends on graduates' ability to utilize digital technologies and intelligent systems within workplace environments. According to Tomlinson (2017), employability is no longer determined solely by academic qualifications but also by graduates' capacity to adapt to changing professional realities. Therefore, accounting education graduates require AI literacy to remain employable within contemporary digitally driven accounting environments.

2.4 Accounting Education

Accounting education refers to the process of equipping learners with knowledge, competencies, skills, attitudes, and professional values necessary for successful participation in accounting-related occupations. Accounting education

prepares students for careers in auditing, taxation, financial management, business consultancy, entrepreneurship, and public finance. Modern accounting education extends beyond traditional bookkeeping practices to include technological competencies, data analytics, financial technologies, and digital accounting systems (Pan & Seow, 2016). Accounting education institutions are therefore expected to align curricula with contemporary workplace demands by integrating emerging technologies into teaching and learning processes. However, several Nigerian tertiary institutions continue to emphasize theoretical instruction with limited practical exposure to technological applications in accounting. This contributes to graduates' inadequate preparedness for digitally transformed accounting environments.

3. Theoretical Framework

3.1 Human Capital Theory

Human Capital Theory was propounded by Theodore Schultz and further expanded by Gary Becker. The theory posits that investment in education, training, and skill acquisition enhances individuals' productivity, efficiency, and employability (Becker, 1993). The theory assumes that education develops valuable competencies capable of improving economic performance and labour market outcomes. Human capital investments such as digital literacy training and technological education therefore increase graduates' capacity to secure employment and contribute productively to organizations. This theory is relevant to the study because AI literacy represents a form of human capital capable of improving accounting education graduates' employability. Graduates possessing AI competencies are more likely to adapt effectively to technological changes and secure employment opportunities within digitally transformed organizations.

3.2 Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Fred Davis, explains individuals' willingness to adopt and utilize technological innovations. The model identifies perceived usefulness and perceived ease of use as major determinants of technology acceptance (Davis, 1989). The theory suggests that individuals are more likely to adopt technologies they perceive as beneficial and easy to use. Accounting education graduates who recognize the usefulness of AI technologies in enhancing professional performance are therefore more likely to embrace AI literacy development. The theory is relevant because AI adoption within accounting education and professional practice depends significantly on graduates' attitudes toward technology utilization and perceived employability benefits.

4. Artificial Intelligence and the Transformation of Accounting Practice

Artificial Intelligence has significantly transformed the accounting profession by automating routine tasks and improving operational efficiency. Modern accounting systems increasingly rely on AI technologies for financial analysis, auditing, fraud detection, payroll administration, taxation, budgeting, and financial forecasting (Sutton et al., 2016). AI-powered accounting software can process large volumes of financial data rapidly while reducing human errors and operational costs. Machine learning systems also assist organizations in identifying financial irregularities, predicting market trends, and supporting strategic decision-making processes (Moll & Yigitbasioglu, 2019). Cloud accounting platforms now enable organizations to manage financial records remotely while providing real-time access to financial information. Similarly, robotic process automation has simplified repetitive accounting tasks such as invoice processing and bank reconciliation (Kokina & Blanchette, 2019). The transformation of accounting practice through AI technologies has implications for accounting education and graduate employability. Employers increasingly seek accounting professionals capable of utilizing intelligent accounting systems and adapting to digital workplace environments. Consequently, accounting education graduates require AI literacy to remain professionally relevant. Recent studies indicate that AI technologies are reshaping accounting job roles by reducing demand for routine clerical functions while increasing demand for analytical, advisory, and strategic competencies (Asonitou & Hassall, 2019). This shift underscores the importance of integrating AI literacy into accounting education programmes.

5. Relationship Between AI Literacy and Employability

Artificial Intelligence literacy significantly influences graduate employability in multiple ways.

5.1 Enhancement of Digital Competence

AI literacy equips accounting education graduates with technological competencies required in modern workplaces. Employers increasingly prioritize graduates capable of operating accounting software, analyzing digital financial data, and utilizing intelligent systems effectively (Ahmed et al., 2023).

5.2 Improvement in Workplace Adaptability

AI-literate graduates adapt more effectively to changing workplace technologies and organizational innovations. Adaptability has become a critical employability skill within technology-driven labour markets (Succi & Canovi, 2020).

5.3 Increased Productivity and Efficiency

AI technologies improve workplace efficiency by automating repetitive tasks and enhancing accuracy. Graduates possessing AI competencies can therefore perform accounting tasks more productively and effectively.

5.4 Competitive Advantage in Employment

Graduates with AI literacy enjoy greater competitive advantage during recruitment because employers increasingly demand digital and analytical skills. Technological competence distinguishes graduates within highly competitive labour markets.

5.5 Entrepreneurial Opportunities

AI literacy enables accounting graduates to establish technology-driven businesses such as digital bookkeeping services, financial consultancy firms, and online accounting platforms.

5.6 Innovation and Problem-Solving Ability

AI literacy enhances graduates' analytical and problem-solving abilities through exposure to data analytics, predictive technologies, and intelligent decision-making systems.

6. Challenges Hindering AI Literacy Acquisition in Gombe State

Several factors hinder effective acquisition of AI literacy among accounting education graduates in Gombe State.

6.1 Inadequate ICT Infrastructure

Many tertiary institutions lack modern computer laboratories, reliable internet connectivity, digital learning facilities, and technological equipment necessary for AI-related training.

6.2 Obsolete Curriculum

Several accounting education curricula remain heavily theoretical with inadequate emphasis on AI technologies, data analytics, cloud accounting, and digital accounting systems.

6.3 Shortage of Qualified Personnel

Many institutions lack lecturers and instructors with adequate expertise in AI applications and digital accounting technologies.

6.4 Poor Funding

Insufficient funding limits institutions' ability to acquire technological equipment and organize digital training programmes.

6.5 Weak Industry Collaboration

Limited collaboration between tertiary institutions and accounting firms reduces students' exposure to practical AI applications in workplace settings.

6.6 Low Digital Awareness

Some educators and students still demonstrate limited awareness regarding the significance of AI literacy within modern professional environments.

6.7 Unstable Power Supply

Frequent electricity interruptions hinder effective utilization of digital technologies and online learning platforms in many institutions across Nigeria.

7. Strategies for Enhancing AI Literacy and Employability

To improve AI literacy and graduate employability, the following strategies are necessary:

7.1 Curriculum Redesign

Accounting education curricula should incorporate AI-related courses such as data analytics, cloud accounting, machine learning applications, blockchain accounting, and financial technologies.

7.2 Lecturer Capacity Building

Lecturers should receive regular professional development training on emerging technologies and AI applications in accounting practice.

7.3 Investment in Digital Infrastructure

Government and educational institutions should invest in ICT facilities, internet connectivity, computer laboratories, and digital learning environments.

7.4 Industry-Academia Collaboration

Partnerships between institutions and accounting firms can provide students with practical exposure through internships, workshops, and industrial training programmes.

7.5 Practical-Oriented Learning

Teaching approaches should emphasize experiential learning, simulations, project-based learning, and practical use of accounting technologies.

7.6 Government Policy Support

Government policies should prioritize digital transformation and technological innovation within tertiary education systems.

7.7 Promotion of Professional Certifications

Students should be encouraged to acquire professional certifications in digital accounting systems and financial technologies.

8. Implications for Accounting Education in Nigeria

The growing integration of AI into accounting practice has significant implications for accounting education in Nigeria. Educational institutions must transition from traditional teaching approaches toward technologically oriented curricula capable of producing digitally competent graduates. Accounting educators must recognize that employability within the modern labour market increasingly depends on technological competence rather than theoretical knowledge alone. Institutions failing to integrate AI literacy into accounting education risk producing graduates who are unemployable within contemporary workplaces. Furthermore, policymakers and educational administrators must understand that AI literacy contributes not only to graduate employability but also to national economic development, innovation capacity, and global competitiveness.

9. Conclusion

Artificial Intelligence has emerged as a transformative force reshaping the accounting profession and redefining employability requirements within the contemporary labour market. Accounting education graduates in Gombe State require AI literacy to remain professionally relevant and competitive in digitally driven workplaces. The paper established that AI literacy enhances employability by improving graduates' digital competence, adaptability, productivity, innovation capability, and problem-solving ability. However, inadequate infrastructure, obsolete curricula, shortage of qualified personnel, poor funding, and weak institutional support continue to hinder effective AI literacy acquisition among accounting education graduates. The study therefore concludes that integrating Artificial Intelligence literacy into accounting education programmes is essential for preparing graduates for sustainable participation in the twenty-first-century workforce and reducing graduate unemployment in Nigeria.

10. Recommendations

1. tertiary institutions should integrate AI and digital accounting courses into accounting education curricula;
2. government should provide adequate funding for ICT infrastructure and digital innovation;
3. lecturers should receive continuous training on AI technologies and accounting software applications;
4. educational institutions should establish partnerships with accounting firms and technology companies;
5. practical and experiential learning approaches should be emphasized in accounting education;
6. students should be encouraged to acquire professional digital certifications; and
7. policymakers should formulate policies promoting AI literacy integration within tertiary education systems.

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