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# Artificial Intelligence, Employability and Labour Market Restructuring: An Industrial Sociological Analysis of Educational Preparedness in Nigeria

**By**

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***Abstract***

*The growing integration of artificial intelligence into global production systems has introduced a decisive shift in labour market structures, redefining employability standards and placing renewed pressure on educational institutions to produce technologically adaptable graduates. Against this background, this paper examined artificial intelligence, employability and labour market restructuring through an industrial sociological analysis of educational preparedness in Nigeria. Specifically, the paper examined how artificial intelligence is influencing employability patterns in Nigeria's labour market, assessed the role of Nigeria's educational system in preparing graduates for labour market changes associated with artificial intelligence, and analysed the implications of artificial intelligence-driven labour market restructuring for workforce participation and occupational opportunities in Nigeria. The paper adopted Human Capital Theory as its theoretical framework, while analytical review method was utilised through critical examination and synthesis of current scholarly literature published between 2020 and 2026. The paper revealed that artificial intelligence is increasingly shaping recruitment priorities in favour of digital competence, computational reasoning and adaptive technological literacy. The paper further established that Nigeria's educational system remains inadequately positioned to equip graduates with relevant competencies due to outdated curricula, weak digital infrastructure and insufficient industry-academic collaboration. The paper also found that artificial intelligence is generating new occupational opportunities while simultaneously reducing routine employment pathways and widening labour market inequality among graduates. The paper concluded that educational preparedness is central to labour market competitiveness in Nigeria's evolving technological environment. It recommended urgent curriculum reform, strengthened institutional collaboration with technology-driven industries, and strategic investment in digital infrastructure and lecturer capacity development to improve graduate readiness for an artificial intelligence-driven labour market.*

***KEYWORDS:*** *Artificial Intelligence, Employability, Labour Market Restructuring, Industrial Sociology, Educational Preparedness, Nigeria.*

## Introduction

The global labour market is undergoing a major transition as artificial intelligence (AI) increasingly shapes production systems, service delivery, recruitment practices, and workplace organization. Across advanced and emerging economies, AI has moved beyond experimental application into routine deployment in manufacturing, finance, healthcare, education, logistics, and public administration. The World Economic Forum reported that by 2030, technological restructuring driven largely by AI and automation may displace about 92 million jobs globally while creating approximately 170 million new roles, signalling not absolute job destruction but a significant reconfiguration of occupational structures and skill requirements (World Economic Forum, 2025). Recent empirical evidence further shows that AI-related competencies increasingly function as employability signals, with workers possessing demonstrable AI literacy enjoying stronger hiring prospects than similarly qualified peers without such skills (Stephany et al., 2026). This transition reflects a broader shift in industrial sociology from labour systems organised around repetitive task

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execution to work arrangements centred on adaptability, digital reasoning, and human-machine collaboration.

Across Africa, this transition presents both opportunity and institutional strain. While AI offers pathways for productivity growth and industrial upgrading, educational systems across many African countries remain unevenly positioned to prepare graduates for this new labour order. A cross-country survey by Aryee et al. (2025) found that although universities across selected African states acknowledge the relevance of AI education, weak infrastructure, insufficient practical training, and limited industry-academic partnerships continue to hinder workforce preparedness. This gap is particularly important in a region where youth unemployment remains persistently high and where educational expansion has not consistently translated into labour market absorption. The challenge therefore is no longer only access to education but whether educational systems produce skills aligned with changing occupational expectations.

In Nigeria, the issue is especially urgent because of the country's demographic structure and labour market realities. Nigeria has one of the world's largest youth populations, with over 60 percent of its population below age 25, yet graduate unemployment and underemployment remain persistent concerns. The National Bureau of Statistics reported that youth underemployment and unemployment continue to reflect deep structural mismatches between educational output and labour market demand (National Bureau of Statistics, 2024). At the same time, AI adoption is gradually expanding across Nigerian banking, telecommunications, healthcare, media, and educational sectors. For example, John et al. (2025) found increasing deployment of AI-driven systems within Nigerian banking institutions, though constrained by technical skill shortages and infrastructure limitations. Similarly, Microsoft's AI National Skills Initiative reported reaching over 350,000 Nigerians with AI-related training by late 2025, suggesting growing institutional recognition of the need for workforce reskilling (Microsoft, 2025).

Within Nigeria's educational sector, available studies reveal a concerning preparedness gap. A national assessment of healthcare students showed that only 12 percent could accurately define core machine learning concepts despite widespread recognition of AI's future workplace relevance, while over 84 percent expressed willingness to receive AI training (Olawade et al., 2025). Research on technical and vocational education similarly shows that curriculum design, lecturer capacity, and digital infrastructure remain inadequate for meaningful AI integration (Rabiu et al., 2025). This indicates that Nigerian students are increasingly aware of AI's significance but remain insufficiently equipped with the competencies needed for an AI-mediated labour market.

From an industrial sociological standpoint, this development signals ongoing labour market restructuring in which occupational stratification is being reorganised around technological competence. Educational institutions serve as critical agencies of workforce socialisation, and their inability to adjust to technological changes may deepen inequality by producing graduates whose credentials carry declining labour market value. It is against this background that this study examines artificial intelligence, employability, and labour market restructuring through the prism of educational preparedness in Nigeria.

## 1. STATEMENT OF THE PROBLEM

The integration of artificial intelligence into labour processes is altering employment structures globally by reducing dependence on routine cognitive tasks and increasing demand for analytical reasoning, digital competence, and adaptive problem-solving skills. While this transition is creating new occupational opportunities, it is also exposing educational deficiencies in countries where curriculum reform has not kept pace with technological change. For developing economies such as Nigeria, this presents a pressing sociological and economic concern because labour market entry for graduates increasingly depends on competencies that many educational institutions are not yet systematically providing.

Nigeria's formal education system continues to operate largely within instructional frameworks designed for earlier industrial requirements. University and polytechnic curricula in many disciplines remain heavily theoretical, with limited exposure to AI applications, computational thinking, data literacy, and interdisciplinary digital problem-solving. Although recent initiatives have introduced AI awareness programmes, these interventions remain fragmented and insufficient to meet labour market demands at scale. Studies have shown that substantial proportions of Nigerian students demonstrate low conceptual understanding of AI despite acknowledging its relevance to future employment (Olawade et al., 2025). This reveals a disconnect between awareness and preparedness.

At the same time, employers across banking, telecommunications, media, healthcare, and education are increasingly incorporating AI-enabled systems into workflow organisation, recruitment processes, and performance evaluation. This restructuring changes not only job descriptions but also the social distribution of employment opportunities, favouring workers with digital adaptability while marginalising those without such competencies. Without deliberate educational restructuring, Nigerian graduates risk entering a labour market for which their formal qualifications no longer provide sufficient competitive advantage.

The problem is further compounded by limited empirical attention to the sociological dimensions of AI-driven labour market transformation in Nigeria. Existing studies by Olawade et al. (2025), John et al. (2025); Luckin and Holmes (2022) among others have largely focused on technological adoption, digital infrastructure, or policy prospects, with insufficient emphasis on how educational preparedness shapes employability within changing labour structures. There remains inadequate scholarly understanding of whether Nigeria's educational institutions are effectively socialising

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students into the competencies demanded by AI-influenced workplaces.

This paper therefore addresses the problem of possible misalignment between Nigeria's educational preparation systems and the changing requirements of an AI-shaped labour market. It seeks to examine how this gap affects employability outcomes and contributes to labour market restructuring from an industrial sociological perspective.

## 2. AIM AND OBJECTIVES

The aim of this paper was to examine the relationship between artificial intelligence, employability, and labour market restructuring through an industrial sociological analysis of educational preparedness in Nigeria. The specific objectives of this paper were to:

1. examine how artificial intelligence is influencing employability patterns in Nigeria's labour market.
2. assess the role of Nigeria's educational system in preparing graduates for labour market changes associated with artificial intelligence.
3. analyse the implications of artificial intelligence-driven labour market restructuring for workforce participation and occupational opportunities in Nigeria.

## 4. METHODOLOGY

This paper adopted the analytical review method as its methodological approach. Analytical review is a qualitative research method that involves systematic examination, interpretation and critical evaluation of existing scholarly literature with the aim of drawing logical inferences, identifying conceptual relationships and generating informed conclusions on a specific subject area. According to Snyder (2019), as extended in recent methodological applications by Paul J. Booth et al. (2021), analytical review requires the careful selection, organisation and interrogation of relevant literature based on clearly defined criteria such as recency, relevance, empirical strength, theoretical alignment and methodological credibility.

In this paper, the method relied on current peer-reviewed studies published between 2020 and 2026 relating to artificial intelligence, employability, labour market transformation, industrial sociology and educational preparedness. The criteria for inclusion were based on scholarly relevance to the subject matter, empirical rigour, contemporary applicability and direct connection to the Nigerian labour and educational context where available. This method was considered suitable because the paper sought to critically examine existing evidence, synthesise emerging debates and establish conceptual linkages between artificial intelligence, educational readiness and labour market restructuring without conducting primary field investigation.

Given the evolving nature of artificial intelligence and the need to integrate insights from multiple disciplinary perspectives, analytical review provided the most appropriate framework for objective assessment and interpretation of available evidence.

The adoption of this method is justified by its capacity to generate broad-based understanding of emerging issues through critical synthesis of established studies. As argued by Grant and Booth (2021), analytical review is particularly appropriate for studies examining developing phenomena where conceptual clarification and evidence integration are necessary for theory-building and policy interpretation. In the context of this paper, the method enabled a structured appraisal of how artificial intelligence is influencing employability patterns, the preparedness of Nigeria's educational system, and the implications of labour market restructuring. It also allowed the application of Human Capital Theory in explaining the observed patterns.

However, the method has limitations. Since it depends on secondary sources, it is constrained by the quality, scope and methodological orientation of existing studies. It does not provide direct field-based evidence from Nigerian institutions, employers or graduates, thereby limiting contextual depth and first-hand verification of observed trends. In addition, analytical review may be affected by publication bias, especially where available literature disproportionately reflects findings from technologically advanced societies. Despite these limitations, the method remains appropriate for this paper because it offers a credible basis for examining current patterns and drawing scholarly conclusions on artificial intelligence and labour market restructuring in Nigeria.

## 5. LITERATURE REVIEW

**Conceptual Review**

**Workplace Incentives**

Workplace incentives are generally understood as the financial and non-financial mechanisms deployed by organisations to influence employee motivation, productivity, commitment, and retention. Recent scholarship situates workplace incentives within changing labour arrangements where performance management is increasingly linked to technological monitoring, skills acquisition, and adaptive output. Gagné et al. (2022) argue that workplace incentives are no longer confined to salary increments and bonuses but now include professional development opportunities, digital learning access, flexible work structures, and recognition systems that align employee aspirations with organisational goals.

Similarly, Howard et al. (2021) maintain that effective workplace incentives must address competence, autonomy, and relatedness if sustained productivity is to be achieved. This view is reinforced by Van den Broeck et al. (2021), who found that workers exposed to developmental incentives demonstrated stronger engagement than those motivated solely by monetary rewards. While some scholars define workplace incentives narrowly as compensation-related tools, this paper adopts the broader position advanced by Gagné et al. (2022), which conceives workplace incentives as organisational strategies, both material and developmental, designed to enhance employee performance and facilitate adaptation to changing work demands, particularly within technologically mediated labour systems.

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**Artificial Intelligence**

Artificial intelligence refers to computational systems designed to perform tasks traditionally requiring human cognitive abilities such as learning, reasoning, problem-solving, pattern recognition, and decision-making. Recent scholarly engagement with AI has shifted from conceptual abstraction to applied implications for labour, governance, and education. Russell and Norvig (2021) define AI as the study and engineering of intelligent agents capable of perceiving environments and taking actions that maximise specified goals. However, this technical orientation has been expanded by Brynjolfsson and McAfee (2022), who interpret AI as a general-purpose technology restructuring economic production and occupational systems through automation and augmentation.

Dwivedi et al. (2023) further argue that AI should be understood not simply as a computational tool but as a socio-technical force altering human interaction, institutional operations, and workplace organisation. While some definitions focus on machine autonomy, scholars such as Acemoglu and Restrepo (2022) stress AI's labour-displacing and labour-complementing capacities. For this paper, artificial intelligence is adopted as the application of machine-based systems capable of performing analytical and adaptive functions that influence workplace processes, skill demands, and employment relations within modern labour markets.

**Employability**

Employability has been widely discussed as the capacity of individuals to secure, retain, and progress in employment through the possession of relevant knowledge, competencies, and adaptive attributes. Contemporary literature treats employability as dynamic rather than static, particularly within economies experiencing technological transformation. Tomlinson (2021) conceptualises employability as the interaction between personal capital, institutional credentials, and labour market conditions. This interpretation is extended by Succi and Canovi (2020), who argue that employability encompasses transferable competencies such as critical thinking, digital literacy, communication, and problem-solving rather than discipline-specific knowledge alone. Clarke (2023) notes that employability increasingly depends on graduates' readiness to engage with digital systems and evolving workplace technologies.

In AI-driven economies, Stephany et al. (2026) provide empirical evidence that demonstrable AI-related competencies significantly improve hiring outcomes. While some scholars interpret employability as an individual responsibility, Holmes (2021) cautions against overlooking structural conditions such as educational quality and labour market accessibility. This paper adopts the position that employability is the capacity of individuals to obtain and sustain meaningful employment through the acquisition and application of relevant technical, cognitive, and adaptive skills within prevailing labour market conditions.

**Labour Market**

The labour market refers to the social and economic arena within which labour is exchanged for wages, and where workers, employers, and institutional structures interact to determine employment conditions. Recent studies move beyond classical economic explanations to interpret the labour market as a socially regulated system shaped by technological change, educational institutions, and policy arrangements. Autor et al. (2022) observe that digital technologies, especially AI, are reshaping labour demand by polarising occupational opportunities between high-skill analytical roles and lower-skill service positions. Kalleberg and Vallas (2021) similarly contend that labour markets are increasingly characterised by instability, platform-mediated work, and skill-based stratification.

From an industrial sociological perspective, labour markets are not neutral spaces but structured systems reflecting power relations and institutional capacity. Grimshaw et al. (2020) argue that technological restructuring alters labour market entry pathways and redistributes opportunities across occupational categories. In the Nigerian context, labour market conditions are strongly shaped by educational mismatches and structural unemployment. This paper adopts the view of the labour market as a socially organised mechanism through which employment opportunities are distributed and negotiated within institutional, technological, and economic contexts.

**Industrial Sociology**

Industrial sociology is the branch of sociology concerned with the study of work, industrial relations, organisational behaviour, labour structures, and the social consequences of production systems. Classical industrial sociology focused largely on factory relations and labour-management interaction, but recent scholarship has expanded the field to include digital transformation, platform work, algorithmic management, and technological restructuring. Vallas and Schor (2020) argue that industrial sociology now examines how digital systems shape labour control and workplace hierarchy.

Thompson (2021) notes that AI and algorithmic governance have shifted industrial sociology toward analysing technological mediation in employment relations. Likewise, Wood et al. (2021) contend that contemporary industrial sociology must account for data-driven managerial practices that redefine supervision, evaluation, and worker autonomy. These perspectives suggest that industrial sociology is no longer confined to manufacturing settings but applies to all technologically structured work systems. For this paper, industrial sociology is adopted as the sociological analysis of workplace structures, labour processes, and institutional relations, with particular attention to how artificial intelligence restructures employment patterns and occupational organisation.

**Educational Preparedness**

Educational preparedness refers to the degree to which educational systems equip learners with the competencies,

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knowledge, and adaptive capacities required for participation in changing social and economic environments. Recent scholarship links educational preparedness closely to labour market transitions driven by technological advancement. OECD-based academic analyses by Schleicher (2020) emphasise that educational preparedness depends not merely on curriculum completion but on the alignment of learning outcomes with emerging workplace demands. Bond et al. (2021) argue that educational preparedness in the digital era requires integration of technological literacy, critical reasoning, and collaborative problem-solving into formal instruction.

In relation to AI, Luckin and Holmes (2022) maintain that educational institutions must move beyond passive digital exposure toward active competence-building in data literacy and computational reasoning. Nigerian-focused studies such as Olawade et al. (2025) reveal that although students increasingly recognise AI's workplace relevance, actual preparedness remains weak due to curricular limitations and insufficient practical exposure. This paper adopts educational preparedness as the capacity of educational institutions to provide learners with the technical, cognitive, and adaptive competencies necessary for effective participation in an AI-influenced labour market.

**How Artificial Intelligence is Influencing Employability Patterns in Nigeria's Labour Market**

Artificial intelligence has introduced notable shifts in employability patterns across labour markets by redefining the competencies considered essential for workforce entry and progression. In Nigeria, this shift is increasingly evident across sectors such as banking, telecommunications, health services, digital commerce, media production, and public administration. Employability, traditionally linked to formal academic qualifications and discipline-specific knowledge, is now being increasingly tied to technological adaptability, digital reasoning, data interpretation, and familiarity with automated systems. This transition reflects what Acemoglu and Restrepo (2021) describe as task reallocation, whereby AI does not necessarily eliminate occupations in absolute terms but redistributes tasks between human workers and intelligent systems. In the Nigerian labour market, this process is producing a gradual but observable transition from qualification-centred hiring to competency-sensitive recruitment.

Recent evidence indicates that employers in Nigeria increasingly prioritise applicants with demonstrable digital and AI-related skills. Stephany et al. (2026), through experimental hiring evidence, established that candidates with AI competencies recorded significantly stronger employment prospects than equally qualified peers lacking such skills. This finding resonates strongly with labour market patterns in Nigeria, where technology-facing sectors increasingly embed AI-driven tools into routine operations. For instance, commercial banks such as Guaranty Trust Holding Company and Zenith Bank have expanded the use of AI-enabled fraud detection systems, customer service automation, and predictive risk analytics. John et al. (2025) found that Nigerian banking institutions adopting AI systems reported greater preference for employees with data analytics competence, cybersecurity literacy, and algorithmic interpretation skills. Consequently, graduates entering the financial sector now face employability requirements that extend well beyond traditional accounting or finance credentials.

The telecommunications sector offers another practical illustration. Firms such as MTN Nigeria and Airtel Nigeria increasingly deploy AI-driven customer behaviour analysis, network optimisation systems, and automated customer support channels. These developments have altered recruitment profiles by favouring candidates with computational problem-solving ability and digital systems awareness. Clarke (2023) argues that employability has become increasingly contingent upon workers' ability to function within technologically mediated organisational systems. In Nigeria, this has generated a distinction between graduates possessing traditional academic knowledge and those able to demonstrate practical digital competence.

AI has also influenced employability through the emergence of entirely new occupational pathways. Roles such as AI prompt specialists, machine learning support analysts, data labelling supervisors, algorithmic auditors, digital compliance officers, and AI ethics assistants are gradually entering Nigeria's employment ecosystem, particularly through fintech firms and outsourced digital labour platforms. Research by Kurer and Gallego (2021) shows that technological restructuring often creates complementary occupations even as routine roles decline. In Nigeria, technology start-ups clustered around Lagos and Abuja increasingly recruit workers for AI-adjacent tasks requiring hybrid competencies in data interpretation, software familiarity, and business reasoning.

However, the influence of AI on employability is unevenly distributed. Many Nigerian graduates remain excluded because educational preparation has not kept pace with workplace expectations. Olawade et al. (2025), in their assessment of healthcare students in Nigeria, found that although over 80 per cent acknowledged AI's relevance to professional practice, only a small proportion demonstrated operational understanding of machine learning applications. This gap reflects broader labour market realities where awareness does not automatically translate into employability.

The informal sector, which accounts for a substantial share of Nigerian employment, also reveals changing employability expectations. Digital commerce vendors increasingly rely on AI-supported platforms for customer targeting and logistics coordination. Workers unable to adapt to platform-driven systems risk occupational displacement. Autor et al. (2022) note that digital technologies tend to reward adaptive capability rather than static vocational proficiency.

A critical appraisal suggests that while AI is creating fresh employability opportunities, it is simultaneously deepening labour market segmentation. Graduates with access to quality digital education, urban infrastructure, and professional

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networks are better positioned to benefit, while those from under-resourced institutions face exclusion. This confirms Holmes' (2021) argument that employability must be understood as both an individual and structural phenomenon. In Nigeria, AI is therefore not merely changing recruitment criteria; it is reorganising access to employment itself.

**The Role of Nigeria's Educational System in Preparing Graduates for Labour Market Changes Associated with Artificial Intelligence**

Nigeria's educational system occupies a central position in determining how effectively graduates transition into an AI-influenced labour market. As the institutional mechanism through which technical knowledge, occupational orientation, and professional competence are developed, the education sector is expected to prepare learners for changing employment realities. Yet evidence suggests that the Nigerian educational system has struggled to align curriculum design, instructional methods, and practical exposure with the skill requirements emerging from AI-driven workplace transformation.

A major challenge lies in curriculum rigidity. Many Nigerian universities and polytechnics continue to operate programmes designed around industrial-era labour assumptions where disciplinary knowledge alone was considered sufficient for employment. Bond et al. (2021) argue that educational preparedness in technologically changing labour systems requires integration of digital reasoning, problem-solving, interdisciplinary learning, and practical systems interaction. In Nigeria, however, many degree programmes remain heavily theoretical, offering limited exposure to computational applications, AI literacy, or digital workplace simulations.

This disconnect is particularly visible in social sciences, humanities, and education-related programmes where AI-related content remains largely absent. Even in technical disciplines such as engineering and computer science, practical exposure is often constrained by inadequate laboratories, unstable electricity supply, and outdated software infrastructure. Rabiu et al. (2025) observed that technical and vocational institutions in Nigeria face persistent infrastructural limitations that restrict meaningful AI skill acquisition.

Practical examples illustrate this challenge clearly. In several federal universities, computer science students often complete degrees with minimal hands-on interaction with machine learning tools such as TensorFlow or PyTorch due to limited access to computing resources. This creates a situation where graduates possess theoretical understanding but lack practical competence demanded by employers. By contrast, institutions such as Covenant University and African University of Science and Technology have increasingly integrated AI and data science modules into specialised programmes, producing graduates more aligned with emerging labour market expectations.

Another important issue concerns lecturer preparedness. Educational transformation depends not only on curriculum revision but also on instructors' ability to teach emerging technologies effectively. Olawade et al. (2025) found that limited faculty competence in AI-related applications significantly affects instructional quality. Where lecturers themselves lack familiarity with contemporary digital systems, student preparedness becomes constrained.

Industry-academic collaboration remains another weak area. Effective preparation for AI-driven labour markets requires partnerships that expose students to real workplace applications through internships, practical projects, and co-designed training modules. In countries with stronger AI labour pipelines, universities collaborate directly with industry to ensure curriculum responsiveness. In Nigeria, such partnerships remain limited and unevenly distributed. Most students encounter workplace technologies only after graduation, creating adjustment difficulties.

Some encouraging developments nevertheless exist. The inclusion of digital literacy reforms under Nigeria's revised national education strategies and increasing private-sector training initiatives indicate growing recognition of the challenge. Programmes led by technology firms, coding academies, and innovation hubs have provided supplementary AI exposure for thousands of young Nigerians. Yet these interventions remain insufficient relative to national graduate output.

A critical appraisal shows that Nigeria's educational system currently performs an uneven preparatory role. It produces pockets of excellence but lacks systemic readiness. Educational preparedness, as Luckin and Holmes (2022) observe, depends on active competence-building rather than passive technological awareness. Nigeria's institutions have made initial progress in recognising AI's relevance, but substantial curricular, infrastructural, and pedagogical reform remains necessary if graduates are to compete effectively within changing labour conditions.

**The Implications of Artificial Intelligence-Driven Labour Market Restructuring for Workforce Participation and Occupational Opportunities in Nigeria**

Artificial intelligence-driven labour market restructuring carries significant implications for workforce participation and occupational opportunities in Nigeria. These implications are both productive and disruptive, generating fresh employment pathways while simultaneously altering occupational stability, entry requirements, and patterns of labour inclusion.

One major implication is occupational displacement within routine-intensive sectors. Acemoglu and Restrepo (2021) argue that AI adoption tends to automate repetitive cognitive and administrative tasks, reducing demand for certain categories of labour. In Nigeria, this pattern is increasingly visible in banking halls, customer support operations, and administrative processing centres where automated systems have reduced dependence on clerical staff. For example, AI-powered customer service chatbots now perform functions previously handled by entry-level customer service representatives. This restructuring narrows traditional graduate entry points.

The second implication is occupational upgrading. While some routine roles decline, new opportunities emerge requiring higher-order digital and analytical capabilities. The fintech sector provides a practical example. Nigerian firms such as Flutterwave and Paystack increasingly recruit data analysts, cybersecurity specialists, automation engineers, and digital compliance professionals. These roles often offer stronger wage prospects than conventional entry-level positions. Autor et al. (2022) note that technological restructuring frequently raises returns to specialised competence.

Thirdly, AI is reshaping workforce participation by increasing platform-mediated work. Digital labour platforms now enable Nigerians to participate in global task markets involving content moderation, data annotation, virtual assistance, and AI model support services. Vallas and Schor (2020) describe this as platform-enabled labour incorporation. In Nigeria, young workers increasingly access such opportunities through remote digital work arrangements. While this expands participation, it often lacks employment protections, stable income guarantees, and social security coverage.

A fourth implication concerns geographic inequality. AI-driven opportunities are heavily concentrated in urban centres such as Lagos, Abuja, and Port Harcourt where digital infrastructure and innovation ecosystems are stronger. Graduates from rural and underserved regions face reduced access to AI-linked employment pathways. This creates what Kalleberg and Vallas (2021) identify as technological stratification within labour systems. Gendered implications also deserve attention. Emerging evidence suggests that women in Nigeria remain underrepresented in AI-intensive occupations due to unequal access to technical training and digital resources. Without targeted intervention, AI restructuring may reproduce existing labour inequalities.

Another practical implication is the growing premium placed on lifelong learning. Employment stability increasingly depends on workers' capacity for continuous reskilling. Traditional assumptions that formal qualification guarantees long-term employability are becoming less tenable. Workers must now adapt continuously to evolving technological demands. The public sector also faces restructuring pressures. Automated record management, digital governance systems, and predictive administrative tools may reduce demand for routine bureaucratic functions while increasing demand for technical oversight roles. Yet public institutions often lag in workforce reskilling, creating transitional vulnerabilities.

A balanced appraisal indicates that AI-driven labour market restructuring in Nigeria presents neither outright employment collapse nor automatic opportunity expansion. Its outcomes depend heavily on educational preparedness, institutional adaptation, regulatory responsiveness, and infrastructure availability. Wood et al. (2021) caution that technological transitions can widen inequality where institutional safeguards are weak. For Nigeria, the challenge lies in ensuring that AI expands occupational participation rather than intensifying exclusion. Without deliberate intervention, labour market restructuring may privilege a technologically equipped minority while marginalising broader segments of the workforce.

**Empirical Review**

Stephany et al. (2026) carried out a study on artificial intelligence skills and labour market competitiveness across digitally evolving employment sectors in Europe and selected emerging economies. The investigation was conducted across Germany, the United Kingdom, India and selected digitally integrated labour clusters with emphasis on hiring discrimination and digital skill signalling. The study was anchored on Human Capital Theory as advanced by Becker, with the argument that technological competence constitutes an emerging form of productive capital that shapes employability outcomes. A field experimental design was adopted using a large-scale hiring simulation involving fictitious job applications submitted across multiple labour market platforms. The sample consisted of 18,500 applications distributed across technology, finance, administration and service-related occupations using stratified random selection. Data were gathered through controlled résumé audit procedures and employer callback tracking. The findings revealed that applicants who explicitly demonstrated artificial intelligence literacy and practical digital systems competence received significantly higher positive employer responses than candidates with equivalent academic credentials but without technological indicators. The authors concluded that AI competence has become a measurable determinant of employability in contemporary labour systems and argued that educational institutions must integrate computational skill development into graduate preparation.

This study provides useful evidence on how employability is increasingly conditioned by technological competence. Its strength lies in its experimental precision and direct measurement of labour market behaviour rather than self-reported perceptions. However, the work focused primarily on advanced and semi-industrialised labour environments with established digital infrastructure. It did not sufficiently address the realities of developing countries where institutional and educational constraints affect technological readiness. The gap identified lies in the absence of contextual analysis regarding how educational preparedness shapes employability in African labour systems, particularly within Nigeria's evolving occupational structure. The present paper addressed this omission by situating employability within Nigeria's educational and industrial context.

Olawade et al. (2025) examined artificial intelligence readiness among healthcare students in Nigeria with attention to competence acquisition and future workplace adaptation. The study was conducted across tertiary institutions in South-West and North-Central Nigeria, covering both federal and private universities offering medical and allied health programmes. The investigation drew from the Technology Acceptance Model, particularly its emphasis on perceived usefulness and behavioural intention in shaping technology adoption. A descriptive cross-sectional survey design was employed. The sample comprised 1,274 undergraduate

healthcare students selected through multistage sampling techniques involving institutional stratification and proportionate selection. Data were collected using a structured questionnaire measuring awareness, exposure, knowledge depth and willingness to adopt AI-supported professional systems. Statistical analysis involved descriptive statistics and logistic regression modelling. The results showed that although over 84 per cent of respondents expressed positive attitudes towards artificial intelligence and acknowledged its future workplace significance, only 12 per cent demonstrated adequate conceptual understanding of machine learning applications, predictive analytics or clinical automation tools. Institutional exposure to practical AI training was also found to be very limited. The researchers concluded that Nigeria's higher education system remains insufficiently prepared to equip future professionals with competencies required for technology-integrated labour environments.

This work is particularly relevant because it offers direct Nigerian evidence regarding educational preparedness and labour market transition challenges. Its empirical contribution lies in exposing the disparity between technological awareness and actual competence acquisition. Nonetheless, the investigation was restricted to healthcare education and therefore offers limited explanatory value across broader disciplinary and occupational sectors. It did not interrogate how these educational deficiencies translate into employability outcomes across Nigeria's wider labour market. The current paper extended beyond sector-specific analysis to examine educational preparedness as a broader sociological factor shaping labour market restructuring across multiple occupational domains.

Rabiu et al. (2025) investigated artificial intelligence adoption for skills development within Nigeria's technical and vocational education system. The research covered selected technical colleges, polytechnics and vocational development centres across Northern and Southern Nigeria. The analysis was guided by Structural Functionalism, particularly the proposition that educational institutions perform adaptive functions in preparing individuals for occupational roles required by changing productive systems. The researchers adopted a systematic review design, synthesising evidence from peer-reviewed studies published between 2020 and 2025 alongside policy implementation reports and institutional performance records. The sample frame included 42 empirical studies selected through purposive inclusion criteria based on relevance, recency and methodological clarity. Data were extracted through document coding matrices and analysed using thematic synthesis. Findings indicated that AI integration within Nigeria's technical and vocational education system remains constrained by infrastructural inadequacies, limited instructor competence, weak curriculum reform and insufficient collaboration between educational institutions and industry. The review further showed that where AI-centred pilot programmes existed, students demonstrated stronger problem-solving ability and improved workplace adaptability compared with peers trained through conventional instructional methods. The authors concluded that Nigeria's workforce preparedness depends substantially on accelerated reform within technical and vocational training structures.

The study contributes significantly by linking educational reform to future labour competitiveness. Its methodological breadth allowed for synthesis of diverse empirical observations across institutional settings. However, because the investigation relied on secondary evidence, it lacked direct engagement with labour market participants and did not examine the practical implications of AI-related educational deficiencies for workforce participation and occupational mobility. The gap emerging from this limitation concerns the need for an industrial sociological analysis that directly connects educational preparedness with employability patterns and labour market restructuring in Nigeria. This is the precise gap addressed by the present paper, which examines the relationship between artificial intelligence, employability and labour restructuring from a broader institutional and occupational standpoint.

**Theoretical Review: Human Capital Theory**

Human Capital Theory was propounded by Gary Becker in 1964. The theory was developed to explain how investments in education, training, skills acquisition, and knowledge development enhance individual productivity and improve labour market outcomes. Becker (1964) argued that education should not merely be viewed as a social good but as an economic investment capable of increasing workers' efficiency, employability, earnings potential, and adaptability to changing production systems. The central assumption of the theory is that individuals and societies derive measurable returns from investments made in formal education, vocational training, technological competence, and professional development. It further assumes that labour markets reward workers based on the quality and relevance of the productive skills they possess, while educational institutions serve as key mechanisms for equipping individuals with competencies required for participation in evolving economic systems.

A major assumption of the theory is that knowledge and technical capability constitute forms of capital similar to physical assets because they generate productive value over time. It presumes that when individuals acquire relevant education and specialised training, they become more competitive and adaptable within changing occupational structures. Another important assumption is that technological and industrial changes alter the value of specific forms of human capital, thereby requiring continuous reskilling and educational adjustment. This assumption is particularly relevant in the age of artificial intelligence, where competencies such as computational reasoning, digital literacy, data interpretation, and technological adaptability increasingly determine labour market access. The theory also assumes that where educational systems fail to align with labour market transformation, employability gaps emerge, resulting in unemployment, underemployment, and occupational exclusion.

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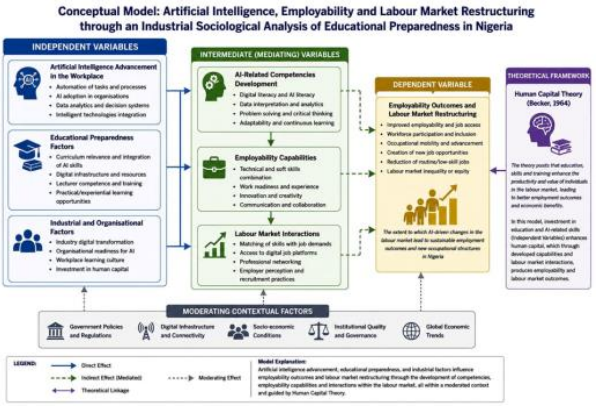
The strength of Human Capital Theory lies in its strong explanatory power regarding the relationship between education, skill acquisition, and employability outcomes. It provides a logical basis for understanding why workers with technologically relevant competencies are more likely to secure employment opportunities within digitally restructuring economies. The theory is especially valuable for analysing labour market transitions associated with artificial intelligence because it explains how technological change redefines the forms of knowledge considered economically productive. It also offers practical policy relevance by highlighting the need for educational reform, workforce retraining, and institutional investment in future-oriented learning systems. Another strength is its adaptability across different labour market contexts, making it useful for examining both developed and developing economies.

Despite these strengths, the theory has some limitations. One weakness is its tendency to overemphasise individual responsibility for employability while underestimating structural barriers such as weak infrastructure, institutional inefficiency, economic instability, and unequal access to quality education. In contexts such as Nigeria, employability is not determined solely by educational attainment but also by labour market saturation, policy inconsistency, and technological inequality. The theory also assumes that labour markets operate rationally by rewarding competence, whereas recruitment processes are often shaped by social networks, regional disparities, and institutional discrimination. Another limitation is that it gives limited attention to broader sociological dimensions such as power relations, occupational stratification, and structural exclusion, which are central concerns in industrial sociology.

Notwithstanding these limitations, Human Capital Theory provides a strong analytical foundation for this study. Its relevance to the topic lies in its capacity to explain how artificial intelligence is restructuring labour markets by changing the value attached to particular forms of educational preparation and technical competence. The theory helps illuminate the relationship between Nigeria's educational system and graduate employability within an AI-influenced occupational environment. It offers a useful framework for examining whether Nigerian educational institutions are producing the forms of human capital required for participation in technologically evolving labour systems. Applied to this study, the theory suggests that if Nigeria's educational system fails to integrate artificial intelligence literacy, digital competence, and adaptive problem-solving into its curriculum, graduates may experience reduced employability and limited occupational mobility. Conversely, strategic investment in AI-oriented education and workforce development would strengthen labour market participation and improve occupational opportunities. Human Capital Theory is therefore adopted for this paper because it offers the most direct explanation of how educational preparedness shapes employability and labour market restructuring in the era of artificial intelligence in Nigeria.




## 6. DISCUSSIONS

This paper revealed that artificial intelligence is significantly reshaping employability patterns within Nigeria's labour market by redefining the competencies considered relevant for workforce entry and occupational progression. This aligns with the position advanced by Acemoglu and Restrepo (2021), who argued that technological advancement restructures labour through task reallocation rather than absolute job elimination. The evidence reviewed in this paper indicates that Nigerian employers increasingly favour graduates with demonstrable digital competence, data interpretation skills, computational reasoning, and adaptive technological literacy over those possessing only conventional academic qualifications. This position is reinforced by Stephany, Teutloff and Leone (2026), whose experimental findings established that AI-related skills now function as important employability signals in recruitment processes.

The Nigerian labour market reflects this transition in practical terms. Financial institutions increasingly demand proficiency in digital analytics and algorithm-supported decision systems; telecommunications firms recruit workers capable of interacting with automated operational platforms; and technology-based enterprises seek graduates with practical exposure to machine-assisted systems. This suggests that employability in Nigeria is gradually shifting from certificate possession to capability demonstration. However, the findings also expose uneven access to these opportunities, especially among graduates from institutions lacking technological infrastructure. This raises important implications for the Nigerian education sector, as continued dependence on outdated pedagogical approaches may further widen graduate unemployment and deepen labour market exclusion.

The paper further established that Nigeria's educational system is yet to adequately prepare graduates for labour market changes associated with artificial intelligence. This finding strongly supports the observations of Olawade et al. (2025), who reported substantial knowledge gaps among Nigerian healthcare students despite widespread awareness of AI's professional relevance. Similarly, Rabiu, Bawa and Saminu (2025) observed that technical and vocational institutions across Nigeria remain constrained by weak infrastructure, outdated instructional facilities, and inadequate lecturer competence in emerging digital technologies. The

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present study extends these observations by demonstrating that the challenge cuts across disciplines and is not limited to science-based programmes. In many Nigerian universities, instructional delivery remains heavily theoretical, with limited opportunities for practical experimentation using computational tools, machine learning interfaces, or digital problem-solving simulations.

A practical illustration can be found in the contrast between institutions with dedicated innovation hubs and those without such facilities. Graduates from universities that provide coding laboratories, data science modules, and collaborative projects with industry partners tend to demonstrate stronger workplace adaptability than those exposed only to traditional classroom instruction. This deficiency has serious implications for educational planning in Nigeria. Curriculum reform can no longer be treated as an administrative exercise but must become a strategic national response to labour market transformation. Without intentional integration of AI literacy across academic programmes, the education sector risks producing graduates whose qualifications are increasingly disconnected from employment realities.

The paper also showed that artificial intelligence-driven labour market restructuring carries both promising and disruptive implications for workforce participation and occupational opportunities in Nigeria. Consistent with Autor, Mindell and Reynolds (2022), the evidence suggests that AI is generating occupational upgrading in some sectors while reducing traditional entry-level opportunities in others. For instance, automated customer service systems have reduced clerical employment openings in banking, while creating demand for digital compliance analysts, cybersecurity specialists, and algorithm-monitoring personnel. This reflects what Kalleberg and Vallas (2021) described as labour market stratification driven by technological competence. In Nigeria, this restructuring is particularly visible in urban centres where digital ecosystems support technology-driven employment growth.

Conversely, graduates in regions with weaker digital infrastructure face reduced access to these emerging opportunities. The practical implication is that AI may inadvertently reinforce existing inequalities unless deliberate educational and infrastructural interventions are implemented. The growth of remote platform work further illustrates this dual effect. While it expands access to global digital tasks such as data annotation, virtual assistance, and AI model support, it often exposes workers to precarious conditions lacking employment protections. For the Nigerian education sector, this finding underscores the need to prepare students not only for formal employment but also for participation in digitally mediated work arrangements that demand flexibility, entrepreneurial capacity, and continuous learning.

The Human Capital Theory adopted for this study provides strong explanatory support for these findings. Becker's proposition that education and skill acquisition function as productive investments is clearly validated by the evidence reviewed. The study demonstrates that graduates equipped with technologically relevant competencies are better positioned to access evolving occupational opportunities, confirming the theory's central assumption that labour markets reward valuable human capital. The observed employability advantage enjoyed by individuals with AI-related competence directly supports this theoretical position. At the same time, the findings reveal the consequences of inadequate human capital investment within Nigeria's educational system. Where institutions fail to provide relevant technological preparation, graduates encounter reduced competitiveness and occupational disadvantage.

This directly illustrates Becker's argument that educational systems shape economic productivity through the quality of skills they transmit. Practical examples such as stronger labour market outcomes among graduates exposed to innovation-centred learning environments further validate the theory. For the Nigerian education sector, the implication is unmistakable: educational investment must move beyond expansion of enrolment towards deliberate cultivation of AI-oriented capabilities. This includes curriculum redesign, lecturer retraining, institutional partnerships with technology-driven industries, and provision of digital learning infrastructure. The theory therefore not only supports the findings but also provides a practical framework for interpreting the relationship between educational preparedness, employability, and labour market restructuring in Nigeria's emerging AI environment.

## 7. CONCLUSIONS

This paper examined artificial intelligence, employability and labour market restructuring through an industrial sociological analysis of educational preparedness in Nigeria and established that the increasing integration of artificial intelligence into workplace systems is fundamentally altering employability requirements and occupational structures across the country. The paper concluded that labour market competitiveness in Nigeria is increasingly determined by digital adaptability, computational reasoning and practical technological competence rather than by conventional academic credentials alone. It further concluded that Nigeria's educational system has not sufficiently adjusted to these labour market transitions, as many institutions continue to operate with curricula and instructional models that inadequately prepare graduates for AI-driven workplace realities.

The paper also concluded that while artificial intelligence is creating new occupational opportunities in sectors such as fintech, telecommunications, healthcare informatics and digital services, it is simultaneously reducing traditional entry-level openings and widening inequalities between graduates with technological exposure and those without such preparation. This emerging pattern confirms that educational preparedness has become a decisive factor in workforce participation and occupational mobility within Nigeria's evolving labour market.

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## 8. RECOMMENDATIONS

The paper suggested the following recommendations arising from the conclusions:

i. The Federal Ministry of Education, the National Universities Commission (NUC) and relevant regulatory bodies should undertake immediate curriculum restructuring across universities, polytechnics and colleges of education to integrate artificial intelligence literacy, data analytics, computational reasoning and digital problem-solving into both technical and non-technical academic programmes. This reform should move beyond theoretical content to include practical laboratory-based instruction, project simulations and industry-relevant digital applications.

ii. Tertiary institutions should establish structured partnerships with technology firms, innovation hubs and digitally driven organisations to create compulsory internship pathways, collaborative training programmes and workplace-based learning opportunities that expose students to practical artificial intelligence applications before graduation. Such institutional collaboration would strengthen graduate readiness and improve alignment between academic preparation and labour market expectations.

iii. Government and educational stakeholders should invest in lecturer retraining, digital infrastructure development and regional technology access initiatives to reduce disparities in educational preparedness across institutions. This should include provision of functional innovation laboratories, subsidised access to relevant software tools and continuous professional development programmes that equip academic staff with the competence required to deliver future-oriented instruction capable of preparing graduates for changing occupational demands.

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