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The Future Counsellors: Challenges and Prospects in the Fourth Industrial Revolution

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ABSTRACT

Background: The Fourth Industrial Revolution (4IR)—driven by artificial intelligence, robotics, big data and virtual platforms—is disrupting counselling in Nigeria, where youth unemployment, uneven infrastructure and legacy curricula constrain practice and employability. *Aim:* To identify the competencies, service models and policy levers required for Nigerian counsellors to remain effective and competitive in the 4IR. *Method:* A position-paper design using systematic document analysis of peer-reviewed articles, national and international policy reports, and labour-market statistics (2015–2025). The review followed a staged flow—scoping, eligibility screening, thematic categorisation and synthesis—using a document-analysis protocol and a coding matrix as instruments; data were analysed through thematic synthesis and integrative argumentation. *Results and Discussion:* Evidence indicates a persistent digital-skills gap in counsellor education (digital literacy, online/hybrid delivery, ethical data governance) and limited institutional readiness, which collectively depress service quality and labour-market outcomes. Yet, technology-enabled models—AI-assisted intake/triage, tele-mental-health platforms, secure cloud records and data-informed career guidance—can expand reach, reduce wait times, personalise interventions and strengthen counsellors' roles in tackling youth employability and mental-health burdens. Realising these gains requires curriculum redesign aligned to 4IR competencies, mandatory CPD in cyberpsychology and data ethics, minimum technology standards and practice guidelines to manage privacy, bias and equity risks, with targeted support for rural and resource-constrained settings. *Conclusion:* The research answers its guiding question by showing that Nigerian counselling will sustain relevance only through a deliberate shift to technologically informed, ethically grounded hybrid practice, underwritten by curriculum reform, structured CPD and enabling policy and infrastructure; without this integration, counsellors face progressive marginalisation, whereas with it they can deliver broader access, higher efficiency and better outcomes.

Keywords: Fourth Industrial Revolution (4IR), Counselling Practice, Digital Competencies, Hybrid Service Models

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INTRODUCTION

The Fourth Industrial Revolution (4IR) is no longer a distant forecast; it is a present reality reshaping how societies live, work, and interact. Marked by the convergence of artificial intelligence, robotics, cloud computing, big data analytics, and virtual systems, it has introduced changes at a pace and scale unmatched by previous industrial revolutions (Sahai & Rath, 2021). These technologies are redefining the structure of labour markets, altering governance systems, and influencing human relationships in profound ways. In the global context, studies suggest that automation could affect more than half of current occupations (Autor, 2015; Mason, 2022). The Nigerian labour market already faces pressing challenges that 4IR may intensify. The unemployment rate rose from 22.7% in the third quarter of 2018 to 32.0% in 2020, with projections suggesting an increase to 33.5% by 2025 (Adebimpe et al., 2021). Young people between the ages of 18 and 35 — including many recent graduates — are the most affected. For counselling graduates, this situation is compounded by a mismatch between their academic preparation and the digital competencies demanded in today's workplaces. In many Nigerian universities, guidance and counselling programmes have not been substantially revised to integrate skills relevant to 4IR, leaving graduates ill-equipped for the digitally mediated environments that now dominate service delivery. Ezeneme (2024) observes, employers are increasingly selective, narrowing recruitment criteria to favour candidates with advanced technological literacy.

The counselling profession, by nature relational and people-centred, is also feeling the impact of digital transformation. Tools such as virtual counselling platforms, tele-mental health systems, and AI-assisted client assessments are not merely augmenting traditional practice—they are redefining it (Ranihusna, 2025). Counsellors now need to navigate hybrid service models that blend face-to-face sessions with online

delivery, while ensuring they preserve the empathetic and ethical foundations of the profession. This transformation raises critical questions: Are Nigerian counsellors adequately prepared to integrate emerging technologies into their work? Do existing training programmes equip them with the skills necessary to thrive in the 4IR environment? Which specific digital competencies should be prioritised to ensure their continued relevance and employability? While previous industrial revolutions disrupted economies and societies, the 4IR poses a more complex challenge because it simultaneously creates and eliminates opportunities. It calls for a fundamental rethinking of how professional services — including counselling — are conceptualised, delivered, and sustained (Muhammed & Alege, 2025). For Nigeria, the urgency is clear: without deliberate reforms in counsellor education and professional development, the gap between technological change and professional readiness will continue to widen. This study examines the implications of 4IR for counselling in Nigeria, analyses the emerging challenges and opportunities, and proposes strategies to align counsellor training and practice with both global technological trends and local socio-economic realities.

Guidance and counselling as a formal professional service in Nigeria emerged in the post-independence period, when education policy reforms began to recognise its role in fostering academic achievement, career development, and social adjustment. By the late 1960s and early 1970s, pioneering initiatives such as the introduction of vocational guidance in secondary schools had begun to take shape, often supported by international agencies and professional associations (Okolocha & Baba, 2016). The 1977 National Policy on Education, revised in 2004 and 2013, formalised counselling's integration into the school system as part of a comprehensive student support service (Oyewole, 2019). In its early years, the profession focused largely on face-to-face engagement, personal rapport, and manual record-keeping. Counsellors relied on interviews, group discussions, and career talks as their primary tools (Okolie et al., 2020). These approaches reflected the socio-economic conditions of the time, when Nigeria's economy was more dependent on traditional industries, and job placement was often a matter of matching skills to predictable career paths. The pace of technological change was slow enough for counsellors to adapt without significant disruption.

However, from the mid-1980s onwards, Nigeria's economic landscape shifted under the combined pressures of globalisation, structural adjustment policies, and rapid demographic growth. Youth unemployment began to climb, and the career trajectories of graduates became increasingly uncertain (Akanle et al., 2025). The counselling profession, while recognised as valuable, often found itself sidelined in resource allocation and policy implementation. In many schools, counsellors were reassigned to administrative duties, leaving limited time for direct student engagement (Aluede et al., 2017; Muhammed & Imam, 2020). These long-standing challenges now intersect with the disruptive forces of the Fourth Industrial Revolution (4IR). Globally, 4IR has been described as an era in which digital, physical, and biological systems merge, enabling technologies such as artificial intelligence, big data, robotics, and virtual reality to redefine the way people work and communicate (Hossain, 2023; Mooney & Williams, 2024). The transformation in developed economies has led to reforms in professional training and service delivery, including the adoption of tele-mental health platforms and AI-driven career assessment tools (Ranihusna, 2025).

In Nigeria, however, counsellor education and practice have not evolved at the same pace. Curricula in many universities remain anchored in models developed before the digital era, with minimal integration of technological competencies relevant to the modern labour market (Bridgstock, 2016; Goulart et al., 2022). This gap is particularly concerning given that the country's youth population — now one of the largest in the world — faces unprecedented employment competition in both domestic and international contexts (Diraditsile, 2020). The urgency is not merely technological; it is also social and economic. Counsellors occupy a pivotal role in helping individuals navigate career uncertainties, manage mental health pressures, and adapt to the demands of an increasingly digital workplace. Without updated skills, however, they risk becoming marginalised in a system that increasingly rewards technological fluency alongside interpersonal competence. Sutton et al. (2018) warn, automation is no longer confined to repetitive manual labour; it is now encroaching on cognitive and relational tasks once considered uniquely human. Against this backdrop, understanding the historical trajectory of counselling in Nigeria, its current limitations, and the new demands imposed by 4IR is essential. Only by situating today's challenges within this broader context can meaningful strategies be developed to align professional training, service delivery, and policy support with both global trends and Nigeria's socio-economic realities.

The Fourth Industrial Revolution and Its Implications for Counselling Practice

The concept of Schwab's Fourth Industrial Revolution (4IR) is a significant shift in human society, characterised by the integration of technologies that blur the lines between physical, digital, and biological realms (Mooney & Williams, 2024). Unlike earlier industrial epochs — steam and mechanisation in the First, electrification and assembly-line production in the Second, and the emergence of digital computing in the Third — the 4IR is defined not merely by its technological innovations but by the unprecedented speed, reach, and transformative capacity of these changes. Across the globe, advances such as artificial intelligence (AI), robotics, machine learning, big data analytics, virtual and augmented reality, and the Internet of Things (IoT) are reshaping industries and professions (George & George, 2024). Susskind and Susskind

(2022) describe this shift as more than cumulative progress; rather, it represents a systemic upheaval that forces professions to evolve or risk obsolescence. For counsellors, whose work has traditionally relied on face-to-face interaction and the nuanced reading of human emotion, the emergence of virtual counselling platforms, tele-mental health systems, algorithm-assisted assessments, and AI-generated behavioural predictions signals both new possibilities and unprecedented challenges.

Moll (2023) notes that, historically, technology has amplified human capability; however, the 4IR differs in that it can replace — rather than simply augment — human roles. Intelligent systems now perform tasks that once required uniquely human judgement, such as decision-making, complex problem-solving, and even recognising emotional cues. This evolution fundamentally alters the landscape for professions, including counselling, that are grounded in relational expertise. Central to this transformation is the dominance of data as an operational resource. With smartphones, wearables, and connected devices generating streams of personal information, counsellors now have access to sophisticated tools for predictive mental health support, tailored intervention plans, and immersive therapeutic environments. At the same time, these innovations raise ethical dilemmas regarding data privacy, algorithmic bias, and the potential erosion of the empathic core of the profession (Kumar et al., 2024). In Nigeria and similar developing contexts, the risk of professional displacement is compounded by limited institutional capacity to integrate such technologies into training and practice. Smărăndescu (2024) cautions that without deliberate investment in upskilling, low- and mid-skilled workers in human services are disproportionately vulnerable to automation. Within this context, the literature calls for a reconceptualisation of counselling frameworks, emphasising adaptive competence, ethical literacy in virtual environments, and the ability to harness technology without losing the human element (Chadiuk, 2025).

METHOD

This study adopted a position paper approach aimed at critically examining the challenges and prospects for Nigerian counsellors within the context of the Fourth Industrial Revolution (4IR). Rather than conducting primary data collection through surveys or experiments, the research relied on a rigorous synthesis of secondary sources, enabling an evidence-based argument grounded in both global trends and the Nigerian socio-economic reality. By reviewing and connecting these strands, the study was able to develop a coherent framework for understanding how 4IR technologies intersect with professional counselling in Nigeria. Two main categories of secondary sources were utilised: Academic literature – including peer-reviewed journal articles, scholarly books, and conference papers that address counselling practice, 4IR technologies, and professional adaptation in education and health-related fields. Policy and institutional reports – from bodies such as the Federal Ministry of Education, the Counselling Association of Nigeria (CASSON), the World Economic Forum, and UNESCO, providing authoritative data and strategic perspectives. The selection of sources was purposive, prioritising credibility, recency, and direct relevance to the research problem. The review process followed a structured pathway: Initial Scoping – A broad sweep of literature and reports was conducted to capture the range of global and local discussions on 4IR and counselling. Source Filtering – Materials were filtered based on publication date (with emphasis on works from 2015 onward), thematic relevance, and empirical or conceptual depth. Thematic Categorisation – Relevant materials were grouped under thematic headings such as "4IR technologies and human services," "counsellor education reform," and "ethical considerations in digital practice." Synthesis and Analysis – Themes were compared and contrasted, identifying commonalities, divergences, and contextual nuances unique to Nigeria. Throughout the process, attention was given to balancing global perspectives with Nigerian realities, ensuring that the discussion remained contextually grounded. One inherent limitation of this approach is its dependence on the availability and quality of existing literature. In areas where Nigerian-specific empirical data on counsellors' digital readiness is sparse, the study relied on extrapolations from broader educational or labour market research. This makes the findings interpretive rather than predictive, highlighting the need for future empirical studies that directly assess counsellors' competencies in 4IR contexts.

RESULTS AND DISCUSSION

4IR Characteristics and Implications for the Global Labour Market: A Counselling Perspective

The defining features of the 4IR extend beyond novel inventions; they embody a structural reorganisation of work itself — how it is conceived, executed, and distributed. This transformation is powered by the simultaneous rise of automation, digital interconnectivity, and real-time data analytics, producing far-reaching consequences for production systems, workforce dynamics, and service delivery (Prabhakar, 2025). Unlike earlier industrial revolutions, the 4IR integrates cyber-physical systems and artificial intelligence into both blue-collar and white-collar roles, challenging the boundaries of employability. Danuser and Kendzia (2019) observe, routine, repetitive tasks are increasingly ceded to machines, while the demand grows for complex cognitive abilities and socio-emotional skills. Atherwood and Sparks (2019) predict that more than 65% of children entering primary school today will ultimately work in jobs that do not yet exist — a stark reminder of the labour market's volatility. For counsellors, this dynamic offers both vulnerability and resilience. On one side, standardised processes such as intake form analysis or basic career matching can be automated. On the other hand, deeply

human capacities — empathy, ethical discernment, critical reflection, and cultural sensitivity — remain difficult to replicate through technology. Robertson and Robertson (2020) point to the emergence of hybrid professional roles such as digital wellness coaches, tele-mental health facilitators, and virtual career counsellors, which require counsellors to blend traditional interpersonal skills with digital literacy, systems thinking, and adaptive communication.

Nevertheless, the global benefits of the 4IR are not evenly distributed. In countries where technological infrastructure lags and education systems are slow to reform, automation risks exacerbating inequality (Smărăndescu, 2024). In Nigeria, the lack of access to training in digital competencies can exclude both practitioners and clients from participating fully in technologically enhanced counselling services, thereby widening social and psychological care disparities. This uneven distribution underscores the urgency for reform in counsellor education, ensuring inclusivity and future-readiness. Moloko (2021) identifies agility, collaboration, and innovation as essential for thriving in the 4IR era. For counselling professionals, this translates into a commitment to hybrid service delivery models, the ethical application of client data, and the creation of interventions that resonate with clients embedded in digitally saturated environments. Counsellors must also be prepared to guide individuals through the uncertainties of the 4IR, including job displacement, shifting identities, and digital dependency.

4IR's Traits and Their Effects on Employment Prospects in Counselling

The global momentum of the 4IR is not merely altering workplace tools; it is reshaping the social and economic contracts between employers and employees. Nanayakkara et al. (2021) suggest, these pressures will challenge traditional workplace hierarchies and organisational cultures. Similar to earlier revolutions, the 4IR brings both opportunities and risks (Llale et al., 2020). Yet, the unparalleled scale and speed of this transformation amplify uncertainty, volatility, and disruptive innovation (Chauhan, 2024). Oxford University research indicates that counselling roles are less likely to be replaced if practitioners adapt and enhance their skill sets, despite some professions facing near-total automation (Britnell, 2019). Abdulkadir and Dakasku (2025) argue that future counsellors will need to navigate fluid boundaries between digital and physical interaction, leveraging IoT, AI, blockchain, and big data to remain relevant. Vizza et al. (2025) similarly envision counsellors moving seamlessly between online and in-person modalities to manage and interpret client data effectively.

However, the expansion of 4IR technologies brings risks such as heightened data security threats, algorithmic discrimination, and privacy violations (Ibegbulam et al., 2023). Counsellors who fail to acquire competencies in these areas risk professional marginalisation. In Nigeria, this challenge is further complicated by socio-economic disparities and uneven access to training opportunities. Lent (2018) stresses that in a stratified job market, technology will increasingly reward highly skilled counsellors while displacing those with limited digital capabilities. Thus, the profession faces a dual imperative: safeguarding its human-centred ethos while embracing the digital proficiencies essential for survival in an evolving labour market. The literature suggests that those able to integrate these dimensions will be best placed to lead the profession into a sustainable future.

Argument / Position Development

The central argument of this paper is that the sustainability and relevance of the counselling profession in Nigeria depend on the urgent integration of Fourth Industrial Revolution (4IR) competencies into both counsellor training and professional practice. Without a deliberate and strategic shift toward digital literacy, data ethics, and adaptive service delivery, Nigerian counsellors risk marginalisation in a labour market that increasingly rewards technologically agile professionals. Evidence from global labour studies underscores the accelerating pace at which technological change is redefining professional viability. The World Economic Forum forecasts that over 65% of today's school-aged children will enter jobs that currently do not exist, a statistic that reflects not only volatility in the labour market but also the shrinking half-life of professional skills (Brewer et al., 2018). For counsellors, whose work has historically been safeguarded by its deeply human and interpersonal nature, this transformation is a double-edged sword. While empathy, ethical judgement, and cultural sensitivity remain core to the profession, tasks such as initial assessments, client data analysis, and even certain forms of psychoeducation are increasingly mediated by AI and algorithmic systems (Urom et al., 2025).

Nigeria's context magnifies the urgency of reform. Counselling programmes in many universities still follow curricula developed before the onset of the digital age, offering minimal exposure to practical technology integration (Ntaji et al., 2025). This creates a mismatch between graduate competencies and market demand, particularly when employers are now filtering candidates through a lens of digital fluency and adaptability (Sohaee et al., 2023). Furthermore, while developed countries have begun to normalise hybrid service models — combining in-person sessions with online platforms — Nigerian practice remains predominantly analogue, limiting counsellors' ability to reach remote or digitally native clients (Ugwu et al., 2024). The argument here is not for the wholesale replacement of traditional counselling methods with technology, but rather for a deliberate hybridisation of practice. Ilori and Ajagunna (2020) note, the professions that thrive in the 4IR will be those that harness technology to enhance — rather than replace — their human strengths. In counselling, this could include integrating AI-assisted screening tools to identify at-risk students, employing virtual reality to facilitate exposure therapy, or using secure cloud-based systems for confidential record-keeping and follow-up. These approaches can increase efficiency, broaden

access, and offer personalised support, provided they are implemented with strong ethical safeguards.

There is also an economic dimension to this position. Youth unemployment in Nigeria, projected to exceed 33% by 2025 (Azu et al., 2025), will place unprecedented pressure on graduates to demonstrate competitive advantage in the job market. Counsellors equipped with 4IR-relevant skills — such as digital content creation for psychoeducation, online career coaching, and data-informed intervention planning — are more likely to secure diverse employment opportunities, including roles in private consultancy, telehealth, and international development projects (Hooley & Staunton, 2021). Without such competencies, many risk being confined to under-resourced school environments or excluded from professional practice altogether. Critically, the integration of 4IR competencies must be embedded in a broader reform of the profession's policy and governance framework. National education policies should mandate periodic curriculum reviews to ensure alignment with technological trends. Professional associations must provide continuous professional development in digital ethics, cyberpsychology, and online client engagement. And institutions should invest in infrastructure — from high-speed internet to secure digital platforms — that enables counsellors to practise effectively in hybrid environments (Ansarullah et al., 2025). In short, the position advanced here is that Nigerian counselling cannot remain static in the face of a technological revolution that is fundamentally altering the delivery of professional services worldwide. To preserve its social value, the profession must move from a reactive to a proactive posture — one that anticipates change, embraces innovation, and ensures that technology is used to amplify, rather than diminish, the human essence of counselling.

Counter Arguments and Rebuttals

While the case for integrating Fourth Industrial Revolution (4IR) competencies into Nigerian counselling practice is compelling, it is important to acknowledge legitimate concerns that stakeholders may raise. Addressing these counter-arguments not only demonstrates the robustness of the position but also provides a realistic framework for reform.

A common argument among practitioners is that counselling, by nature, is rooted in human connection, empathy, and trust — qualities that cannot be replicated by machines. Critics fear that the adoption of AI-driven tools, virtual platforms, or automated assessments could depersonalise the counselling process, reducing it to a series of mechanical interactions. While this concern is valid, research shows that technology need not replace human engagement but can complement it. Ayinde and Kirkwood (2020) note, professions that thrive in the 4IR era are those that use technology to augment — not supplant — their human strengths. In counselling, for example, AI-assisted screening can streamline intake processes, allowing practitioners to dedicate more time to deep, relationship-based work with clients. Thus, the human core of counselling can be preserved and even enhanced through strategic use of technology. Opponents may argue that many Nigerian schools and counselling centres lack the infrastructure — such as reliable internet access, digital devices, and data security systems — to support technology-enhanced counselling. This is an undeniable challenge, particularly in rural and underserved areas. However, the gradual adoption of mobile technologies, coupled with government and private-sector investment in broadband expansion, indicates that these barriers are not insurmountable (Wahab & Akintade, 2025). Moreover, hybrid models can be designed to function with varying levels of technological sophistication, starting with low-cost tools such as encrypted messaging platforms or mobile-based scheduling systems, and expanding as capacity improves.

Another concern is that professional retraining in digital competencies may place a financial burden on both practitioners and institutions. While this is a genuine consideration, continuous professional development (CPD) is already an expectation in most regulated professions. Integrating 4IR competencies into existing CPD frameworks could reduce cost by leveraging online learning platforms and open educational resources (OERs), which have been shown to deliver high-quality, affordable training (Chowdhury et al., 2024). Furthermore, the long-term cost of inaction — including declining employability and relevance — is arguably far greater than the investment required for upskilling. Sceptics highlight that digital counselling raises serious concerns about data protection, client confidentiality, and algorithmic bias. These are valid ethical challenges that cannot be dismissed. However, rather than avoiding technology altogether, the counselling profession must adopt robust data governance frameworks and clear ethical guidelines for online practice. International best practices, such as those outlined by the American Counselling Association (ACA) and the British Association for Counselling and Psychotherapy (BACP), offer models that can be adapted to the Nigerian context to ensure ethical compliance and client trust.

There is a risk that introducing 4IR competencies could widen inequalities within the profession, privileging urban-based, digitally fluent counsellors over those in remote or under-resourced settings. This danger is real and must be mitigated by equitable access to training, subsidies for rural practitioners, and the development of community-based technology hubs. George and George (2024) caution, technological revolutions often deepen social divides unless proactive measures are taken to ensure inclusion. The goal, therefore, should not be to create a two-tier profession but to raise the collective digital capacity of all counsellors, regardless of location or resource base. In each case, the concerns raised are not reasons to reject the integration of 4IR competencies, but rather signals that such integration must be thoughtfully planned and inclusively implemented. By embedding technology adoption within an ethical, accessible, and context-sensitive framework, Nigerian counselling can protect its human essence while

embracing the tools that will secure its relevance in a rapidly evolving professional landscape.

CONCLUSION

The Fourth Industrial Revolution (4IR) is not a distant inevitability; it is a present force reshaping the landscape of work, education, and professional service delivery. For Nigerian counselling, the question is not whether the profession will be affected, but how it will respond. The evidence from global trends and local realities points to a clear conclusion: counsellors who fail to integrate 4IR-relevant competencies into their practice risk professional obsolescence. Conversely, those who embrace technological literacy, data ethics, and adaptive service models will be better positioned to meet the needs of a rapidly changing society. This paper has argued that the integration of technology into counselling must be deliberate, ethically grounded, and tailored to Nigeria's socio-economic realities. While concerns over cost, infrastructure, and the preservation of human connection are legitimate, they are surmountable through phased implementation, capacity-building initiatives, and the establishment of professional guidelines for digital practice. The profession's survival and growth depend on a proactive shift from traditional, analogue models to hybrid approaches that leverage technology to enhance — rather than replace — the relational core of counselling. To translate this position into actionable steps, the following recommendations are proposed:

1. Nigerian universities should review and revise guidance and counselling programmes to embed 4IR competencies, including digital literacy, data analysis for intervention planning, and online client engagement strategies. Curriculum updates should be iterative, with periodic reviews to reflect emerging technologies.
2. Professional associations, such as the Counselling Association of Nigeria (CASSON), should require members to undertake regular CPD courses in technology-enhanced counselling. Affordable online modules and partnerships with technology providers can make such training accessible nationwide.
3. The Federal Ministry of Education, in collaboration with professional bodies, should develop guidelines for ethical digital practice, covering data protection, informed consent in online settings, and safeguards against algorithmic bias.
4. Public–private partnerships should be leveraged to provide the technological infrastructure necessary for hybrid counselling models, particularly in rural and underserved areas. Community-based technology hubs could serve as shared resources for practitioners with limited access to equipment or high-speed internet.
5. Training opportunities must be equitably distributed, with targeted support for counsellors in resource-constrained settings. This could include subsidised training fees, mentorship programmes, and mobile technology solutions designed for low-bandwidth environments.
6. Before nationwide adoption, pilot projects should be implemented in selected schools, universities, and community centres to test and refine technology-integrated counselling models. Lessons learned can inform a scalable, context-sensitive rollout.

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