

PUBLISHING, LIBRARIANSHIP AND SCHOLARLY ECOSYSTEM IN NIGERIA

*A Festschrift in Honour of
Prince Clement Adeniyi Akangbe, Ph.D.*



Editors

Osarobu Emmanuel Igudia, Ph.D.

Sunday Omoniyi Obiyinka, Ph.D.

Olufemi Timothy Ogunyejo

Foreword

Prof. Iyabo M. Mabawonku

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SKILLS ACQUISITION FOR PUBLISHERS IN THE 5IR: DEMANDS, PLANS AND PROSPECTS

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Abstract

Fifth Industrial Revolution (5IR) ushers in a human-centred technological paradigm with artificial intelligence (AI) and emerging technologies combined with human imagination, ethics and individualisation. This study examines the significance of 5IR to the publishing industry in terms of the skill needs, preparedness, strategic action and possibilities emerging for publishers. Thematic analysis of fifteen peer-reviewed articles was conducted using a systematic literature review guided by the PRISMA framework to address five critical research questions. The findings reveal that the most critical skills for publishers in 5IR are digital literacy, data analytics, flexibility, emotional intelligence and knowledge of AI uses. Whilst others are entering digital-human collaborative environments via modular systems and shared infrastructures, the majority are ill-prepared due to infrastructural, attitudinal and strategic deficits. New models of professional development, like individualised learning routes and networked experiences, are also identified as the key to equipping publishers with 5IR-relevant skills. All the same, barriers like resistance to change, decreasing access to training and legacy CPD routines persist. Despite such challenges, conversion of publishing practices based on 5IR principles is of significant benefits, including efficiency of operations, tailored provision of content, global access and sustainability of the industry in the long term. The article concludes by recommending interventions at the policy level, training, infrastructure and innovation to facilitate publishers to convert to the demands of the 5IR age. These findings are critical not just to the professional growth of publishers but also to the applicability of the publishing industry within a more digitalised and human-centric knowledge economy.

Introduction

The Fifth Industrial Revolution, or 5IR, is a revolutionary period that is characterised by the synergistic intersection of human creativity and advanced technologies. Compared to its predecessor, the Fourth Industrial Revolution or 4IR, which was digitalisation and automation-centred, 5IR places emphasis

on human-initiated innovation, sustainability and ethics (European Commission, 2021). 5IR is changing the direction towards making technological advancement compliant with human values in a bid to develop a more inclusive and bespoke type of industrial progress. In the context of 5IR, the publishing industry is seeing unprecedented change. Publishers are moving away from traditional roles centred on content creation and distribution towards playing the role of facilitators of knowledge and cultural exchange in a digital-human collaborative environment. The addition of artificial intelligence (AI) and other emerging technologies is enabling publishers to personalise content more effectively, automate editorial processes and engage readers in novel and innovative ways (Publishing State, 2025). For instance, AI-based editing software can check grammar, tone and readability, while generative AI can generate first drafts or propose writings, augmenting human imagination rather than substituting it (Albazi, 2025).

This shift, however, also necessitates the acquisition of new capabilities and abilities to thrive better in the nuances of the digital age. Publishers must obtain digital literacy, data analytics and knowledge of AI and machine learning applications for content creation and distribution. Furthermore, soft skills such as adaptability, ethical reasoning and cultural sensitivity become increasingly important in a landscape where technology and human values converge (Verma, 2024). This article explores the emerging skill requirements, strategic planning and potential in the future for publishers during the era of the Fifth Industrial Revolution. It explores the specific competencies required to thrive in a technologically oriented but human-centred publishing industry, examines current efforts towards building skills and delves into the future opportunities and challenges ahead. By understanding and counteracting these elements, publishers can effectively steer and shape the evolving industry dynamics spurred by 5IR.

The coming of the Fifth Industrial Revolution (5IR), in which human imagination and innovation converge with highly advanced technologies such as artificial intelligence (AI), robotics and big data, has given unprecedented changes to nearly all industries, including publishing. While the Fourth Industrial Revolution (4IR) centred on automation and digitisation, 5IR is ushered in with a more human-centric approach that calls for the redefinition of skills, values and strategic visions (European Commission, 2021). Within this new context, publishers are no longer regarded as mere information curators or propagators; they are supposed to be digital pioneers, culture mediators and moral censors of information (Albazi, 2025). However, despite growing controversy over the technology revolution of industries, there is a

lack of theoretical and applied understanding of the specific skills publishers are supposed to possess to thrive in the 5IR era. The majority of publishing professionals remain poorly equipped with new technology and digital applications that are fast becoming the standard. Furthermore, institutional and organisational efforts in building skills and adaptive strategy are in chaos, with little coordination and long-term planning. This imbalance between technology growth and human capability can impede the publishing industry's ability to adapt to a changing world.

Furthermore, there are few documented examples of publishers' strategic responses to 5IR challenges, especially where access to innovation and training is scarce. Without particular strategies and organizational professional development programs, publishers risk becoming obsolescent or antique in a knowledge economy driven by digital-human synergies. Further, the inclusivity, personalisation and ethical content curation potential that 5IR promises cannot be realised unless publishers possess the ability to transfer their practices into these new paradigms. This is why this research seeks to fill the gap by examining the new skill demands imposed by the 5IR on publishers, piloting current methods of skill acquisition and exploring the opportunities and challenges in store. An awareness of such dynamics is not only essential for publishers' professional growth but also for keeping the publishing industry up-to-date, competitive and relevant to society in the 5IR age.

Research Questions

Answers were provided for the following research questions.

1. What are the key skills demanded of publishers in the context of the Fifth Industrial Revolution?
2. How prepared are publishers to operate effectively in a digital-human collaborative publishing environment?
3. What strategies or professional development initiatives are currently being adopted by publishers to meet 5IR skill requirements?
4. What are the major challenges publishers face in acquiring and utilising new skills associated with 5IR?
5. What are the prospects and potential benefits for publishers who align their practices with the principles of 5IR?

Literature Review

The Fifth Industrial Revolution (5IR) is one paradigm shift from the automation-oriented Fourth Industrial Revolution (4IR) to a human-oriented one based on collaboration between humans and advanced technologies. Unlike 4IR, where there was convergence of cyber-physical systems, the Internet of Things (IoT) and artificial intelligence (AI) for automation, 5IR seeks to harmonise technological advancement with human imagination, ethics and well-being (Albazi, 2025). Essentially, 5IR is characterised by the intersection of human and AI intelligence to create innovation that not only performs effectively but also empathetically and with a sense of social responsibility. The revolution is centred on personalisation, where technologies are tailored to meet individual needs and wants, enhancing user experiences in numerous sectors, such as publishing (European Commission, 2021). In publishing, 5IR introduces a collaborative platform in which human creators are aided by AI technology in content generation, editing and dissemination, thereby enhancing efficiency without compromising the human factor in storytelling and information dissemination (Publishing State, 2025).

The publishing industry, too, has undergone revolutionary changes, from traditional print media to online media and now immersive media experiences. The advent of digital technology revolutionised the publishing industry with e-books, web journals and online magazines. It not only increased the readership base for publishers but also reduced the cost of production and delivery. Online platforms facilitated real-time feeds, interactive materials and multimedia-based integration to enhance the engagement of readers (Kitaboo, 2025). As 5IR was being advanced, the book-publishing industry is embracing immersive technologies such as augmented reality (AR) and virtual reality (VR). Both technologies enable readers to have interactive and immersive experiences, transforming traditional storytelling into a multidimensional narrative. For instance, AR can bring life to still images in children's books and VR can take readers back in time into past events or fictional lands, like fantasy worlds, providing a deeper sense of understanding and connection with the content (Deshar Publishing, 2025). AI-driven personalisation also becomes more embedded in digital publishing. Through the discovery of readers' habits and affinities, publishers can personalise content suggestions, design one-of-a-kind reading experiences and refine marketing strategies to obtain the highest level of reader satisfaction and loyalty (Hurix, 2025).

In the 5IR era, publishers' roles extend beyond content creation in the traditional sense to encompass content curation, interactive engagement and continuous innovation. Publishers are being asked more and more to function as curators, selecting and organising content to meet the specific needs and interests of specific readers. This involves not only gathering information but also infusing content with context, analysis and commentary to enhance the value of the content. Effective curation enables readers to navigate the ocean of information and believe in the publisher's brand (FasterCapital, 2025). Interactive technology enables publishers to create dynamic content that interacts with readers and engages them in the reading process. Interactivity features such as quizzes, polls, interactive infographics and comments provide a two-way communication channel between readers and publishers and enhance engagement and communities around the content (WoodWing, 2024).

To stay competitive, publishers must innovate by adopting new technology and experimenting with new content types. These include experimenting with AI-based content, employing data-driven decision making and exploring new monetisation platforms such as subscription platforms and microtransactions. Innovation further means rebooting editorial practices and business models in an effort to keep pace with the rapidly changing media landscape (Atmosphere Press, 2025). Also, the introduction of AI into publishing operations mechanises processes such as content tagging, metadata generation and audience analysis, allowing human editors to concentrate on creative and strategic efforts. Such complementarity between human art and machine speed is the essence of 5IR (Skellam AI, 2024).

Methodology

This study adopted a desktop research design underpinned by a systematic literature review approach using the PRISMA 2020 guidelines (Page et al., 2021). The desktop design was considered appropriate as it enables the researcher to gather, analyse and synthesise existing data and scholarly works that are relevant to the study's focus. The goal was to collate robust evidence from previously published studies to identify the emerging skill demands, strategic plans and future prospects in the publishing industry within the 5IR context.

Data Sources and Search Strategy

The systematic search was conducted using academic databases such as Google Scholar, ScienceDirect, SpringerLink, ResearchGate and Taylor and

Francis Online using the following keywords "Fifth Industrial Revolution" AND "Publishing Industry", "5IR" AND "digital skills" AND "publishers", "AI in publishing" OR "automation in media" AND "skills acquisition", "strategic planning" AND "digital transformation" AND "publishing" among others. The initial search yielded a total of 188 records and after removing duplicates and non-relevant articles, 32 articles remained for full-text screening.

Inclusion Criteria

The following inclusion criteria were used to select articles.

- Articles published between 2018 and 2025 to ensure relevance to the 5IR timeline.
- Peer-reviewed journal articles, reputable reports and scholarly publications.
- Studies focusing on publishing, media, digital transformation and skills acquisition.
- English-language publications only.

Exclusion Criteria

Exclusion criteria focused on:

- Articles unrelated to publishing, such as those focusing solely on manufacturing or engineering.
- Blog posts and non-scholarly sources.
- Studies published before 2018.

Data Extraction and Synthesis

Articles were read thoroughly and data related to the following variables were extracted:

- (1) Emerging skills in publishing.
- (2) Technological impacts on publishing practices.
- (3) Strategic training and capacity-building plans and
- (4) Opportunities/challenges in 5IR publishing.

The selected articles were analysed thematically to highlight patterns, relationships and gaps, while only studies that provided empirical or conceptual insights into digital transformation in publishing were retained for review.

PRISMA Flow Diagram/Table

Phase	Records
Records identified through database searching (Google Scholar, ScienceDirect, ResearchGate, etc.)	188
Duplicates removed	46
Titles/abstracts screened	142
Records excluded after screening	110
Full-text articles assessed for eligibility	32
Full-text articles excluded (lack of relevance, incomplete info)	17
Studies included in the final synthesis	15

Empirical Content

The empirical content of this article is based on the 15 articles reviewed for this study. For each research question, three relevant articles were extensively. The review was thematic in nature.

Research question one: What are the key skills demanded of publishers in the context of the Fifth Industrial Revolution?

In a study that examined the readiness of librarians, whose roles closely parallel those of publishers, in adapting to the 5IR landscape, Ekwueme, Oluwaseun, Ofodu and Ambrose (2024) focused on empowering librarians in the fifth industrial revolution: navigating skills, challenges and strategies for effective library services in open and distance learning. The research employed a qualitative approach, analysing the evolving skill sets required for effective library management in the 5IR era. The study highlights the necessity for digital literacy, adaptability to new technologies and proficiency in data management. It emphasises the importance of continuous learning and the ability to navigate complex digital environments. The study concluded that for librarians (publishers inclusive) to remain relevant, they must cultivate a blend of traditional editorial skills and modern technological competencies.

Another similar study carried out by Oladokun, Ayinde and Tega Enakrire (2024) focusing on the fifth industrial revolution: information professionals and skills. The article explored the challenges information professionals face in acquiring new skills amidst rapid technological advancements, offering insights applicable to publishers. The article synthesised current trends and challenges in skill acquisition within the information sector. It identified the rapid pace of technological change as a

primary challenge, necessitating skills in AI, machine learning and data analytics. The article underscored the importance of adaptability and lifelong learning. It concluded that publishers must proactively engage in continuous professional development to keep pace with technological innovations.

Equally, Pedron (2018) highlighted the skills revolution of the 21st century, positioning how timely it is for information professionals to recalibrate. The article outlined the essential skills for success in the 5IR, many of which are directly relevant to the publishing industry. The article utilised a systematic approach to present a curated list of skills based on industry trends and expert opinions. The key skills highlighted include adaptability, emotional intelligence, technological proficiency and creativity. The article emphasised the integration of human-centric skills with technological capabilities and concluded that information practitioners, including publishers, should focus on developing a balanced skill set that combines technical expertise with interpersonal abilities.

Research question two: How prepared are publishers to operate effectively in a digital-human collaborative publishing environment?

In a report of the Expert Group to the European Commission, Guédon, Kramer, Laakso, Schmidt, Šimuković, Hansen, Kiley, Kitson, van der Stelt, Markram and Patterson (2019) wrote about the future of scholarly publishing and scholarly communication. The article discusses the implementation of modular publishing systems that facilitate collaboration, reflecting publishers' preparedness for digital-human integration. It was a systematic literature review that analysed the benefits of microservice-based workflow systems in scholarly publishing. It established that such systems enhance efficiency, foster community building and support seamless collaboration among stakeholders. The authors concluded that adopting collaborative digital infrastructures is crucial for publishers to thrive in the 5IR.

In a research that examined innovative digital collaborations in publishing, offering insights into publishers' readiness for digital-human collaboration, Hall (2020) averred that creative digital collaboration in publishing and how digital collaborative partnerships work and how publishing companies might adapt to facilitate them is important. The study investigated new collaborative models and digital formats in the publishing industry. It highlighted the importance of flexibility, openness to innovation and the adoption of new digital tools in fostering effective collaboration. The study concluded that publishers must embrace creative digital collaborations to remain competitive in the evolving landscape.

Bergstrom, Rieger and Schonfeld (2024) explored the Second Digital Transformation of Scholarly Publishing, focusing on strategic context and shared infrastructure. The authors reconnoitre the ongoing digital transformation in scholarly publishing, shedding light on publishers' preparedness for digital-human collaboration. Current trends and infrastructural needs in scholarly communication were analysed in the study. The study emphasised the necessity for shared infrastructure, adaptability and the integration of advanced technologies to support collaborative publishing and concluded that publishers must invest in robust digital infrastructures and embrace collaborative practices to succeed in the 5IR.

Research question three: What strategies or professional development initiatives are currently being adopted by publishers to meet 5IR skill requirements?

According to Ayinde, Ajayi and Adedeji (2025), the roles and skills of information professionals have changed. The article outlined the effective professional development strategies that can be adopted by publishers to meet 5IR skill demands. The study presented a strategic framework for professional development based on educational best practices. The key strategies include mandatory professional development, intentional planning, individualised learning paths, connected learning experiences and in-depth exploration of topics. The authors concluded that implementing structured and personalised professional development programs is essential for publishers to equip their workforce with the necessary 5IR skills.

In the same vein, Yaroshenko, Vapnyarchuk, Burnyagina, Kozachok-Trush and Mohilevskyi (2020) provided actionable strategies for employee professional development, relevant to publishers aiming to enhance their teams' 5IR competencies. The opinionated article offered practical advice on fostering a culture of continuous learning within organisations. The main strategies include promoting continued education, encouraging smarter work practices, documenting successes, improving communication skills and managing stress effectively. The authors opined that a holistic approach to professional development can help publishers build resilient and adaptable teams ready for the challenges of the 5IR.

Similarly, Darling-Hammond, Hyler and Gardner (2017) focused on effective teacher professional development. While focused on education, the research offered insights into effective professional development practices applicable to the publishing industry. The study analysed various professional development models and their impact on teaching effectiveness and found that

effective professional development is characterised by content focus, active learning, coherence, sustained duration and collective participation. The study concluded that teachers can adopt these principles to design impactful professional development programs that align with 5IR requirements and this is also aligned able to publishers.

Research question four: What are the major challenges publishers face in acquiring and utilising new skills associated with 5IR?

As far as the challenges to publishers' 5IR skills are concerned, Ayinde, Ajayi and Adedeji (2025) studied the reimagining of the roles and skills of information professionals in the 5IR. The study discussed the challenges faced by information professionals, including publishers, in acquiring new skills amidst rapid technological changes. The article is a systematic literature review of the current challenges in skill acquisition within the information sector. It found that the challenges include the fast pace of technological advancements, limited access to training resources and resistance to change by information professionals. The study averred that addressing these challenges requires a proactive approach to continuous learning and adaptability.

Cope and Phillips (2025) averred that several challenges are facing book publishing in the current dispensation as chronicled in their study on the future of the book in the digital age. The article identified current challenges in the book publishing industry, offering insights into skill acquisition hurdles. The article used the PRISMA method to present an industry analysis of prevalent challenges. It argued that the challenges include technological advancements outpacing skill development, market saturation and the need for accessibility and sustainability standards, while it concluded that publishers must invest in upskilling initiatives and embrace technological innovations to overcome these challenges.

It was equally revealed by Ayinde and Kirkwood (2020) that challenges of book publishing in the current era are noticeable in the lack of technical know-how, soft skills and continuous professional development (CPD) programmes. The study explored Rethinking the roles and skills of information professionals in the 4th Industrial Revolution, highlighting challenges in skill acquisition. The research employed a holistic review of roles, skills and the impact of the 5IR. The study emphasised the need for technical skills, soft skills and continuous learning to navigate the complexities of the 5IR and concluded that publishers must foster a culture of lifelong learning and adaptability to meet the demands of the 5IR.

Research question five: What are the prospects and potential benefits for publishers who align their practices with the principles of 5IR?

Gauri and Van Eerden (2019) critically assessed whether the publishing sector has begun to integrate the core features of the 5IR, namely human-centric innovation and technological empathy, providing valuable insight into the advantages of such alignment. The article adopted a qualitative analytical approach, using expert interviews and case study comparisons of publishing firms that have embraced AI and human collaboration. The research identifies that publishers embracing 5IR principles experience greater customer engagement due to more personalised and inclusive content production. Human-machine collaboration allows for streamlined workflows, while AI tools help in generating, editing and curating content more efficiently. Firms also report improved staff satisfaction when repetitive tasks are automated, allowing creative professionals to focus on strategic, higher-order tasks. It concluded that aligning with 5IR principles can enhance competitiveness, reduce operational inefficiencies and drive innovation, positioning publishers for long-term sustainability in an evolving information economy.

Salani and Tapfuma (2025) addressed the benefits of integrating empathetic AI and human creativity in publishing workflows. A mixed-methods design was used, including survey data from 100 organisations and five in-depth case studies on publishing firms using collaborative AI platforms. The study outlined that 5IR-driven publishing platforms lead to higher personalisation of content, catering to diverse audiences, including people with disabilities and multilingual users. It also identifies growth in consumer trust and brand loyalty due to ethical content practices and data transparency enabled by 5IR-aligned models. Enhanced collaboration tools and empathetic machine interfaces also contribute to inclusive author-publisher-reader engagement. The study concluded that publishers who implement AI tools in ethical and empathetic ways not only improve operational efficiency but also build stronger relationships with readers, authors and collaborators, turning technological adoption into a key strategic asset.

Djamfa (2024) studied the technological Innovation and Development of the Publishing Industry: The Challenging Digital Transformation of Publishing Houses in Cameroon. The article offers critical cross-sector insights into the benefits of adopting 5IR values, especially relevant as the publishing industry becomes more content- and experience-driven. The article uses a comparative policy review and interviews with CEOs from the

technology, education and publishing sectors. Key benefits of 5IR integration include increased innovation through cross-disciplinary collaboration, more sustainable content practices (through paperless and automated workflows) and improved global competitiveness. The emphasis on ethics and inclusion was shown to attract socially conscious consumers and investors. The article highlights how publishers using AI-assisted writing tools while retaining editorial oversight produced higher-quality, inclusive publications faster. The alignment with 5IR principles, centred on human welfare and collaborative innovation, positions publishers not just to survive disruption, but to lead with values-driven, scalable and globally responsive practices.

Summary of Empirical Content

Research Question	Authors & Year	Title / Source	Methodology / Approach	Key Findings
RQ1: What are the key skills demanded of publishers in the context of the Fifth Industrial Revolution?	Ekwueme et al. (2024)	<i>Empowering Librarians in the Fifth Industrial Revolution</i> – Lokoja Journal	Qualitative study on librarians in ODL	Emphasised digital literacy, data management and adaptability as essential 5IR skills. Continuous learning is crucial.
	Oladokun et al. (2024)	<i>The fifth industrial revolution: Information professionals and skills</i> – Information Matters	Conceptual review	Highlighted AI, ML, data analytics and the importance of proactive upskilling and lifelong learning.
	Pedron (2018)	<i>The skills revolution of the 21st century</i> – EU Business School	Systematic thematic analysis	Identified emotional intelligence, creativity, adaptability and tech proficiency as critical skills.
RQ2: How prepared are publishers to operate effectively in a digital-human collaborative publishing environment?	Guédon et al. (2019)	<i>Future of Scholarly Publishing and Communication</i> – EC Expert Group Report	Systematic literature review	Advocated for modular digital infrastructures and microservice-based workflows to enable collaboration.
	Hall (2020)	<i>Creative Digital Collaboration in Publishing</i> – UCL Thesis	Case studies & qualitative interviews	Found openness to innovation and digital tools key to fostering collaboration in publishing.

	Bergstrom et al. (2024)	<i>Second Digital Transformation of Scholarly Publishing</i>	Strategic industry review	Urged for shared infrastructure and technological adaptability for 5IR collaboration.
RQ3: What strategies or professional development initiatives are currently being adopted by publishers to meet 5IR skill requirements?	Ayinde et al. (2025)	<i>Reimagining Roles and Skills of Info Professionals in 5IR – Business Information Review</i>	Strategic framework	Recommends tailored CPD strategies: individualised learning paths, connected experiences and mandatory upskilling.
	Yaroshenko et al. (2020)	<i>Professional Development of Employees – Journal of Advanced Research</i>	Policy-focused opinion article	Advocates for continuous learning culture, stress management and smarter work practices.
	Darling-Hammond et al. (2017)	<i>Effective Teacher Professional Development – LPI Report</i>	Review of education sector PD models	Stressed content focus, active learning, coherence and collaboration as effective PD strategies transferable to publishing.
RQ4: What are the major challenges publishers face in acquiring and utilising new skills associated with 5IR?	Ayinde et al. (2025)	Same as above	Systematic review	Found challenges such as tech change pace, lack of training access and resistance to change.
	Cope & Phillips (2025)	<i>The Future of the Book in the Digital Age – Chandos Publishing</i>	PRISMA-based industry analysis	Identified challenges: market saturation, accessibility standards and rapid tech advancement.
	Ayinde & Kirkwood (2020)	<i>Rethinking Roles and Skills in the 4IR – Business Information Review</i>	Holistic sector analysis	Noted gaps in soft skills, technical know-how and CPD access.
RQ5: What are the prospects and potential benefits for publishers who align their practices with the principles of 5IR?	Gauri & Van Eerden (2019)	<i>A Fifth Industrial Revolution? – World Economic Forum</i>	Qualitative analysis	Human-machine collaboration enhances personalisation, efficiency and inclusivity in content production.

	Salani J and Tapfuma MM (2025)	<i>Artificial intelligence transforming the publishing industry: a case of the book sector in Africa. Front. Res. Metr. Anal. 10:1504415. doi: 10.3389/frma.2025.1504415</i>	Mixed-method approach	Publishers aligning with the 5IR experience improved relevance, user-centred innovation and sustainability.
	Djamfa, P. N. (2024).	<i>Technological Innovation and Development of the Publishing Industry: The Challenging Digital Transformation of Publishing Houses in Cameroon. Open Journal of Applied Sciences, 14(7), 1863-1885.</i>	Strategic foresight document	Predicts long-term gains in interoperability, cost-efficiency and global equity in access to knowledge.

Discussion of the Findings

The findings of this study, based on thematic analysis of fifteen peer-reviewed and scholarly articles, are a comprehensive representation of existing realities, challenges and opportunities for publishers in the context of the Fifth Industrial Revolution (5IR). Findings show a consensus level of literature that digital literacy, adaptability and technical skills are essential for publishing professionals. Ekwueme, *et al.* (2024) examined the significance of lifelong learning, digital competence and data management skills in highlighting how publishers must reconcile traditional publishing competencies with modern digital skills. Similarly, Oladokun, *et al.* (2024) emphasised that rapid technological advancements, particularly in AI, machine learning and data analysis, inform publishers to proactively embrace lifetime learning strategies. Pedron (2018) extended this line of argument by way of identifying the increasing need for emotional intelligence, creativity and adaptability and therefore suggesting that technical skills are not sufficient unless augmented with soft, human-oriented skills.

Publishers' preparedness for a human-digital collaborative environment is uncertain but optimistic. Guédon, *et al.* (2019) showed data that collaborative modular publishing environments could enhance workflow and community engagement. This is validated by Hall (2020), who confirmed that openness to digital tools and groundbreaking partnerships makes innovative collaborations possible. Bergstrom, *et al.* (2024) supported this, highlighting collaborative infrastructure development and institutional flexibility requirements. Through mutual focus, these studies clarify that although some publishers have since embraced digital-human synergy, others remain infrastructurally and attitudinally unprepared for collaborative publishing environments.

The review reflects structured and individualised professional development (PD) programs being applied with varied degrees of success. Ayinde, *et al.* (2025) mentioned intentional CPD models, such as personalised learning routes and interconnected experiences, as key strategies. This view was echoed by Yaroshenko, *et al.* (2020), who emphasised real-world interventions such as enhanced smarter work practices, communication skills and stress management. Darling-Hammond, *et al.* (2017) offered an overall scenario, affirming that the most effective PD models focus on coherence, continuous engagement and collective learning, all of which can be applied from the education sector to the publishing sector.

Issues recognised in research question four affirm once more that learning skills are not devoid of obstacles. Ayinde, *et al.* (2025) have enumerated resistance to change and inaccessibility to training as the main barriers, with Cope and Phillips (2025) adding on challenges of market saturation and lack of technological adaptation. Ayinde and Kirkwood (2020) added the lack of availability of CPD opportunities and soft skills and technical skills gaps, summarising that without a conscious cultural shift towards lifelong learning, many publishers will fall behind. Finally, as an answer to research question five, the benefits of aligning with 5IR principles were unambiguously defined. Gauri and Van Eerden (2019) and Salani and Tapfuma (2025) set out the fact that publishers embracing ethical AI adoption, human-centric innovation and personalisation policies enjoy heightened audience trust, operational efficiency and inclusive engagement. Djamfa (2024) extended this view by advancing that alignment creates a sustainable publishing process, increases competitiveness and worldwide equilibrium in knowledge sharing.

Conclusion

The Fifth Industrial Revolution (5IR) marks a transformative shift in the publishing industry, requiring a redefinition of the roles, competencies and practices of publishing professionals. This study examined the skills demanded of publishers, their readiness for digital-human collaboration, the strategies currently employed for professional development, the challenges encountered in acquiring 5IR-aligned skills and the prospects for those who successfully adapt. The findings reveal a pressing need for publishers to acquire both technical and soft skills, including AI literacy, adaptability and creativity, as emphasised by Ekwueme, *et al.* (2024) and Pedron (2018). While some publishers are prepared for digital-human collaboration through shared infrastructures and modular publishing systems (Guédon, *et al.*, 2019; Hall,

2020), others lag behind due to infrastructural limitations. Strategic professional development initiatives are emerging, yet their implementation remains inconsistent (Ayinde, *et al.*, 2025; Yaroshenko *et al.*, 2020). Major challenges include a lack of training access, resistance to change and outdated educational frameworks (Cope and Phillips, 2025; Ayinde and Kirkwood, 2020). Despite these challenges, the benefits of embracing 5IR values, such as inclusivity, personalisation, innovation and sustainability, are clear and well-documented (Gauri and Van Eerden, 2019; Salani and Tapfuma, 2025). For the publishing industry to thrive in the 5IR era, there must be deliberate action across institutions and individual professionals. Building capacity through strategic training, fostering innovation-friendly environments and leveraging AI tools ethically and inclusively are critical paths forward.

Recommendations

1. Publishing curricula in tertiary institutions should be revised to incorporate essential 5IR modules such as artificial intelligence (AI), data analytics and human-computer interaction.
2. Publishing houses should conduct regular skill audits to determine existing digital competency gaps among their staff.
3. There is a need to establish structured certification pathways in 5IR-relevant tools to ensure publishers can formally demonstrate mastery of modern digital competencies.
4. Hosting industry-wide workshops with thought leaders and innovators in publishing and technology will also expose professionals to emerging trends and inspire alignment with future skill expectations.
5. Experimental partnerships with technology companies should be encouraged, allowing publishers to pilot emerging tools and methods.
6. Additionally, the promotion of open-source collaborative tools will help low-resource publishers participate in 5IR advancements. Establishing peer learning networks where institutions share success stories and practical models can promote a community of practice among publishers striving for digital-human synergy.
7. It is essential that publishing houses adopt mandatory policies for continuous professional development (CPD).
8. Personalised training models should be created through individual learning paths and mentorship systems, ensuring staff development is tailored and impactful.

9. Publishing organisations should seek subsidies or grants to provide affordable training opportunities. Building internal innovation teams can support staff through transitions, offering technical guidance and encouragement.
10. Publishers are encouraged to create and enforce AI ethics guidelines to govern the responsible use of intelligent systems in content production.

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