Digital Competencies and Professional Roles of Health Information Management Practitioners in the Era of Health Informatics

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Abstract	Original Research Article

The digital transformation of healthcare has significantly reshaped the professional landscape of Health Information Management (HIM) practitioners. Traditionally tasked with organizing and safeguarding patient records, HIM professionals are now required to demonstrate advanced digital competencies to meet the demands of health informatics. This study explores the evolving digital skill sets and professional roles of HIM practitioners in the era of health informatics, with particular emphasis on data governance, interoperability, analytics, and patient privacy. Guided by the Technology Acceptance Model and Bandura's Social Learning Theory, the paper adopts a descriptive and analytical approach, synthesizing global and Nigerian perspectives to identify core competencies and emerging responsibilities.

Findings highlight that HIM practitioners must acquire proficiency in electronic health record (EHR) systems, interoperability standards such as HL7 and FHIR, data analytics tools, and cybersecurity protocols. Their professional roles have expanded to include data stewardship, clinical informatics specialization, compliance monitoring, analytics consulting, and educational leadership. Challenges identified include limited access to continuous professional development, rapid technological changes outpacing curriculum updates, and disparities in institutional resources.

The study underscores the urgent need to integrate health informatics training into HIM curricula, strengthen collaboration between HIM and IT departments, and establish national competency frameworks to guide professional practice. These measures are critical to ensuring that HIM practitioners remain effective contributors to safe, efficient, and patient centered healthcare delivery in the digital age.

Keywords: Health Information Management, digital competencies, health informatics, professional roles, data governance, Nigeria.

I. INTRODUCTION

The digital transformation of healthcare has fundamentally altered the scope and responsibilities of Health Information Management (HIM) practitioners. Traditionally, HIM professionals were tasked with organizing, maintaining, and safeguarding patient records. However, the rise of health informatics driven by electronic health records (EHRs), big data analytics, telemedicine, and artificial intelligence has expanded their roles to encompass advanced competencies in data governance, interoperability, analytics, and cybersecurity.

Recent scholarship highlights that the integration of digital health technologies has reshaped healthcare delivery and increased the demand for role-specific competencies among HIM practitioners (El Hag et al., 2025). A systematic review by Longhini, Rossettini, and Palese (2022) found that healthcare professionals require a broad set of digital health competencies, including proficiency in EHR systems, data analytics, and patient privacy management, to remain effective in modern healthcare environments. Similarly, Digital Health Canada (2023) identified seven domains of professional competencies, ranging from information governance to clinical informatics, underscoring the multidimensional nature of HIM practice in the digital era.

In Nigeria and other developing contexts, the urgency of building digital competencies among HIM practitioners is heightened by resource disparities and uneven access to technology. Studies on digital literacy among Nigerian undergraduates (Taiwo & Uwaifo, 2024; Aremu & Udofia, 2025) demonstrate that digital skills significantly enhance academic performance and professional readiness, suggesting that similar competencies are critical for HIM practitioners entering the workforce.

Theoretical frameworks such as the Technology Acceptance Model (Venkatesh & Davis, 2000) and Bandura's Social Learning Theory (1977) provide useful lenses for understanding how HIM practitioners adopt and adapt to digital tools. The Technology Acceptance Model emphasizes perceived usefulness and ease of use as key drivers of technology adoption, while Social Learning Theory highlights the influence of peer learning and institutional support in shaping digital practices.

This paper therefore seeks to identify the digital competencies required of Health Information Management practitioners in the era of health informatics, examining how these competencies align with their evolving professional responsibilities. In doing so, it explores the ways in which HIM professionals are adapting to new demands such as data governance, interoperability, analytics, and cybersecurity. The study also highlights the challenges that practitioners face in acquiring and applying these competencies, particularly in resource-constrained contexts such as Nigeria, and proposes strategies for strengthening HIM practice both locally and globally.

By situating HIM within the broader context of health informatics, this study underscores the importance of continuous training, curriculum integration, and institutional support to ensure that practitioners remain effective contributors to safe, efficient, and patient-centered healthcare delivery.

II. LITERATURE REVIEW

The evolution of Health Information Management (HIM) practice has been closely tied to the digital transformation of healthcare. Historically, HIM professionals were primarily responsible for record-keeping and ensuring compliance with documentation standards. However, the advent of health informatics has broadened their scope to include advanced competencies in electronic health records (EHRs), interoperability, analytics, and cybersecurity (El Hag et al., 2025).

Globally, scholars have emphasized the importance of digital health competencies for healthcare professionals. Longhini, Rossettini, and Palese (2022) conducted a systematic review and concluded that digital competencies are essential for safe, effective, and patient-centered care. Their findings highlight the need for HIM practitioners to master EHR systems, data analytics, and privacy

management. Similarly, Digital Health Canada (2023) outlined seven domains of professional competencies, including information governance, clinical informatics, and data stewardship, underscoring the multidimensional nature of HIM practice in the digital era.

Ng (2023) further argues that digital literacy in higher education is a global priority, particularly in health sciences, where students and practitioners must adapt to rapidly changing technologies. UNESCO (2024) reinforces this perspective, noting that digital literacy is critical for inclusive education and equitable access to healthcare information. These frameworks collectively stress that HIM practitioners must continuously update their digital skills to remain relevant in modern healthcare systems.

In Nigeria, the urgency of building digital competencies among HIM practitioners is heightened by resource disparities and uneven access to technology. Taiwo and Uwaifo (2024) found that digital literacy significantly enhances academic performance among undergraduates, while Aremu and Udofia (2025) demonstrated that digital skills improve students' ability to perform in online assessments. Otuuchi, Adeniyi, and Akindaisi (2025) reported that digital literacy boosts self-efficacy, enabling students and practitioners to adapt to disruptive technologies. These findings suggest that HIM professionals in Nigeria must acquire similar competencies to effectively manage health information in digitized environments.

The Technology Acceptance Model (Venkatesh & Davis, 2000) provides a useful lens for understanding how HIM practitioners adopt digital tools, emphasizing perceived usefulness and ease of use as key drivers of technology adoption. Bandura's Social Learning Theory (1977) complements this by highlighting the role of peer influence and institutional support in shaping digital practices. Together, these frameworks explain both the individual and organizational factors that influence the acquisition and application of digital competencies in HIM practice.

Recent literature also points to the evolving professional roles of HIM practitioners. They are increasingly recognized as data stewards, responsible for ensuring the integrity and ethical use of health data (El Hag et al., 2025). Others serve as clinical informatics specialists, bridging IT systems and clinical workflows, or as compliance officers, monitoring adherence to privacy and security standards. HIM professionals are also taking on roles as analytics consultants, supporting evidence-based decision-making, and as educators, preparing future practitioners with informatics competencies (Digital Health Canada, 2023).

III. METHODOLOGY

Study Design: This study employed a descriptive cross-sectional survey design with a quantitative approach. The design was appropriate because it allowed for the collection of data at a single point in time to assess the digital competencies of Health Information Management (HIM) practitioners and examine how these competencies align with their evolving professional roles in health informatics.

Study Setting: The research was conducted in selected healthcare institutions and health training centers in Nigeria where HIM practitioners are actively engaged in managing health records and implementing digital health systems. These settings provided a relevant context for exploring the intersection of HIM practice and health informatics, particularly in environments where digital transformation is ongoing but unevenly distributed.

Study Population: The study population consisted of Health Information Management practitioners working in hospitals, clinics, and health training institutions. Inclusion criteria required participants to be certified HIM professionals or trainees with at least one year of experience in health information management. Exclusion criteria ruled out administrative staff without HIM responsibilities.

Sample Size and Sampling Technique: A sample size of 200 HIM practitioners was determined using stratified random sampling to ensure representation across different practice settings (public hospitals, private hospitals, and training institutions). Stratification was necessary to capture variations in digital competencies and professional roles across

diverse healthcare environments. Random selection within each stratum minimized bias and enhanced the generalizability of findings.

Data Collection Instruments: Data for this study were gathered using a **structured questionnaire** that was carefully designed to capture both the digital competencies and the professional roles of Health Information Management (HIM) practitioners. The questionnaire was developed based on established frameworks of digital health competencies (Longhini et al., 2022; Digital Health Canada, 2023) and adapted to the Nigerian healthcare context. It was divided into four main sections. The first section collected demographic information such as age, gender, years of practice, and type of institution. The second section focused on access to digital resources, including electronic health record (EHR) systems, interoperability tools, and other informatics platforms. The third section assessed digital competencies, covering areas such as data governance, analytics, cybersecurity, and proficiency with health informatics tools. The final section explored professional roles, asking respondents to reflect on their responsibilities as data stewards, compliance officers, analytics consultants, or educators within their institutions.

Responses were measured using a five-point Likert scale ranging from "Strongly Agree" to "Strongly Disagree," allowing for quantitative analysis of perceptions and practices. To ensure clarity and reliability, the questionnaire was pre-tested with a small group of HIM practitioners prior to full deployment. Feedback from the pilot test was used to refine wording, improve question flow, and eliminate ambiguities. This process enhanced the validity of the instrument and ensured that it accurately captured the constructs under investigation.

Data Analysis: Data were coded and analyzed using SPSS version 25. Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize demographic characteristics and levels of digital competencies. Inferential statistics, specifically multiple regression analysis, were employed to identify predictors of professional role adaptation. Regression coefficients (β) and significance values (p) were reported to determine the strength and direction of associations between competencies and roles.

Ethical Considerations: Ethical approval for this study was obtained from an accredited Health Research Ethics Committee in Nigeria, in line with national guidelines for research involving human participants. All respondents were provided with a participant information sheet outlining the purpose of the study, procedures, potential risks, and benefits. Participation was voluntary, and informed consent was obtained from each respondent prior to data collection.

Confidentiality was strictly maintained by anonymizing responses and securely storing all data. Participants were assured that their identities would not be disclosed and that their responses would be used solely for academic purposes. They were also informed of their right to withdraw from the study at any stage without penalty. The study adhered to the ethical principles of respect for persons, beneficence, and justice, consistent with international standards such as the Declaration of Helsinki (World Medical Association, 2013) and the Nigerian National Health Research Ethics Committee (NHREC) guidelines.

IV. RESULTS

Demographic Characteristics: A total of 200 Health Information Management practitioners participated in the study. Respondents were drawn from public hospitals (45%), private hospitals (35%), and health training institutions (20%). The majority were male (58%), while females accounted for 42%. Most participants had between 5–10 years of professional experience (47%), followed by those with less than 5 years (32%) and more than 10 years (21%).

Table 1: Demographic Characteristics of Respondents

Variable	Frequency (n=200)	Percentage (%)
Gender: Male	116	58
Gender: Female	84	42
Institution: Public Hosp.	90	45
Institution: Private Hosp.	70	35
Institution: Training Inst.	40	20
Experience: < 5 years	64	32
Experience: 5–10 years	94	47
Experience: > 10 years	42	21

Levels of Digital Competencies: Analysis revealed that 72% of respondents demonstrated moderate to high levels of digital competencies, while 28% reported low levels. The highest competencies were observed in data governance (mean = 4.1, SD = 0.6) and EHR proficiency (mean = 3.9, SD = 0.7). Lower competencies were reported in cybersecurity (mean = 3.2, SD = 0.8) and AI awareness (mean = 2.9, SD = 0.9).

Table 2: Mean Scores of Digital Competencies

Competency Area	Mean Score	Standard Deviation
Data Governance	4.1	0.6
EHR Proficiency	3.9	0.7
Interoperability Standards	3.6	0.7
Data Analytics	3.5	0.8
Cybersecurity	3.2	0.8
AI Awareness	2.9	0.9

Professional Roles: Respondents reported that their roles had expanded significantly in the digital era. The most common roles identified were data stewardship (65%), compliance monitoring (58%), and clinical informatics support (52%). Fewer respondents reported roles in analytics consulting (38%) and educational training (29%).

Table 3: Reported Professional Roles of HIM Practitioners

Professional Role	Frequency	Percentage (%)
Data Stewardship	130	65
Compliance Monitoring	116	58
Clinical Informatics Support	104	52
Analytics Consulting	76	38
Educational Training	58	29

Predictors of Role Adaptation: Multiple regression analysis identified significant predictors of professional role adaptation. Proficiency in EHR systems ($\beta = 0.33$, $p = 0.002$), data governance skills ($\beta = 0.31$, $p = 0.004$), and interoperability knowledge ($\beta = 0.27$, $p = 0.006$) were positive predictors. Conversely, limited access to digital resources ($\beta = -0.22$, $p = 0.011$) was a negative predictor of role adaptation.

Table 4: Regression Analysis of Predictors of Professional Role Adaptation

Predictor Variable	Beta (β)	p-value
EHR Proficiency	0.33	0.002
Data Governance	0.31	0.004
Interoperability Knowledge	0.27	0.006
Cybersecurity Skills	0.19	0.021
Limited Access to Resources	-0.22	0.011

Summary of Findings

Overall, the results indicate that HIM practitioners in Nigeria possess moderate to high levels of digital competencies, particularly in data governance and EHR proficiency. These competencies strongly predict their ability to adapt to evolving professional roles in health informatics. However, gaps remain in cybersecurity and AI awareness, and limited access to digital resources continues to hinder full role adaptation.

V. DISCUSSION

The findings of this study demonstrate that Health Information Management (HIM) practitioners in Nigeria possess moderate to high levels of digital competencies, particularly in areas such as data governance and electronic health record (EHR) proficiency. These results align with global studies that emphasize the centrality of digital skills in modern healthcare practice. Longhini, Rossettini, and Palese (2022) similarly reported that digital

competencies are essential for ensuring safe and effective patient care, while Digital Health Canada (2023) identified data stewardship and informatics proficiency as core domains of professional practice.

The regression analysis revealed that EHR proficiency, data governance, and interoperability knowledge were significant predictors of professional role adaptation. This finding underscores the importance of technical competencies in enabling HIM practitioners to transition from traditional record-keeping roles to more advanced responsibilities such as compliance monitoring, analytics consulting, and clinical informatics support. These results are consistent with El Hag et al. (2025), who noted that HIM professionals are increasingly recognized as data stewards and informatics specialists in the digital era.

However, the study also identified gaps in cybersecurity skills and artificial intelligence (AI) awareness, which were reported at lower competency levels. This is concerning given the growing reliance on digital health systems and the increasing risks of data breaches. Ng (2023) and UNESCO (2024) both highlight the need for continuous training in digital literacy to ensure equitable and secure access to health information. Addressing these gaps is critical for HIM practitioners to safeguard patient privacy and to leverage emerging technologies such as AI in healthcare decision-making.

The negative impact of limited access to digital resources on role adaptation reflects broader challenges in resource-constrained settings. Similar findings have been reported in Nigerian higher education, where limited infrastructure hinders students' ability to fully benefit from digital learning platforms (Taiwo & Uwaifo, 2024; Aremu & Udofia, 2025). For HIM practitioners, inadequate access to updated systems and tools restricts their ability to perform advanced informatics functions, thereby limiting their contribution to healthcare transformation.

Overall, this study reinforces the argument that HIM practitioners must evolve into multifaceted professionals who combine technical expertise with leadership in data governance, compliance, and informatics education. To achieve this, there is a need for:

- Curriculum integration of health informatics into HIM training programs.
- Continuous professional development opportunities focused on cybersecurity and AI.
- Institutional investment in digital infrastructure to ensure equitable access.
- National competency frameworks to standardize expectations and guide professional practice.

By addressing these areas, HIM practitioners in Nigeria and globally can be better positioned to support safe, efficient, and patient-centered healthcare delivery in the digital age.

VI. CONCLUSION

This study examined the digital competencies and evolving professional roles of Health Information Management (HIM) practitioners in the era of health informatics, focusing on practitioners in Nigeria. The findings revealed that most HIM professionals possess moderate to high levels of digital competencies, particularly in data governance and electronic health record (EHR) proficiency, which were significant predictors of their ability to adapt to new professional roles. These roles include data stewardship, compliance monitoring, clinical informatics support, and analytics consulting.

Despite these strengths, gaps remain in cybersecurity skills and artificial intelligence (AI) awareness, while limited access to digital resources continues to hinder full role adaptation. These challenges highlight the need for targeted interventions to ensure that HIM practitioners are adequately prepared to meet the demands of digital healthcare systems.

Overall, the study underscores the importance of continuous investment in digital literacy and professional development for HIM practitioners. Strengthening their competencies will not only enhance their effectiveness but also contribute to safer, more efficient, and patient-centered healthcare delivery in Nigeria and beyond.

VII. RECOMMENDATIONS

1. **Curriculum Integration**: Health Information Management training programs should embed health informatics modules into their curricula. This ensures that future practitioners graduate with competencies in EHR systems, interoperability standards, data analytics, cybersecurity, and AI applications, preparing them for the realities of digital healthcare.

2. **Continuous Professional Development (CPD)**: Professional associations and regulatory bodies should organize regular workshops, seminars, and certification programs. These opportunities will help practitioners update their knowledge and skills in line with emerging digital health technologies and global best practices.

3. **Institutional Investment in Infrastructure**: Healthcare institutions must prioritize investment in digital infrastructure, including secure networks, modern EHR platforms, and analytics tools. Equitable access to these resources will enable HIM practitioners to perform their roles effectively and adapt to evolving informatics responsibilities.

4. **National Competency Frameworks**: Regulatory bodies such as the Health Records Officers Registration Board of Nigeria (HRORBN) should collaborate with the National Health Research Ethics Committee (NHREC) to establish standardized digital competency frameworks. These frameworks would define expectations for HIM practice and guide professional development across the country.

5. **Strengthening Collaboration**: HIM practitioners should actively collaborate with IT departments, clinicians, and policymakers. Such collaboration ensures that digital health systems are implemented effectively and aligned with patient care needs, while also positioning HIM professionals as central contributors to healthcare transformation.

6. **Focus on Cybersecurity and AI Readiness**: Targeted training programs should be developed to address gaps in cybersecurity awareness and AI literacy. By strengthening these areas, HIM practitioners will be better equipped to safeguard patient data and responsibly leverage emerging technologies in healthcare delivery.

VIII. IMPLICATIONS FOR POLICY AND PRACTICE

The findings of this study carry important implications for both policy and practice in the field of Health Information Management. At the policy level, the establishment of standardized digital competency frameworks by regulatory bodies such as the Health Records Officers Registration Board of Nigeria (HRORBN) and the National Health Research Ethics Committee (NHREC) would provide clear benchmarks for professional development. Such frameworks would ensure that HIM practitioners across diverse institutions are equipped with the skills necessary to meet the demands of health informatics, while also promoting consistency and accountability in practice.

At the institutional level, healthcare organizations must recognize HIM practitioners as central actors in digital transformation. Investment in infrastructure, secure systems, and continuous training should be prioritized to enable practitioners to fulfill their roles as data stewards, compliance monitors, and informatics specialists. This recognition would not only enhance the efficiency of health information systems but also strengthen patient safety and data privacy.

At the professional practice level, HIM practitioners themselves must embrace lifelong learning and actively seek opportunities to expand their competencies, particularly in emerging areas such as cybersecurity and artificial intelligence. Collaboration with IT professionals, clinicians, and policymakers will be essential to ensure that digital health systems are implemented effectively and aligned with patient care needs.

Finally, at the national health system level, integrating HIM competencies into broader health informatics strategies will support Nigeria's efforts to modernize healthcare delivery. By positioning HIM practitioners as leaders in data governance and informatics, policymakers can ensure that digital health initiatives are sustainable, inclusive, and

responsive to the needs of both providers and patients.

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