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Adoption of Artificial Intelligence in Health Information Management in Abuja. Nigeria

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ABSTRACT
Health Information Management (HIM) is critical for efficient healthcare delivery, ensuring accurate patient data management, informed decision-making, and operational efficiency. This study examined the adoption of Artificial Intelligence (AI) in Health Information Management in Nigeria, focusing on challenges, potential benefits, and strategies for effective integration. The study employed a descriptive survey design, targeting 106 HIM personnel at selected healthcare facilities, with 82 respondents completing the structured questionnaire. Data were analyzed using descriptive statistics, including frequencies and percentages. Findings reveal that AI adoption in Nigerian healthcare remains limited, primarily due to financial constraints (36.6%), lack of skilled AI professionals (30.5%), resistance from healthcare workers (18.3%), and political and regulatory challenges (14.6%). Technological infrastructure gaps were reported by 61.0% of respondents, while 68.3% indicated that manual, paper-based record-keeping persists. Despite these challenges, healthcare professionals recognize AI's potential: 85.4% believe AI could enhance accuracy in patient data management, 82.9% support AI automation for administrative tasks, and 73.2% affirm AI can improve diagnostic speed and accuracy. Regarding AI implementation priorities, 30.5% identified patient data storage and retrieval, followed by 24.4% for diagnosis and treatment planning, and 23.1% for administrative efficiency. The study further highlights the need for capacity building, with 82.9% of respondents advocating for AI training programs, and 87.8% emphasizing the importance of clear national AI policies. Financial and policy support were also considered crucial, with 85.4% recommending increased government funding and 84.1% supporting public-private partnerships to facilitate AI adoption. In conclusion, while Nigerian healthcare professionals acknowledge the benefits of AI in HIM, adoption is hindered by infrastructural, financial, technical, and regulatory barriers. Strategic investments in training, digital infrastructure, policy frameworks, and stakeholder collaboration are necessary to leverage AI for improved health information management and patient care.
Keywords: Health Information Management, Artificial Intelligence, healthcare

INTRODUCTION

Artificial Intelligence (AI) use in the healthcare industry is associated with the potential to radically change the Health Information Management (HIM). Through these technologies, health systems will be in

a position to acquire greater levels of accuracy, speed of operations, and enhanced decision-making. AI tools like predictive analytics, machine learning (ML), and natural language processing (NLP) are already proving their worth in countries with a well-developed digital economy. The tools are automating the routine data entries, identifying anomalies in patient data, and helping clinicians to make evidence-based decisions (Jiang et al., 2017). Therefore, artificial intelligence applications in developed communities have enhanced the efficiency of handling electronic health records (EHRs), reduced the administrative burden, and enhanced the data protection measures (Davenport and Kalakota, 2019).

Contrastingly, the adoption of AI in health information management in Nigeria is very young at the moment. In the local healthcare setting, the current limitations are primarily the lack of necessary infrastructure, shortage of the necessary technical expertise, and the lack of effective regulation rules. The Nigerian system has significant challenges in health record keeping where there is intermittent practice of documentation and fragmented data platforms (Ojo et al., 2021). Although the implementation of AI can make record-keeping standard, enhance interoperability of systems, and reduce cases of documentation errors, there exist a number of challenges. The most significant of them are related to the privacy of patient data, the lack of qualified personnel, and a lack of funds related to health technology (Akinola et al., 2022).

1.2 Statement of the Problem

The adoption of Artificial Intelligence (AI) in Health Information Management (HIM) has been increasing in pace across the globe since it is proven to increase efficiency, accuracy, and clinical decision-making (Davenport and Kalakota, 2019). In developed healthcare sectors, AI has become an inseparable part of electronic health records (EHR), medical coding, and patient management, with the latter making a crucial contribution to the minimization of human error and improvement of the quality of the provided services (Jiang et al., 2017).

1.3 Aim and Objectives of the Study

The aim is to assess Feasibility of the Adoption of Artificial Intelligence in Health Information Management in Abuja. Nigeria. The objectives are as follows:

i. To assess the current state of health information management in Abuja, Nigeria.
ii. To evaluate the awareness and readiness of healthcare institutions to adopt AI in HIM.
iii. To identify the challenges and potential solutions for AI adoption in HIM.
iv. To analyse the expected impact of AI adoption on healthcare efficiency and decision-making.
v. To propose a framework for the feasible adoption of AI in Nigeria's HIM sector.

1.4 Research Questions

i. What is the current state of health information management in Abuja, Nigeria?
ii. What are the levels of awareness and preparedness for AI adoption in HIM?
iii. What challenges hinder the integration of AI in HIM in Abuja, Nigeria?
iv. How can AI improve efficiency and data management in the Nigerian healthcare system?
v. What strategies can facilitate the feasible adoption of AI in HIM?

LITERATURE OF RELATED WORKS

The Micro-Level Perspective: Technology Acceptance Model (TAM). Originating from the work of Davis (1989), the Technology Acceptance Model was designed to decode the motivations behind why users choose to embrace or reject new technology. At its core, the model posits that adoption hinges on two primary constructs: perceived usefulness and perceived ease of use. Simply put, if a user believes a tool will make their job more efficient and does not require excessive mental effort to operate, the likelihood of adoption increases significantly. When we apply this logic to the Nigerian healthcare environment—specifically regarding Health Information Management the potential value of AI becomes clear. AI promises to drastically reduce the "operational traps" that plague the system, such as data entry errors and lost records. By automating routine tasks, AI could allow medical practitioners to access cleaner, more accurate data, thereby sharpening their clinical decision-making. Ideally, this leads to a direct improvement in patient health outcomes. However, the TAM framework highlights a critical

friction point: the ease of use. Even if a system is functionally powerful, it will face fierce resistance if it is perceived as cumbersome. Considering that many Nigerian medical institutions still rely on paper-based records or archaic digital systems, introducing an AI interface that feels alien or difficult to navigate will likely result in rejection. The cognitive load required to learn a complex system is often seen as not worth the trouble, regardless of the long-term benefits. We can look to international benchmarks for evidence of this. Singapore and Estonia, for instance, have successfully rolled out digital health solutions because they prioritized user experience alongside technical power. In Singapore, the success of AI in patient management is largely attributed to how seamlessly it integrates into the existing daily routines of hospital staff (Tan et al., 2020). The lesson for Nigeria is clear: for AI to survive, it must be intuitive. It cannot just be a "functionally powerful" backend engine; it must present a front-end that feels natural to overworked medical professionals. The Macro-Level Perspective: Innovation Diffusion Theory (IDT) While TAM focuses on the individual's mind, Rogers' (2003) Innovation Diffusion Theory shifts the focus to the community. IDT investigates how new technologies spread through a social system, identifying five specific characteristics that determine the speed of adoption: relative advantage, compatibility, complexity, trialability, and observability. For AI to gain a foothold in Nigeria's HIM sector, it must first demonstrate a clear "relative advantage." This means proving, in undeniable terms, that it is superior to the status quo—not just in terms of data quality, but in cost reduction and efficiency of care. Yet, "compatibility" is perhaps even more pivotal in the Nigerian context. The technology must fit into the current manual or semi-automatic workflows without demanding a total overhaul of existing processes. If an AI system forces healthcare workers to abandon familiar routines entirely, it creates instability and breeds resistance.

METHODOLOGY

This chapter will explain the methodological framework that will be founded to explore the feasibility of implementing Artificial Intelligence (AI) in Health Information Management (HIM) in a Nigerian healthcare setting. It provides detailed presentation of the research design, geographical area of the study, the target population and the criteria used to select the participants. Moreover, it provides the information on instruments to be used in data collection and sampling methodology to be applied in data analysis. The main goal is to formulate the investigation in a way that would allow an objective, systematic, and holistic assessment of determinants of AI adoption regarding the HIM systems in Nigeria. Research Design The research design is a descriptive research design, which is considered the best in terms of systematic observation and description of the phenomena under consideration. It is a non-experimental design, which implies that it does not presuppose any manipulation of variables but rather gives attention to the true reflection of the state of things. The given approach is relevant specifically to the research, as it aims to provide an accurate and in-depth description of the existing situation in the sphere of Health Information Management in Nigeria, as well as the elements that influence the viability of the AI adoption. With the adoption of a descriptive framework, the researcher stands to assemble information 1related to various aspects, including the awareness of AI in the minds of HIM practitioners, the readiness of the institutions to implement it, and the challenges faced in the process of integrating AI with the existing healthcare systems. Seeing how the study is expected to understand the phenomenon of AI implementation in HIM and describe it without enacting any experimental changes, the descriptive method is suitable and realistic. The investigation also adopts a quantitative paradigm of data collection in which a structured questionnaire is used to extract information out of HIM staff in hospitals and healthcare facilities in Nigeria. The instrument consists of closed-ended questions that are designed to provide numerical data on readiness to adopt, the awareness level, and perceived obstacles to implementing AI in HIM. The application of such structured quantitative approach will ensure objective data collection and analysis and will allow making a clear evaluation of the feasibility of AI implementation in the health sector of Nigeria. A descriptive research design, therefore, acts as a sound framework in order to capture and report the complexities of AI integration in HIM. Asokoro District hospital is a state owned public hospital located in the Asokoro district of Abuja and is run by the Hospitals management board of the Federal

Capital Territory Administration. This hospital provides a broader range of medical services, including the general outpatient consultation and inpatient admissions. Its specialized services include emergency care, maternal and child health services, diagnostic imaging and lab services. The plant is committed to healthcare delivery and is a constituent of the trend in the FCT to attain development objectives in terms of health. Nisa premier hospital is a privately run medical facility in 15/21 Alex Ekwueme way, Jabi, Abuja and it is unique in that it provides medical services expertly. The hospital offers both general outpatient and inpatient services which are tailored to meet the unique requirements of the patients. Nisa Premier provides advanced maternal and child care, fertility services and extensive diagnostic services as some of the specialized services. Nisa premier hospital has a dedicated medical staff, who are determined to provide patients with personalized care, it focuses on providing services to patients during routine check-ups, as well as complex treatments.

HIM Efficiency Index

$$HIM_Eff = (1 / k) \times \Sigma Xj \quad (3.1)$$

AI Readiness Index

$$AI_Ready = (1 / r) \times \Sigma Rj \quad (3.2)$$

RESULTS AND DISCUSSION

The analysis aims to determine the alignment of empirical evidence with the initial hypotheses concerning AI adoption in HIM within these institutions. A total of 85 questionnaires were distributed among the HIM professionals across the three facilities, with 82 completed and returned, yielding a response rate of approximately 96.5%. The analysis encompasses demographic characteristics, current HIM practices, familiarity with AI concepts, perceived benefits and challenges of AI adoption, and the existing technological infrastructure.

Table 4.1: Results of Respondents Bio-data

S/N	INDICATORS	VARIABLES	TOTAL RESPONSES	PERCENTAGE
1.	Sex	Male	37	45.1%
		Female	45	54.9%
		Total	82	100%
2.	Age	<20 years	3	3.7%
		20 - 30 years	18	22.0%
		31 - 40 years	25	30.5%
		41 - 50 years	22	26.8%
		51 and above	14	17.0%
		Total	82	100%
3.	Qualification	Professional Diploma	36	44.0%
		Degree	28	34.1%
		Post Graduate Degree	12	14.6%
		Others	6	7.3%
		Total	82	100%
4.	Working experience	1 - 5 years	10	12.2%
		6 - 10 years	20	24.4%
		11 - 15 years	25	30.5%
		16 years and above	27	32.9%
		Total	82	100%

Table 4.2: Is the current health information management (HIM) system in your healthcare facility efficient and effective?

Response	Respondents	Percentage (%)
Yes	37	45.1
No	30	36.6
Undecided	15	18.3
Total	**82**	**100**

The data shows that 45.1% of respondents view their HIM systems as efficient, 36.6% disagree, and 18.3% remain undecided, indicating a generally positive perception of system performance.

Table 4.3: Is health data accurately recorded and up-to-date in your healthcare facility?

Response	Respondents	Percentage (%)
Yes	48	58.5
No	22	26.8
Undecided	12	14.6
Total	**82**	**100**

Similarly, 58.5% believe health data is accurately recorded and up-to-date, 26.8% disagree, and 14.6% are uncertain, reflecting a favorable outlook on data management.

Table 4.4: Are the HIM tools used in your healthcare facility primarily manual-based (e.g., paper records)?

Response	Respondents	Percentage (%)
Yes	56	68.3
No	20	24.4
Undecided	6	7.3
Total	**82**	**100**

From the above table, 68.3% report relying on manual HIM tools, 24.4% disagree, and 7.3% are unsure, highlighting the widespread use of manual systems, especially in public healthcare facilities.

Table 4.5 Is there a functional computerized system in place for managing health information in your facility?

Response	Respondents	Percentage (%)
Yes	26	31.7
No	50	61.0
Undecided	6	7.3
Total	**82**	**100**

The data shows that 31.7% report having functional computerized HIM systems, 61.0% do not, and 7.3% are uncertain. This suggests that many healthcare facilities still depend on manual processes for managing health information.

DISCUSSION OF FINDINGS

An analysis of the 82 respondents reveals a demographic composition skewed slightly towards females, who make up 54.9% of the sample compared to 45.1% males. This distribution mirrors broader global healthcare patterns where women often dominate the workforce. In terms of age, the cohort is largely experienced, with 57.3% falling between the ages of 31 and 50. Interestingly, the sector sees limited entry from younger generations, as only 3.7% are under the age of 20, a trend that raises concerns about future succession planning

and the transfer of institutional knowledge. Educationally, the workforce holds diverse qualifications: 44.0% possess Professional Diplomas, 34.1% hold University Degrees, and 14.6% have obtained Postgraduate Degrees. The relatively small fraction of postgraduates suggests potential barriers to accessing advanced education or a workforce tendency to prioritize immediate employment over further specialization. This gap highlights an opportunity to enhance specialized skills through targeted continuing education. Regarding tenure, the majority (63.4%) have accumulated over 11 years of experience, indicating a deep reservoir of professional expertise that could be leveraged for internal mentorship. Perceptions of current HIM system efficiency are mixed. While 45.1% of participants believe their systems are effective, a significant portion (36.6%) disagrees, and 18.3% remains undecided. This division aligns with the findings of Oluwaseun et al. (2020), who argue that traditional paper-based record-keeping which remains prevalent is prone to errors and information loss. Similarly, Okunola et al. (2020) point to data fragmentation and poor interoperability as persistent hurdles preventing seamless information exchange. Despite these issues, data accuracy appears to be a relative strong point. Table 4.1.6 shows that 58.5% of respondents affirm their records are accurate and current. However, with 26.8% disagreeing, it is clear that inconsistencies remain, particularly in facilities lacking skilled personnel. As noted by Omoniyi and Akpan (2019), inadequate training and staffing continue to undermine data quality efforts. A major contributor to these inefficiencies is the stubborn reliance on manual processes. The data indicates that 68.3% of facilities still utilize paper-based systems. This reliance is especially pronounced in rural settings where technological adoption lags. The practical drawbacks such as the difficulty of retrieving records and the risk of data loss underscore the urgent need for digital transition. Consequently, functional computerized systems are scarce; only 31.7% of respondents report having them, while 61.0% note their absence. Adebayo et al. (2020) observe that while some urban Nigerian hospitals have begun adopting Electronic Health Records (EHRs), the implementation is insufficient and requires a nationwide push for integration. The obstacles to modernizing HIM are multifaceted. Table 4.1.9 identifies a lack of skilled personnel (42.7%) and poor infrastructure, such as inadequate internet and hardware (36.6%), as primary barriers. Weak record-keeping practices and insufficient training also feature, though to a lesser extent. These findings resonate with Omoniyi and Akpan (2019), who highlight that a lack of proper HIM training exacerbates security and accuracy issues. Furthermore, Adebayo et al. (2020) note that the absence of cybersecurity measures poses a significant risk to digital transformation efforts. When assessing the overall structure of HIM systems, only 14.6% of respondents view them as well-structured. Over half (54.9%) believe the systems function but require improvement, while 30.5% view them as inefficient and in need of reform. Ogunleye et al. (2018) contrast this with the advanced, AI-powered systems found in the US, UK, and South Africa, noting that Nigeria's technological and infrastructural deficits continue to hinder full-scale integration. The transition toward AI is hampered by low awareness. Table 4.1.11 reveals that nearly half of the respondents (47.6%) are unaware of AI's role in healthcare. This supports Idowu and Oyekunle's (2021) observation that many professionals fail to recognize AI's potential to revolutionize data management and decision-making. This knowledge gap presents a clear imperative for educational initiatives designed to boost AI literacy. Strategic planning for AI is equally lacking. Only 26.8% of respondents report having a clear integration strategy, whereas 54.9% indicate that no such strategy exists at their facility. Musa et al. (2020) argue that without a structured implementation plan, the transition from traditional practices to AI-driven solutions remains difficult. Compounding this is a severe lack of training; 78.1% of respondents feel they have not received adequate preparation to use AI tools. Adebayo et al. (2020) emphasize that this deficit in digital literacy is a major roadblock to adoption. The barriers to AI are both human and structural.

CONCLUSIONS/RECOMMENDATIONS

5.1 Summary of Findings

This research investigates the integration of Artificial Intelligence (AI) within Health Information Management (HIM) across the Nigerian healthcare landscape. It scrutinizes the extent of AI utilization, the hurdles obstructing its uptake, the prospective advantages, and the viewpoints held by various stakeholders. The outcomes shed light on the mechanisms of AI incorporation in Nigeria's medical sector and the barriers stalling its broader application. Currently, the deployment of AI in health information management is sporadic, with only a handful of institutions deploying solutions powered by this technology (Adebayo et al., 2022). A significant number of medical centers continue to depend on conventional data handling methods, hampered

by poor infrastructure, a scarcity of technical skills, and a hesitation among staff to adopt emerging technologies. The evidence suggests that Nigeria is merely at the nascent phase of this transition; numerous hospitals and clinics lack the capacity to deploy sophisticated AI tools because their digital foundations are insufficient. Multiple obstacles were pinpointed as critical challenges to embracing AI. Notable constraints include insufficient technological backbone, funding shortages, and negligible backing from the government (Okeke & Ibrahim, 2021). Furthermore, worries regarding the safety of data, the confidentiality of patients, and moral dilemmas play a role in the sluggish acceptance of these tools. Numerous medical practitioners are wary of trusting AI with clinical decisions, pointing to problems such as the opacity of algorithmic logic and who is liable when mistakes occur. These observations are consistent with international research showing comparable anxieties among doctors regarding the ethics of AI in medicine. The research also underscores that whereas AI is frequently utilized in wealthy nations for clinical decision support, its use in Nigeria is predominantly centered on administrative duties like digital health records and automated scheduling. Earlier studies have stressed AI's capacity to bolster diagnostics and patient oversight (Smith et al., 2021), yet this investigation emphasizes its function in bettering record-keeping, cutting inefficiencies, and tackling data handling issues in Nigerian facilities. The results imply that local institutions prioritize AI tools that boost administrative efficiency before moving to more intricate clinical AI utilities. A central issue identified was the disparity between technological preparedness and actual deployment. Even though there is recognition of AI's value, putting it into action is blocked by infrastructural deficits. This observation mirrors wider global patterns where settings with limited resources find it difficult to move from merely knowing about AI to implementing it fully due to economic and technical hurdles. Worries about the privacy and security of data were also prevalent. Many participants voiced apprehensions regarding potential breaches and threats to patient confidentiality linked to AI-based HIM platforms. These fears reflect ongoing worldwide debates concerning the ethical and security ramifications of AI in handling confidential patient records (Brown & Patel, 2020). Absent definitive regulations and strong cyber defenses, the rollout of AI in Nigerian healthcare will keep facing pushback. The lack of regulatory structures overseeing AI in medicine is a major stumbling block. Numerous respondents stressed the necessity for state-led policies to standardize AI use and tackle ethical questions (Adebola & Nwachukwu, 2023). In the absence of unambiguous rules, healthcare providers remain unsure of the best methods for incorporating AI, resulting in hesitation. The findings suggest that governance structures will be a decisive element in speeding up AI adoption in Nigeria's health information management.

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