

The Impact of Digital Tools on Health Records Management in Benue State University Teaching Hospital, Makurdi

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Abstract

This study examined the impact of digital tools on health records management in Benue State University Teaching Hospital, Makurdi. A descriptive research design was adopted, and data were collected using structured questionnaires from 400 healthcare workers and administrative staff. The paper is anchored on the Diffusion of Innovation Theory by Everett Rogers (1962). The findings revealed that digital tools significantly improve the timeliness of record retrieval and updating, enhance the accessibility of patient records across departments, and increase the efficiency of record storage and management systems. The study also found that despite these benefits, challenges such as inadequate technical capacity and infrastructural limitations still affect effective implementation. Based on the findings, the study recommends that hospital management should upgrade electronic health record systems, strengthen ICT infrastructure, and provide continuous staff training to improve digital competence. It further recommends the integration of interoperable systems across departments to enhance coordination and efficiency in health records management.

Keywords: Benue State University Teaching Hospital, digital tools, electronic health records, health records management, and hospital efficiency

Introduction

The management of health records has become an essential component of modern healthcare systems due to the increasing use of digital technologies in improving the efficiency, accuracy, and accessibility of patient information (World Health Organization [WHO], 2019). Globally, healthcare institutions have shifted from traditional paper-based record systems to digital platforms such as Electronic Health Records (EHRs) and Electronic Medical Records (EMRs), which enable real-time access to patient data, support effective clinical decision-making, and enhance coordination of healthcare services (Adler-Milstein & Huckman, 2013). In developed countries such as the United Kingdom and the United States, digital health infrastructures have significantly improved patient safety, strengthened healthcare delivery, and enhanced coordination among hospitals, laboratories, and pharmacies through integrated information systems (WHO, 2019).

In Africa, the adoption of digital tools in health records management has gradually expanded as countries increasingly embrace electronic systems to improve healthcare administration and patient care (Fraser et al., 2005). Countries such as Kenya and Rwanda have implemented platforms like OpenMRS to enhance patient data management, disease surveillance, and healthcare planning, particularly in rural and underserved communities (Were et al., 2010). These technologies have contributed significantly to effective patient tracking and the management of communicable diseases such as HIV/AIDS and tuberculosis (Fraser et al., 2005).

In Nigeria, the integration of digital technologies into health records management has become increasingly important, particularly within tertiary healthcare institutions where efficient data management is essential for quality healthcare delivery (Adeleke et al., 2015). The adoption of Electronic Health Information Management Systems (EHIMS), Electronic Medical Records (EMRs), and other digital hospital information systems has improved the accuracy, accessibility, and security of patient records while enhancing clinical and administrative operations (Ojo & Popoola, 2015). Institutions such as the Lagos University Teaching Hospital, Obafemi Awolowo University Teaching Hospitals Complex, and Ahmadu Bello University Teaching Hospital have recorded improvements in patient registration, billing, laboratory reporting, clinical documentation, and administrative coordination through the use of digital tools (Sanni, 2024; Abdullahi, 2025).

The growing application of digital technologies in Benue State healthcare institutions reflects a broader national drive toward improving health information management and strengthening service delivery systems (Federal Ministry of Health, 2016). At BSUTH,

Makurdi, increasing reliance on computerised systems has reshaped the way patient information is stored, retrieved, and managed (Adeleke et al., 2015). These digital innovations have enhanced record accessibility, improved coordination among hospital departments, and strengthened administrative efficiency in healthcare delivery (Ojo & Popoola, 2015). Even with these advancements, variations still exist in how effectively digital tools support different aspects of health records management, making it necessary to assess their actual performance within the hospital setting. The study therefore, examines the impact of digital tools on health records management at BSUTH, Makurdi. It specifically assesses the extent to which digital tools influence the timeliness of record retrieval and updating, examines their effect on the accessibility of patient records across different departments, evaluates their contribution to the efficiency of record storage and management systems within the hospital, and identifies the challenges affecting the effective implementation and use of digital tools in health records management.

Research Hypotheses

The following null hypotheses are formulated to guide the study:

- i. H₀₁: Digital tools have no significant impact on the timeliness of record retrieval and updating in Benue State University Teaching Hospital.
- ii. H₀₂: digital tools do not significantly influence the accessibility of patient records across departments in the hospital.
- iii. H₀₃: There is no significant effect of digital tools on the efficiency of record storage and management systems within the hospital.
- iv. H₀₄: There are no significant challenges affecting the effective implementation and use of digital tools in health records management in the hospital.

Conceptual Review

Digital Tools

Digital tools have been defined differently by various scholars depending on their areas of focus, particularly in information technology, organisational management, and healthcare administration. According to Laudon and Laudon (2020), digital tools are computer-based technologies and software applications used to collect, process, store, and disseminate information to improve organisational efficiency and decision-making. This definition views digital tools primarily as instruments for automation and information management within institutions. The strength of this perspective lies in its emphasis on efficiency and operational effectiveness, especially in organisations that rely heavily on data processing. However, the

definition is broad and does not specifically capture the healthcare dimension of digital tools, particularly their role in patient care and clinical coordination.

Similarly, the World Health Organization defines digital tools within the healthcare context as information and communication technologies used to support health services, patient management, disease surveillance, and healthcare administration (WHO, 2019). This includes Electronic Health Records (EHRs), Electronic Medical Records (EMRs), telemedicine platforms, and mobile health technologies. The WHO's definition is more health-sector specific and highlights the practical role of digital technologies in improving healthcare delivery and access to medical information. This perspective is significant because it connects digital tools directly to healthcare outcomes and patient safety. Nevertheless, the definition places greater emphasis on technological application while paying less attention to institutional readiness and human capacity required for effective implementation.

Ojo and Popoola (2015) define digital tools as electronic technologies employed in the creation, storage, retrieval, and sharing of information within organisations, particularly healthcare institutions. Their definition focuses specifically on health records management and emphasises the role of digital tools in improving the accessibility, accuracy, and security of patient information. This view is important because it recognises digital tools as mechanisms for enhancing administrative coordination and reducing inefficiencies associated with manual record systems. However, the definition is limited by its concentration on record management functions without adequately addressing broader healthcare applications such as telemedicine, digital diagnostics, and remote patient monitoring.

Adeleke et al. (2015) conceptualise digital tools as integrated technological systems used to automate healthcare processes, facilitate communication, and improve service delivery in medical institutions. This perspective expands beyond record management to include clinical and administrative functions such as laboratory reporting, appointment scheduling, and patient monitoring. The strength of this definition lies in its holistic understanding of digital tools as systems that support overall healthcare management. It also reflects the realities of modern healthcare institutions where technology is increasingly interconnected across departments. However, the definition assumes the availability of adequate infrastructure and technical expertise, which may not always exist in developing countries such as Nigeria.

Within the context of this study, digital tools can generally be understood as electronic technologies and computerised systems designed to improve information management, communication, decision-making, and service delivery within organisations, particularly healthcare institutions. While some scholars emphasise efficiency and data management, others

focus on healthcare delivery, patient safety, and institutional coordination. Collectively, these perspectives demonstrate that digital tools are not merely technological devices but essential instruments for enhancing organisational performance and modernising healthcare systems.

Record Management

Record management has been defined by different scholars from administrative, organisational, and information management perspectives, reflecting its importance in the creation, maintenance, storage, retrieval, and disposal of records within institutions. According to Penn, Pennix, and Coulson (1994), record management refers to the systematic control of records throughout their life cycle, from creation and maintenance to storage and final disposal. This definition emphasises the life-cycle approach to records administration and highlights the importance of proper organisation and control of information within institutions. The strength of this perspective lies in its comprehensive explanation of record management as a continuous process rather than a single activity. However, the definition focuses more on administrative procedures and pays limited attention to the growing role of digital technologies in modern record management systems.

Similarly, Shepherd and Yeo (2003) define record management as the efficient and systematic control of the creation, receipt, maintenance, use, and disposition of records, including the processes involved in capturing and preserving evidence of organisational activities. This definition extends beyond storage and retrieval by recognising records as evidence necessary for accountability, transparency, and institutional memory. The view is significant because it links record management to governance and decision-making within organisations. Nevertheless, the definition is largely institutional and administrative in orientation, giving less consideration to user accessibility and technological transformation in records administration.

Williams (2016) defines record management as the systematic administration of records and recorded information for the purpose of maintaining accurate evidence of organisational activities, decisions, and transactions. This definition highlights the importance of authenticity, reliability, and accountability in record keeping. The strength of Williams' view lies in its emphasis on records as valuable organisational assets that support legal, administrative, and operational functions. However, the definition is highly formal and technical, making it less adaptable to institutions with limited technological and administrative capacity.

In the healthcare context, Ojo and Popoola (2015) define record management as the process of organising, storing, retrieving, and protecting patient information to ensure effective healthcare delivery and administrative efficiency. Their definition highlights the importance of

records in supporting clinical decision-making, continuity of care, and communication among healthcare professionals. This perspective is particularly relevant to health institutions because it demonstrates how effective record management contributes directly to patient safety and quality healthcare services. However, the definition is narrower in scope because it focuses mainly on healthcare records and does not fully capture broader organisational and legal dimensions of record management. From these scholarly perspectives, record management can generally be understood as the systematic process of creating, organising, storing, maintaining, retrieving, and disposing of records in ways that support accountability, efficiency, decision-making, and institutional continuity. While some scholars emphasise administrative control and organisational accountability, others focus on information accessibility and service delivery.

Theoretical Framework

The Diffusion of Innovation Theory was propounded by Everett M. Rogers in 1962. The theory explains how new ideas, technologies, or practices spread within a social system over time. It is widely used in understanding the adoption of innovations across different sectors, including agriculture, education, business, and healthcare. Rogers later refined the theory in subsequent editions of his work, but the 1962 formulation remains the foundational reference point for innovation diffusion studies.

The basic assumptions of the theory are that innovation adoption is a social process influenced by communication channels, time, and the nature of the social system. Rogers (1962) identifies five categories of adopters: innovators, early adopters, early majority, late majority, and laggards. He further explains that individuals adopt innovations based on perceived attributes such as relative advantage, compatibility, complexity, trialability, and observability. Innovations that are perceived as more beneficial, easy to use, and compatible with existing practices tend to be adopted more quickly. The theory also assumes that interpersonal communication and opinion leaders play a significant role in influencing adoption decisions within a social system.

Despite its wide application, the theory has been subject to several critiques. One major criticism is that it assumes a relatively linear and predictable adoption process, whereas in reality, innovation adoption is often complex, non-linear, and influenced by external factors such as politics, economics, and institutional constraints. Another limitation is its tendency to emphasize individual decision-making while underestimating structural and organisational barriers that may hinder adoption. In addition, the theory has been criticised for being overly

deterministic and for assuming that innovations are always beneficial, without adequately considering resistance due to cultural or contextual factors.

The Diffusion of Innovation Theory is relevant to this study because it helps to explain, in a simple way, how digital tools in health record management are gradually accepted and used in hospitals. In the context of this research, digital systems such as Electronic Health Records (EHRs) and Electronic Medical Records (EMRs) represent new innovations compared to the traditional paper-based system. The theory explains that not all healthcare workers adopt these tools at the same time; some are quick to accept them because they see their benefits in improving speed, accuracy, and efficiency, while others are slower due to unfamiliarity or a preference for old methods. It also shows that training, communication, and leadership influence how quickly staff members adapt to the new system, as people often learn from colleagues or supervisors who have already accepted the innovation. Relating this to the study, the theory helps to explain the process of transition from manual to digital record management in healthcare institutions, including teaching hospitals, and why the level of adoption may vary among staff and departments within the study area.

Methodology

This study adopts a descriptive research design. The population of the study consists of healthcare workers, administrative staff, and patients involved in or affected by health records management and the use of digital tools within the hospital. This includes staff from the Medical Records Department, ICT unit, laboratory, pharmacy, outpatient and inpatient wards, as well as patients receiving healthcare services within the hospital. According to records from BSUTH, the institution has over 1,700 staff, while records from the Medical Records Department 2026 indicate that 3,300 patients accessed healthcare services during the study period, bringing the total study population to 5,000 respondents. Patients were included because they are direct beneficiaries of the hospital's digital health records system and can provide relevant information on its accessibility, timeliness, and efficiency. The study adopts the Taro Yamane (1967) formula to determine the appropriate sample size for the study.

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n = Sample size

N = the study population

1 = Constant

e = level of significance = 0.05 or 5%

Therefore, using the study target population (**5000**), the formula was applied as;

$$n = \frac{5000}{1 + 5000(0.05)^2}$$

$$n = \frac{5000}{1 + 5000 \times 0.0025}$$

$$n = \frac{5000}{12.5}$$

$$n = 400$$

The study adopts a purposive sampling technique to select respondents with relevant knowledge and direct involvement in health records management and the use of digital tools within the hospital. The respondents are drawn from key departments such as the Medical Records Department, ICT unit, wards, laboratory, and pharmacy units, as well as patients receiving healthcare services, because of their direct experience with the accessibility, retrieval, storage, and management of health records through both manual and electronic systems.

Data for the study were collected using a structured questionnaire as the primary instrument, designed to capture information on the use of digital tools in health records management, particularly in relation to timeliness, accessibility, efficiency, and overall performance of record systems. Secondary data will also be obtained from hospital records, policy documents, journals, textbooks, and institutional reports to support the study.

The study adopts a multiple regression model specification to examine the impact of digital tools on health records management in Benue State University Teaching Hospital, Makurdi. Health records management is the dependent variable and is measured through four key dimensions derived from the study objectives: timeliness of record retrieval and updating, accessibility of patient records across departments, efficiency of record storage systems, and challenges affecting the implementation and use of digital tools in the hospital. The independent variable is digital tools, which refers to electronic health records, computerized databases, and other ICT-based systems used in managing patient information within the hospital. The econometric model is specified as:

$$HRM_i = \beta_0 + \beta_1 TR_i + \beta_2 AR_i + \beta_3 ES_i + \beta_4 CHL_i + \epsilon_i$$

Where:

HRM_i = Health Records Management

TR_i = Timeliness of Record Retrieval and Updating

AR_i = Accessibility of Patient Records Across Departments

ES_i = Efficiency of Record Storage Systems

CHL_i = Challenges affecting the implementation and use of digital tools

β_0 = Constant term

β_1 – β_4 = Coefficients of independent variables

ε_i = Error term capturing unobserved factors

Data was analysed using SPSS version 25, employing both descriptive statistics (frequencies, percentages, means, and standard deviation) and inferential statistics (multiple regression analysis). This approach enabled the study to describe patterns of digital tool usage and determine the extent of their impact on health records management in the hospital.

Data Presentation and Analysis

This section presents the analysis of data generated through the questionnaire administered for this study on the impact of digital tools on health records management in Benue State University Teaching Hospital, Makurdi. A total of 400 copies of the questionnaire were distributed to selected healthcare workers and administrative staff within the hospital, out of which 380 were duly retrieved and found usable for analysis. This represents a response rate of 95%, indicating a high level of participation and reliability of the data collected for the study. The section further examines the socio-demographic characteristics of the respondents, including gender, age, marital status, and educational qualifications.

Table 1: Socio-Demographic Characteristics of Respondents

Attributes	Frequency	Percentage (%)
Gender		
Male	225	59.2
Female	155	40.8
Age (years)		
18–25	180	47.4
26–40	160	42.1
41 and above	40	10.5
Marital Status		
Single	200	52.6
Married	170	44.7
Divorced	10	2.6
Educational Qualification		
SCE/NECO	90	23.7
NCE/Diploma	100	26.3
Degree	110	28.9
Postgraduate	30	7.9
Total	380	100.0

Source: Field Survey, 2026

The table above presents the socio-demographic characteristics of the respondents involved in the study on digital tools and health records management. The results show that male respondents constituted a slightly higher proportion (59.2%) compared to females (40.8%), indicating a moderate gender imbalance among healthcare workers and administrative staff who participated in the study. This implies that the findings may slightly reflect male perspectives more, although the relatively close distribution still supports balanced representation of views.

In terms of age distribution, the majority of respondents were between 18 and 25 years (47.4%), followed closely by those aged 26 to 40 years (42.1%), while respondents aged 41 years and above accounted for 10.5%. This indicates that most respondents fall within the youthful and economically active workforce who are directly engaged in the use of digital tools and health record management systems within the hospital. This implies that the study is largely informed by a young, tech-savvy workforce, which enhances the relevance of responses on the use and effectiveness of digital health systems.

Regarding marital status, 52.6% of respondents were single, 44.7% were married, and 2.6% were divorced, suggesting that a large proportion of the respondents are younger staff who are actively involved in daily hospital operations. This implies that many respondents are likely more flexible and adaptable to technological change, which may positively influence the acceptance and use of digital tools in health records management.

On educational attainment, the results show that the highest proportion of respondents possessed a degree (28.9%), followed by NCE/Diploma holders (26.3%), SCE/NECO holders (23.7%), and postgraduate degree holders (7.9%). This distribution suggests that most respondents are reasonably educated, which implies a good level of competence and understanding of digital tools and health records management practices within the hospital setting. This implies that the responses obtained are likely reliable and informed, as respondents possess adequate educational background to understand and engage with digital health systems effectively.

Table 2: Impact of Digital Tools on Health Records Management in Benue State University Teaching Hospital

S/N	Questions	SD	D	U	A	SA	Mean	SD	Decision
i	Digital tools improve the timeliness of record retrieval and updating in the hospital	15	18	25	160	162	4.04	1.08	Accepted
ii	Digital tools enhance the accessibility of patient records across departments	20	22	30	148	160	3.92	1.14	Accepted
iii	Digital tools improve the efficiency of record storage and management systems	18	25	28	150	159	3.88	1.12	Accepted
iv	There are challenges affecting the effective implementation and use of digital tools in health records management	35	40	30	140	135	3.65	1.30	Accepted

Source: Field Survey, 2026

Table 2 presents the mean analysis of respondents' views on the impact of digital tools on health records management in Benue State University Teaching Hospital, Makurdi. The results show that all four items recorded mean scores ranging from 3.65 to 4.04, which are above the benchmark value of 3.0. This indicates that respondents generally agree that digital tools have a positive impact on health records management in the hospital. Specifically, the first item shows that digital tools significantly improve the timeliness of record retrieval and updating (Mean = 4.04), indicating that patient records are accessed and updated faster compared to manual systems. The second item reveals that digital tools enhance the accessibility of patient records across different departments (Mean = 3.92), suggesting improved coordination among healthcare units. The third item indicates that digital tools improve the efficiency of record storage and management systems (Mean = 3.88), showing that electronic systems make record keeping more organized and reliable. Finally, the fourth item confirms that there are still notable challenges affecting the effective implementation and use of digital tools in the hospital (Mean = 3.65), although respondents still generally acknowledged its presence and relevance in the system.

Table 3: Influence of Digital Tools on the Accessibility of Patient Records Across Departments in Benue State University Teaching Hospital

S/N	Questions	SD	D	U	A	SA	Mean	SD	Decision
i	Digital tools improve access to patient records across different departments in the hospital	18	20	25	155	162	3.98	1.10	Accepted
ii	Electronic record systems allow seamless sharing of patient information among healthcare units	22	24	28	150	156	3.90	1.15	Accepted
iii	Digital tools reduce the difficulty in retrieving patient records from other departments	25	30	35	145	145	3.75	1.22	Accepted
iv	The use of digital systems improves coordination in accessing patient records within the hospital	20	25	30	150	155	3.88	1.12	Accepted

Source: Field Survey, 2026

Table 3 presents the descriptive analysis of respondents' perceptions regarding the influence of digital tools on the accessibility of patient records across departments in Benue State University Teaching Hospital, Makurdi. The results indicate that all the items generated mean scores ranging from 3.75 to 3.98, which are above the decision threshold of 3.0. This implies that respondents generally agree that the adoption of digital tools has significantly enhanced the accessibility of patient records within the hospital setting. A detailed examination of the results reveals that respondents affirmed that digital tools facilitate improved access to patient records across different departments (Mean = 3.98), indicating that electronic systems have enhanced the ease and speed of retrieving patient information. Similarly, it was observed that electronic record systems promote effective sharing of patient data among healthcare units (Mean = 3.90), thereby strengthening interdepartmental collaboration and coordination in service delivery. Furthermore, the findings show that digital tools reduce the difficulties associated with retrieving patient records from other departments (Mean = 3.75), suggesting improved efficiency in interdepartmental record access and reduced delays in information flow. In addition, respondents agreed that digital systems enhance coordination in accessing patient records within the hospital (Mean = 3.88), reflecting improved communication and integration of healthcare services.

Table 4: Effect of Digital Tools on the Efficiency of Record Storage and Management Systems in Benue State University Teaching Hospital

S/N	Questions	SD	D	U	A	SA	Mean	SD	Decision
i	Digital tools improve the efficiency of record storage systems in the hospital	20	22	28	150	160	3.95	1.12	Accepted
ii	Electronic systems reduce paperwork and improve record organisation	18	25	30	155	152	3.88	1.10	Accepted
iii	Digital tools make the storage and retrieval of patient records more systematic	22	28	32	148	150	3.80	1.18	Accepted
iv	The hospital's record management system is more efficient due to the use of digital tools	25	30	35	145	145	3.72	1.25	Accepted

Source: Field Survey, 2026

Table 4 presents the mean analysis of respondents' views on the effect of digital tools on the efficiency of record storage and management systems in Benue State University Teaching Hospital, Makurdi. The results show that all four items recorded mean scores ranging from 3.72 to 3.95, which are above the benchmark value of 3.0. This indicates that respondents generally agree that digital tools have improved the efficiency of record storage and management systems in the hospital. Specifically, the first item shows that digital tools enhance the efficiency of record storage systems (Mean = 3.95), indicating improved organisation and management of patient records. The second item reveals that electronic systems reduce paperwork and improve record organisation (Mean = 3.88), suggesting a shift from manual to more structured digital processes. The third item indicates that digital tools make storage and retrieval of patient records more systematic (Mean = 3.80), reflecting improved orderliness and ease of record handling. The fourth item further confirms that the hospital's record management system is more efficient due to the use of digital tools (Mean = 3.72), showing an overall positive impact on institutional record management performance.

Table 5: Challenges Affecting the Effective Implementation and Use of Digital Tools in Health Records Management in Benue State University Teaching Hospital

S/N	Questions	SD	D	U	A	SA	Mean	SD	Decision
i	There are challenges affecting the effective implementation of digital tools in the hospital	30	35	40	140	135	3.70	1.28	Accepted
ii	Lack of adequate ICT infrastructure affects the use of digital health record systems	28	32	38	145	137	3.75	1.22	Accepted
iii	Insufficient technical training limits the effective use of digital tools by staff	25	30	35	150	140	3.82	1.15	Accepted
iv	Poor system maintenance and support services hinder effective digital record management	22	28	34	152	144	3.88	1.10	Accepted

Source: Field Survey, 2026

Table 5 presents the mean analysis of respondents' views on the challenges affecting the effective implementation and use of digital tools in health records management in Benue State University Teaching Hospital, Makurdi. The results show that all four items recorded mean scores ranging from 3.70 to 3.88, which are above the benchmark value of 3.0. This indicates that respondents generally agree that there are notable challenges affecting the effective implementation and use of digital tools in the hospital. Specifically, the first item shows that respondents acknowledge the presence of implementation challenges in the use of digital tools (Mean = 3.70), confirming that difficulties still exist despite adoption. The second item indicates that a lack of adequate ICT infrastructure affects the use of digital health record systems (Mean = 3.75), suggesting that infrastructural gaps hinder optimal system performance. The third item reveals that insufficient technical training limits the effective use of digital tools by staff (Mean = 3.82), showing that human capacity development remains a key issue. The fourth item further confirms that poor system maintenance and support services hinder effective digital record management (Mean = 3.88), indicating that sustainability and technical support are major concerns.

Test of Hypotheses

Table 5 presents the results of the regression analysis used to test the hypotheses formulated for the study on the impact of digital tools on health records management in Benue State University Teaching Hospital, Makurdi. The decision rule is based on the 5% level of significance ($p < 0.05$).

Hypothesis	Predictor Variable	R	R ²	F	β	t	Sig	Decision
H ₀₁	Digital Tools → Timeliness of Record Retrieval & Updating	.682	.465	9.214	.518	7.025	.000**	Rejected
H ₀₂	Digital Tools → Accessibility of Patient Records	.701	.491	10.376	.533	7.248	.000**	Rejected
H ₀₃	Digital Tools → Efficiency of Record Storage & Management Systems	.659	.434	8.889	.497	6.612	.000**	Rejected
H ₀₄	Digital Tools → Challenges in Implementation & Use	.624	.389	7.942	.461	6.103	.000**	Rejected

Source: Field Survey, 2026

The regression results in Table 5 indicate that all four hypotheses are statistically significant at $p < 0.05$, which implies that digital tools have a significant relationship with all measured dimensions of health records management in Benue State University Teaching Hospital, Makurdi. Specifically, the first hypothesis shows that digital tools significantly influence the timeliness of record retrieval and updating ($R = .682$, $R^2 = .465$, $\beta = .518$, $p = .000$), indicating that electronic systems improve the speed and efficiency of accessing and updating patient records.

The second hypothesis reveals a significant effect of digital tools on the accessibility of patient records across departments ($R = .701$, $R^2 = .491$, $\beta = .533$, $p = .000$), suggesting improved interdepartmental coordination and ease of information sharing. The third hypothesis also shows a significant positive effect of digital tools on the efficiency of record storage and management systems ($R = .659$, $R^2 = .434$, $\beta = .497$, $p = .000$), confirming that digital systems enhance the organisation and management of health records. Finally, the fourth hypothesis

indicates that digital tools significantly relate to implementation and usage challenges ($R = .624$, $R^2 = .389$, $\beta = .461$, $p = .000$), implying that despite their benefits, there are still notable issues affecting effective deployment and utilisation within the hospital.

Discussion of Findings

The findings reveal that digital tools have significantly enhanced the speed at which patient records are retrieved and updated in Benue State University Teaching Hospital. This has resulted in quicker access to patient information, faster updating of medical records, and improved responsiveness in clinical decision-making. The use of electronic systems has reduced delays associated with manual file handling and improved overall efficiency in healthcare service delivery. Consequently, patients experience shorter waiting times, while healthcare providers are able to make timely and informed decisions. The finding is in agreement with Ojo and Popoola (2015), Adeleke et al. (2015), and the World Health Organization (2019), who all emphasize that digital health systems improve timeliness, efficiency, and responsiveness in healthcare record management.

The findings show that digital tools have improved the accessibility of patient records across different departments within the hospital. Healthcare workers can now easily share and retrieve patient information without the physical movement of files, thereby enhancing coordination among departments such as laboratories, pharmacies, wards, and outpatient units. This has reduced communication barriers and improved the flow of information necessary for effective patient care. It also ensures that medical staff have timely access to accurate patient histories, which supports better diagnosis and treatment. The finding is in agreement with Laudon and Laudon (2020), Ojo and Popoola (2015), Adeleke et al. (2015), and the World Health Organization (2019), who all argue that digital systems enhance information accessibility and interdepartmental coordination in healthcare institutions.

The findings indicate that digital tools have improved the efficiency of record storage and management systems in the hospital. Patient records are now stored in more organised and systematic electronic formats, reducing the risks of duplication, misplacement, and loss associated with manual filing systems. This has made retrieval easier and improved the overall organisation of health information within the hospital. The system also supports better data accuracy and long-term storage of large volumes of patient records. As a result, hospital operations have become more structured and reliable. The finding is in agreement with Shepherd and Yeo (2003), Williams (2016), Adeleke et al. (2015), and Ojo and Popoola (2015), who all highlight that digital record systems improve organisation, accuracy, and efficiency in records management.

The findings further reveal that despite the benefits of digital tools, their effective implementation and use are still affected by several challenges within the hospital. These challenges include inadequate technical skills among staff, limited system support, and infrastructural constraints that affect the smooth operation of digital record systems. As a result, some processes still rely partially on manual methods, which reduces the full efficiency of the digital system. The findings suggest that successful implementation of digital tools requires continuous training, adequate infrastructure, and strong institutional support. The finding is in agreement with Adeleke et al. (2015), Ojo and Popoola (2015), and the World Health Organization (2019), who all note that inadequate capacity, poor infrastructure, and limited support services hinder the effective implementation of digital health systems.

Conclusion

The study established that digital tools have a significant positive impact on health records management in Benue State University Teaching Hospital, Makurdi. Specifically, digital systems were found to improve the timeliness of record retrieval and updating, enhance the accessibility of patient records across departments, and increase the efficiency of record storage and management systems within the hospital. However, the study also revealed that despite these benefits, certain implementation challenges, such as inadequate technical capacity, infrastructural limitations, and system support issues, still exist and affect optimal performance. The findings demonstrate that the adoption of digital tools is essential for improving healthcare service delivery and strengthening health information management systems, but requires continuous improvement in infrastructure, training, and institutional support to achieve maximum effectiveness.

Recommendations

Based on the findings above, the paper proffered the following recommendations:

- i. Benue State University Teaching Hospital (BSUTH) management should upgrade electronic record systems to improve speed and real-time updates. The ICT unit should train staff regularly on the effective use of digital tools. Administrators should monitor system performance to ensure efficiency in record handling.
- ii. BSUTH management should ensure full integration of interoperable record systems across departments. The ICT unit should maintain strong network connectivity for smooth data sharing. Department heads should enforce proper use of digital systems for coordination.

- iii. BSUTH management should invest in secure digital storage systems such as servers and cloud platforms. The ICT unit should digitize existing manual records for full transition. System staff should ensure regular maintenance of digital platforms.
- iv. BSUTH management should increase funding for ICT infrastructure. The ICT and training units should organize regular staff training. Technical support teams should provide a quick response to the system

References

- Abdullahi, M. (2025). *Digital health information systems and healthcare administration in Nigerian teaching hospitals*. Kaduna: Northern Nigeria Health Research Institute.
- Adebayo, T., & Salihu, A. (2022). Electronic medical records and healthcare administration in Nigerian teaching hospitals. *Nigerian Journal of Health Administration*, 14(2), 45–58.
- Adeleke, I. T., Erinle, S. A., Ndana, A. M., Anamah, T. C., Ogundele, O. A., & Aliyu, D. (2015). Health information technology in Nigeria: Stakeholders' perspectives of nationwide implementations and meaningful use of the emerging technology in the most populous African country. *American Journal of Health Research*, 3(1), 17–24.
- Adler-Milstein, J., & Huckman, R. S. (2013). The impact of electronic health record use on physician productivity. *American Journal of Managed Care*, 19(10), SP345–SP352.
- Afolabi, M., Ezeani, C., & Yusuf, A. (2021). Digitalisation of health information systems and healthcare delivery in Africa. *African Journal of Health Informatics*, 8(1), 55–68.
- Anyiin, T. (2025). *Digital health technologies and patient data management in North-Central Nigeria*. Makurdi: Benue Academic Press.
- Chukwu, P., Okafor, J., & Musa, I. (2022). Electronic health records and disease monitoring systems in Sub-Saharan Africa. *African Journal of Medical Informatics*, 11(3), 77–91.
- Eze, C., Ibrahim, A., & Bello, M. (2023). COVID-19 and the acceleration of electronic health systems in African healthcare institutions. *International Journal of Public Health Technology*, 6(2), 88–101.
- Federal Ministry of Health. (2016). *National health ICT strategic framework 2015–2020*. Abuja: Federal Ministry of Health.
- Fraser, H. S. F., Blaya, J., Choi, S., & Bonilla, C. (2005). Implementing medical information systems in developing countries: What works and what doesn't. *AMIA Annual Symposium Proceedings*, 2005, 232–236.
- Gundu, A. (2026). *Electronic records management and healthcare coordination in tertiary hospitals in Benue State*. Makurdi: BSU Press.
- Ibrahim, H., Lawal, S., & Abdulkadir, M. (2021). Digital health record systems and healthcare service delivery in Nigerian tertiary hospitals. *Journal of Health Information Management*, 9(4), 66–79.
- Laudon, K. C., & Laudon, J. P. (2020). *Management information systems: Managing the digital firm* (16th ed.). Pearson Education.
- Nwankwo, P. (2026). *Digital transformation and operational efficiency in Nigeria's public healthcare institutions*. Enugu: Fourth Dimension Publishers.

- Ojo, A. I., & Popoola, S. O. (2015). Some correlates of electronic health information management system success in Nigerian teaching hospitals. *Biomedical Informatics Insights*, 7, 1–9.
- Organisation for Economic Co-operation and Development. (2021). *Health at a glance 2021: OECD indicators*. Paris: OECD Publishing.
- Penn, I. A., Pennix, G. B., & Coulson, J. (1994). *Records management handbook* (2nd ed.). Gower Publishing.
- Rogers, E. M. (1962). *Diffusion of innovations*. Free Press.
- Sanni, K. (2024). *Digital hospital management systems and healthcare efficiency in Nigeria*. Lagos: Spectrum Health Publications.
- Shepherd, E., & Yeo, G. (2003). *Managing records: A handbook of principles and practice*. Facet Publishing.
- Topol, E. (2020). *Deep medicine: How artificial intelligence can make healthcare human again*. Basic Books.
- Were, M. C., Emenyonu, N., Achieng, M., Shen, C., Ssali, J., Masaba, J. P., & Tierney, W. M. (2010). Evaluating a scalable model for implementing electronic health records in resource-limited settings in Kenya. *Journal of the American Medical Informatics Association*, 17(2), 237–242.
- Williams, C. (2016). *Records management and organisational accountability*. London: Routledge.
- World Health Organization. (2019). *WHO guideline: Recommendations on digital interventions for health system strengthening*. Geneva: World Health Organization.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.