

Cloud-Based Hospital Information Systems (HIS) and Their Role in Transforming Healthcare Delivery in Benin: Comparative Insights from Other African Countries

Transcript

Hello.

My name is Nelson Akaffou, and this presentation outlines my research proposal entitled “*Cloud-Based Hospital Information Systems and Their Role in Transforming Healthcare Delivery in Benin: Comparative Insights from Other African Countries*.”

Digital transformation has become a strategic priority in healthcare systems worldwide, driven by the need for efficiency, data-driven decision-making, and improved patient outcomes. In Sub-Saharan Africa, and particularly in Benin, healthcare digitalisation remains uneven and fragmented despite increasing political commitment and international support.

This research proposal aims to critically examine whether cloud-based Hospital Information Systems, or HIS, can realistically support improvements in healthcare delivery in Benin, and what lessons can be drawn from African countries that have achieved more advanced levels of digital health maturity.

Hospital Information Systems are widely recognised as foundational components of modern healthcare delivery. However, in Benin, HIS implementations remain largely fragmented, locally hosted, and poorly integrated across healthcare facilities.

Key challenges include limited digital infrastructure in rural areas, shortages in skilled health IT personnel, weak interoperability standards, and the absence of coherent national governance frameworks for health data. As a result, existing systems often fail to support continuity of care, data accuracy, and strategic health planning.

While anglophone African countries such as Rwanda and Kenya have demonstrated measurable progress through coordinated national digital health strategies, there is limited empirical research focused on francophone West African contexts.

This gap is significant because technological solutions that succeed in one regional or linguistic context may not automatically translate to another. Addressing this gap contributes both to academic knowledge in information systems research and to practical policymaking in developing healthcare systems.

The central research question guiding this study is:

To what extent can cloud-based Hospital Information Systems improve healthcare delivery in Benin, and what lessons can be drawn from other African countries with more advanced HIS implementations?

The phrase “to what extent” reflects an evaluative rather than deterministic approach. Rather than assuming that cloud technology is inherently beneficial, this research seeks to assess its practical potential, limitations, and contextual dependencies.

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The comparative dimension allows the research to identify transferable success factors while remaining sensitive to Benin's institutional, economic, and organisational realities.

The overall aim of this research is to evaluate the potential of cloud-based Hospital Information Systems to enhance healthcare delivery in Benin.

To achieve this aim, the study pursues five specific objectives.

First, it examines the current state of HIS adoption and digital readiness within Benin's healthcare system.

Second, it identifies the perceived benefits and constraints of cloud-based HIS in resource-constrained environments.

Third, it compares Benin's situation with selected African countries that have implemented more mature digital health systems.

Fourth, it analyses organisational, technological, and human factors influencing HIS adoption.

Finally, it proposes a conceptual framework to guide sustainable HIS implementation in Benin.

Existing literature highlights the growing role of digital health in strengthening healthcare systems across Africa. Studies emphasise that HIS can improve clinical decision-making, reduce medical errors, and enhance governance when appropriately implemented.

Research on cloud computing in healthcare identifies scalability, reduced infrastructure costs, and improved system availability as major advantages, particularly in low- and middle-income countries. However, concerns around data sovereignty, cybersecurity, and vendor dependency remain prominent.

Importantly, the literature reveals a strong concentration on anglophone African countries, with limited research addressing francophone contexts such as Benin. Furthermore, many studies focus on technological outcomes without adequately addressing organisational readiness or user acceptance.

These limitations justify the need for a more integrative, theory-informed analysis tailored to Benin's healthcare environment.

To analyse HIS adoption comprehensively, this research integrates three established information systems frameworks.

The Technology Acceptance Model explains how perceived usefulness and ease of use influence clinicians' willingness to adopt digital systems. While valuable, TAM alone does not address organisational or infrastructural constraints.

The HOT-Fit framework extends this perspective by examining alignment between human, organisational, and technological dimensions, making it particularly suitable for complex healthcare environments.

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Finally, the DeLone and McLean Information Systems Success Model provides outcome-focused indicators, such as system quality, user satisfaction, and net benefits.

By combining these models, the research captures acceptance, readiness, and measurable success as interconnected stages rather than isolated factors.

A qualitative research approach was selected due to the exploratory and evaluative nature of the research question. The study does not seek statistical generalisation, but rather an in-depth understanding of processes, experiences, and contextual factors influencing HIS adoption.

The primary method is a structured literature review guided by PRISMA principles to ensure transparency and replicability. This is complemented by a comparative case analysis of selected African countries, including Rwanda, Kenya, and Ghana.

This combination enables the identification of patterns and lessons while accounting for contextual diversity. Alternative methods, such as large-scale surveys or experiments, were considered less appropriate given data availability constraints and the early maturity of HIS adoption in Benin.

Data collection relies exclusively on secondary sources, including peer-reviewed journal articles, policy documents, and reports from international health organisations.

Databases such as Scopus, PubMed, IEEE Xplore, and ScienceDirect were used.

A systematic screening process was applied using predefined inclusion and exclusion criteria, followed by quality appraisal using recognised frameworks such as CASP.

Data analysis employed thematic coding to identify recurring concepts related to infrastructure readiness, governance, workforce capacity, and interoperability. These themes were then mapped against the selected theoretical frameworks to support structured synthesis and interpretation.

Although this study is based on secondary data and does not involve direct human participation, ethical considerations remain essential.

These include accurate representation of country case studies, proper attribution of sources, and avoidance of selective reporting that could bias conclusions.

Additional ethical reflection concerns digital sovereignty and data governance, particularly in the context of cloud-hosted health data in African countries.

Risks such as publication bias and over-reliance on successful case studies were mitigated through inclusion of both positive and critical perspectives, as well as literature from diverse regional contexts.

The research will produce three main artefacts.

First, a conceptual framework integrating acceptance, readiness, and success dimensions for HIS adoption in Benin.

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Second, a comparative evaluation matrix summarising lessons from selected African countries.

Third, a set of policy-oriented recommendations aimed at healthcare decision-makers and IT planners.

These artefacts ensure that the research delivers both academic and practical value.

The proposed research timeline spans the remaining project period, and it is structured into four phases: literature consolidation, thematic analysis, framework development, and final writing and review.

This phased approach ensures feasibility while allowing iterative refinement based on emerging insights.

In conclusion, this research proposal argues that cloud-based Hospital Information Systems hold significant potential to strengthen healthcare delivery in Benin, but only when aligned with organisational readiness, governance structures, and user acceptance.

By integrating established information systems theories with comparative African evidence, the study contributes to both academic knowledge and practical digital health strategy.