



Digital Maturity in Healthcare Organizations: A Conceptual Framework for Assessing Technology Adaptation and Organizational Readiness

Vaishali Laxman Tidke¹, Dr Rameshwar R. Chavan²

¹ Assistant Professor, MVP'S Institute of Management Research and Technology, Nashik

² Professor, School of Management Studies, KBC North Maharashtra University Jalgaon Maharashtra

vaishali.tidke1@gmail.com , drrrchavan09@gmail.com

ABSTRACT :

Healthcare organizations are adopting digital technologies at a pace that has changed the way many clinical and administrative activities are performed. Electronic health records, hospital information systems, telemedicine, artificial intelligence, digital diagnostic systems, patient-monitoring technologies and data analytics are now found in different parts of healthcare delivery. However, the presence of several digital technologies within a hospital does not necessarily mean that the hospital has achieved a high level of digital maturity. A hospital may have modern systems but still face difficulties related to interoperability, employee skills, data management, cybersecurity, leadership support and patient engagement.

The distinction between technology adoption and digital maturity provides the starting point for this conceptual paper. The purpose of the paper is to develop an integrated conceptual framework for assessing digital maturity and organizational readiness in healthcare organizations, particularly multi-speciality hospitals. The paper reviews literature on digital maturity, digital health capability, technology acceptance, organizational technology adoption and organizational capabilities. Existing maturity literature indicates that hospital digital maturity extends beyond information technology infrastructure and includes areas such as strategy, interoperability, governance, patient-centred care, people and skills, and data analytics.

Based on the literature, the paper proposes eight dimensions of healthcare digital maturity: **digital strategy and leadership; technology infrastructure and capability; interoperability and system integration; data and analytics; governance, cybersecurity and risk management; people, skills and organizational culture; patient-centred digital capability; and innovation and continuous improvement**. These dimensions are brought together with organizational readiness to form the proposed **Healthcare Digital Maturity and Organizational Readiness Framework (HDMORF)**. The framework also proposes five broad maturity stages: Initial, Emerging, Integrated, Advanced and Transformative. The paper argues that digital maturity should be understood as an organizational capability rather than simply as the number or sophistication of technologies installed. The framework may be useful to hospital administrators, policymakers, accreditation bodies and researchers seeking to assess the preparedness of healthcare organizations for sustained digital transformation.

Keywords: Digital Maturity, Healthcare Organizations, Digital Health, Technology Adaptation, Organizational Readiness, Healthcare Technology, Digital Transformation, Multi-speciality Hospitals

1. Introduction

Healthcare has always depended on information. Patient histories, diagnostic reports, medication records, laboratory results, clinical observations and administrative records are central to almost every decision made within a hospital. What has changed considerably is the way this information is created, stored, shared and used.

Hospitals today use a wide range of digital technologies. Electronic health records can bring patient information together in a digital format. Hospital information systems can support registration, billing, scheduling and administrative activities. Picture Archiving and Communication Systems can make diagnostic images available to clinicians. Telemedicine can extend consultations beyond the physical hospital. Artificial intelligence and machine-learning applications are being explored for diagnosis, prediction and decision support. Mobile applications, Internet of Things devices and remote-monitoring systems are also becoming part of healthcare delivery.

Yet the adoption of technology is only one part of the larger digital transformation process.

A hospital may purchase an advanced software system without integrating it with its existing systems. Employees may receive a new digital platform but may not receive adequate training. Patient information may be available electronically but may not be accessible across departments. Data may be collected in large quantities but may not be used effectively for managerial decision-making. Similarly, a hospital may introduce telemedicine without redesigning its clinical and administrative processes around it.

These situations raise an important question: **When can a healthcare organization actually be considered digitally mature?**

This question is different from asking whether an organization has adopted technology.

Technology adoption generally refers to the decision to acquire, introduce or use a particular technology. Digital maturity is broader. It concerns the extent to which an organization has developed the structures, capabilities, skills, processes and culture required to use digital technologies effectively and continuously.

A systematic review of hospital digital maturity models identified seven recurring dimensions: strategy, information technology capability, interoperability, governance and management, patient-centred care, people/skills/behaviour, and data analytics. Another review of digital health capability maturity models similarly shows that maturity assessment involves more than technology infrastructure and requires attention to organizational capability and implementation.

This distinction is particularly relevant in healthcare because technology operates within a complex environment involving doctors, nurses, technicians, administrators, patients, caregivers, technology vendors, regulators and other stakeholders. A digital system that works technically may not necessarily work well organizationally.

The present paper therefore focuses on the relationship between **technology adaptation, organizational readiness and digital maturity**. It attempts to bring these concepts together into a conceptual framework that can be applied to healthcare organizations, with particular relevance to multi-speciality hospitals.

2. Background of the Study

The growth of digital healthcare has been accompanied by considerable investment in information systems and connected technologies. However, the outcomes of digitalization have not always been uniform.

Digital health technologies can support faster access to information, coordination between departments, remote consultations, documentation and data-based decision-making. At the same time, implementation can create new problems if systems are poorly designed or inadequately integrated.

In the Indian healthcare context, these issues are particularly relevant because healthcare organizations differ considerably in infrastructure, financial resources, workforce capabilities and technological preparedness. A systematic review of digital transformation in the Indian health sector identified several barriers, including inadequate IT infrastructure and network connectivity, implementation costs, lack of appropriate records and expertise, concerns about data privacy and confidentiality, language and communication difficulties, user-related barriers, and ethical and legal concerns.

Therefore, the question is not simply whether hospitals are adopting digital technologies. The more useful question is whether hospitals are developing the organizational capacity required to make these technologies work effectively.

This provides the basis for examining digital maturity as an organizational phenomenon.

3. Technology Adoption and Digital Maturity: A Conceptual Distinction

Technology adoption and digital maturity are related but should not be treated as identical concepts.

Technology adoption can occur at the level of a particular application or system. For example, a hospital may adopt an electronic health record system, introduce telemedicine or install an AI-supported diagnostic application.

Digital maturity refers to a broader organizational condition.

A digitally mature organization is expected to have the ability to:

- select technologies according to organizational needs;
- integrate different systems;
- provide employees with appropriate skills;
- manage digital information responsibly;
- protect patient information;
- use data for operational and strategic decisions;
- redesign processes around digital capabilities;
- involve patients in digital services;
- evaluate the results of technology use; and
- continuously improve its digital capabilities.

This means that a hospital can have a high level of technology adoption but still have relatively weak digital maturity.

For example, consider two hospitals that have implemented electronic health records. In the first hospital, the system is connected to laboratory, pharmacy and billing functions; employees are trained; data are used for decision-making; patients can access selected information; and management regularly reviews system performance. In the second hospital, the electronic record operates largely as an isolated system, employees have limited training, data remain fragmented and management does not systematically review outcomes.

Both hospitals have adopted technology. Their levels of digital maturity, however, may be very different.

This distinction is central to the framework proposed in this paper.

4. Review of Literature

4.1 Digital Maturity in Hospitals

Digital maturity has become an important area of research because the presence of digital technologies alone does not adequately explain the effectiveness of digital health implementation.

Duncan et al. conducted a systematic review of hospital digital maturity models and identified 27 distinct maturity models across 29 relevant publications. Their synthesis produced seven major dimensions: strategy, IT capability, interoperability, governance and management, patient-centred care, people/skills/behaviour and data analytics.

This finding is important because it demonstrates that digital maturity extends beyond hardware and software. Strategy, people, governance and the way data are used are equally relevant.

The literature therefore supports a shift from a technology-centred understanding of digital maturity toward an organization-centred understanding.

4.2 Digital Health Capability and Maturity Models

Liaw and Godinho's critical thematic review examined digital health capability maturity models and discussed their development, implementation and evaluation. The literature suggests that maturity models can help organizations identify their present capabilities and areas requiring further development. However, maturity models also present a challenge. Different models use different dimensions, terminology and assessment criteria. As a result, there is no single universally accepted method for determining digital maturity in healthcare.

This creates space for contextual frameworks that reflect the characteristics of specific healthcare settings.

4.3 Technology Acceptance

The Technology Acceptance Model proposed by Davis explains technology acceptance through constructs including perceived usefulness and perceived ease of use. Davis's original work established these two perceptions as important determinants of user acceptance of information technology.

The relevance of this perspective to healthcare is straightforward. A hospital may invest in a sophisticated digital system, but its benefits depend partly on whether doctors, nurses, technicians and administrators consider the system useful and manageable.

The Technology Acceptance Model therefore contributes the **individual/user dimension** to the broader digital maturity discussion.

4.4 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) brought together several earlier technology-acceptance perspectives and examined factors affecting users' intentions and technology use.

In healthcare, factors such as expected performance benefits, effort involved in using a system, social influences and facilitating conditions can affect how employees respond to technological changes.

However, user acceptance alone cannot explain organizational digital maturity. A system may be accepted by employees but remain poorly integrated with other organizational systems. Therefore, user acceptance needs to be considered alongside organizational and technological capabilities.

4.5 Technology-Organization-Environment Perspective

The Technology-Organization-Environment framework proposed by Tornatzky and Fleischer provides an organizational perspective on technological innovation. The framework considers technological, organizational and environmental contexts when examining adoption and implementation decisions. This perspective is useful for healthcare because technology decisions are influenced not only by the characteristics of a particular system but also by organizational resources, leadership, internal processes, regulatory requirements and the external healthcare environment.

The TOE perspective therefore provides a useful foundation for understanding why the same technology may be implemented differently across hospitals.

4.6 Resource-Based View

The Resource-Based View emphasizes the importance of organizational resources and capabilities in developing sustained organizational advantage.

From a healthcare perspective, technology itself may not provide a lasting organizational advantage if competitors can purchase the same system. The more difficult-to-replicate element may be the organization's ability to combine technology with skilled employees, effective processes, knowledge and managerial capabilities.

Thus, digital maturity can be viewed partly as a capability developed through the combination of technological and organizational resources.

4.7 Dynamic Capabilities

Teece, Pisano and Shuen's dynamic capabilities perspective focuses on an organization's ability to develop and reconfigure internal and external competencies in changing environments.

This perspective is particularly relevant to digital healthcare because technologies, regulations, patient expectations and clinical practices continue to

change.

A hospital cannot depend permanently on the systems it has installed today. It needs the capacity to identify emerging opportunities, modify existing processes and introduce new technologies when appropriate.

Digital maturity, therefore, should not be considered a final destination. It should also represent an organization's capacity to learn and adapt.

5. Research Gap

The review of existing literature indicates several areas that require further conceptual development.

First, technology adoption and digital maturity are sometimes discussed together even though they represent different organizational conditions.

Second, several maturity models emphasize technological and information-system dimensions, while the human and patient dimensions may receive comparatively less attention.

Third, digital maturity models developed in one healthcare environment may not necessarily reflect the operational realities of healthcare organizations in another environment.

Fourth, the Indian healthcare environment presents particular challenges related to infrastructure, cost, privacy, skills, language, implementation capacity and organizational diversity.

Fifth, there is a need for a framework that connects **technology adaptation with organizational readiness**, rather than treating them as separate issues.

The present paper addresses these gaps by proposing an integrated framework for assessing healthcare digital maturity through technological, organizational, human and patient-related dimensions.

6. Objectives of the Paper

The paper has the following objectives:

1. To examine the conceptual difference between technology adaptation and digital maturity in healthcare organizations.
2. To identify the major dimensions that contribute to digital maturity in healthcare organizations.
3. To examine the role of organizational readiness in successful technology adaptation.
4. To develop a conceptual framework integrating technological capability, organizational readiness and digital maturity.
5. To propose broad maturity stages that may assist healthcare organizations in assessing their digital development.

7. Theoretical Foundation of the Proposed Framework

The proposed framework does not depend on one theory alone. Instead, it brings together insights from several theoretical perspectives.

Table 1: Theoretical Foundations

Theory/Perspective	Main Contribution to the Framework
Technology Acceptance Model	Explains employee/user acceptance of technology
UTAUT	Explains factors affecting technology intention and use
Technology-Organization-Environment	Explains organizational technology adoption
Resource-Based View	Highlights organizational resources and capabilities
Dynamic Capabilities	Explains organizational ability to adapt and reconfigure capabilities
Digital Maturity Literature	Provides dimensions for assessing organizational digital capability

The combination of these perspectives provides a broader explanation than any one theory could provide independently.

8. Dimensions of Healthcare Digital Maturity

Based on the literature reviewed, eight dimensions are proposed.

8.1 Digital Strategy and Leadership

Digital maturity begins with organizational direction.

Hospital management needs to have a clear understanding of why technology is being adopted and what organizational problem it is intended to address.

Leadership-related indicators may include:

- existence of a digital strategy;
- leadership commitment;
- allocation of digital investment;
- alignment between technology and organizational objectives;

- involvement of clinical and administrative leaders;
- monitoring of digital initiatives; and
- willingness to redesign processes.

Technology projects are more likely to become sustainable when they are connected to organizational priorities rather than being treated as isolated IT projects.

8.2 Technology Infrastructure and Capability

The second dimension concerns the technological foundation required for digital healthcare.

It includes:

- hardware;
- software;
- network connectivity;
- servers and cloud infrastructure;
- electronic health records;
- hospital information systems;
- diagnostic technologies;
- mobile technologies;
- telemedicine systems; and
- technical support.

Infrastructure provides the foundation, but it should not be mistaken for maturity itself.

A hospital may possess substantial technological infrastructure without having the organizational capabilities necessary to use it effectively.

8.3 Interoperability and System Integration

Healthcare organizations commonly use multiple digital systems.

A hospital may have separate systems for:

- registration;
- billing;
- laboratory;
- pharmacy;
- radiology;
- medical records;
- human resources;
- finance; and
- patient communication.

If these systems operate independently, information may remain fragmented.

Interoperability therefore becomes an important indicator of maturity.

Key indicators include:

- system-to-system connectivity;
- information exchange;
- reduction of duplicate data entry;
- common data standards;
- integration between clinical and administrative systems; and
- accessibility of relevant information across departments.

8.4 Data and Analytics

Digital systems generate large quantities of information. However, collecting data is not the same as using data.

A mature organization should be able to convert information into useful managerial and clinical insights.

This dimension includes:

- data quality;
- data availability;
- reporting systems;
- dashboards;
- analytics;
- evidence-based decision-making;
- predictive analysis; and
- use of data for performance monitoring.

The value of digital systems therefore depends partly on how effectively organizations use the information generated by them.

8.5 Governance, Cybersecurity and Risk Management

Healthcare organizations deal with highly sensitive information.

Digital maturity must therefore include responsible information governance.

Important areas include:

- data privacy;
- cybersecurity;
- access controls;
- authentication;
- backup and recovery;
- incident management;
- ethical use of data;
- regulatory compliance; and
- accountability.

The Indian literature has specifically identified data privacy, confidentiality and ethical/legal concerns as barriers to digital health implementation. Consequently, cybersecurity should not be treated simply as a technical IT issue. It should be considered part of organizational governance.

8.6 People, Skills and Organizational Culture

Technology is ultimately used by people.

Doctors, nurses, technicians, administrators and support staff need the knowledge and confidence to work with digital systems.

This dimension includes:

- digital literacy;
- training;
- technology-related competencies;
- employee participation;
- change management;
- willingness to learn;
- communication;
- leadership support; and
- organizational culture.

A hospital may have excellent technology but obtain limited benefit if employees do not understand how to use it or do not see its value.

8.7 Patient-Centred Digital Capability

Digital maturity should also be evaluated from the patient's perspective.

Relevant areas include:

- online appointment systems;
- digital registration;
- teleconsultation;
- access to reports;
- patient portals;
- digital communication;
- reminders;
- health information services;
- accessibility; and
- patient feedback.

The inclusion of patients is important because the ultimate purpose of healthcare technology is not simply organizational efficiency. Technology should contribute to accessible, safe and responsive healthcare.

Patient-centred care is also identified as one of the dimensions in the systematic review of hospital digital maturity models.

8.8 Innovation and Continuous Improvement

Digital maturity should not be treated as a one-time achievement.

Healthcare organizations need to evaluate whether existing technologies continue to meet organizational and patient needs.

This dimension includes:

- experimentation;
- innovation;
- technology evaluation;
- process improvement;

- learning from implementation;
- review of user feedback;
- updating systems; and
- willingness to discontinue ineffective technologies.

This dimension connects digital maturity with the dynamic capabilities perspective.

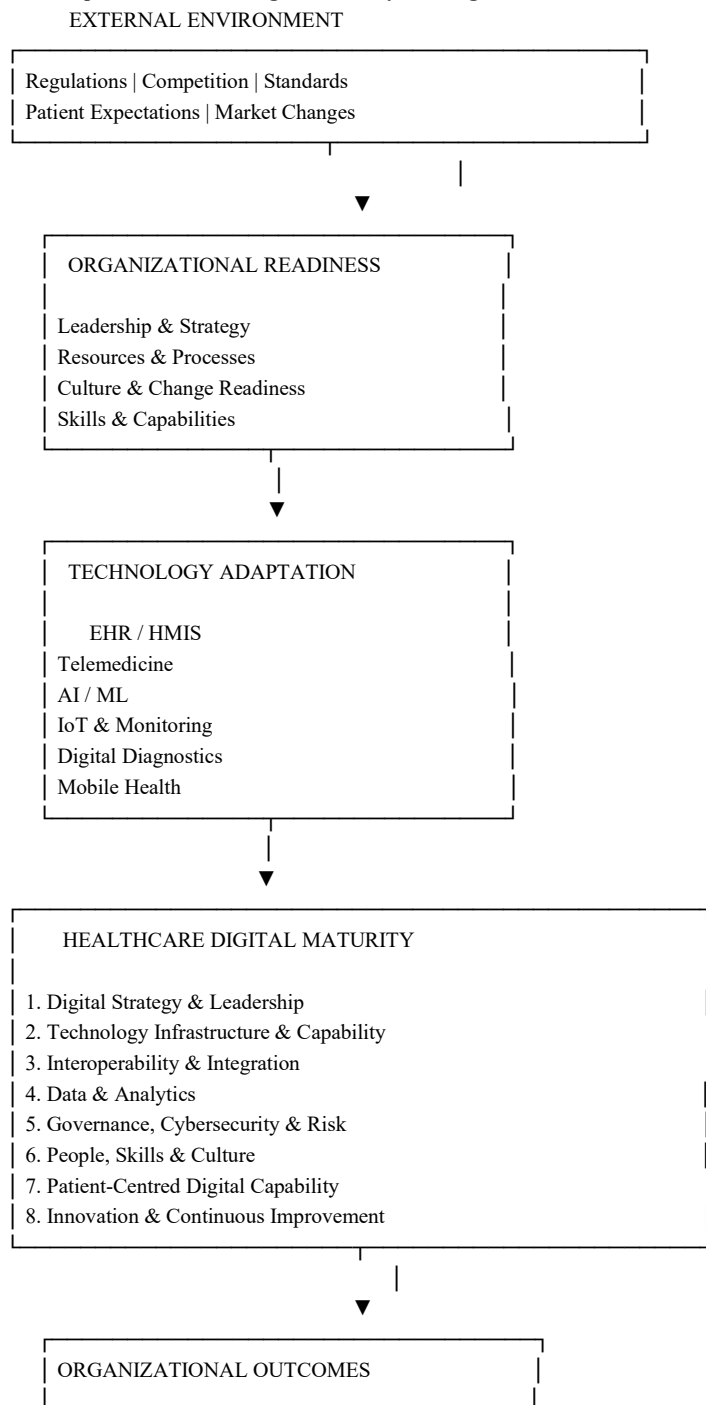
9. Proposed Conceptual Framework

The proposed framework is named:

Healthcare Digital Maturity and Organizational Readiness Framework (HDMORF)

The framework is based on the assumption that digital maturity develops through interaction among technological capabilities, organizational readiness, human capabilities and patient-oriented practices.

Figure 1: Proposed Healthcare Digital Maturity and Organizational Readiness Framework



Operational Efficiency
Service Quality
Employee Productivity
Decision-Making
Patient Experience
Organizational Performance

The framework should be interpreted as a conceptual relationship rather than a statistically tested causal model.

10. Organizational Readiness as a Connecting Element

One of the central arguments of the proposed framework is that organizational readiness connects technology adoption with digital maturity.

Readiness includes more than the availability of financial resources.

A hospital may be financially capable of purchasing an advanced system but still be organizationally unprepared because employees lack digital skills, existing processes are not compatible with the system, leadership commitment is weak or data governance is inadequate.

Organizational readiness can therefore be considered in terms of four broad elements:

1. **Strategic readiness**
2. **Resource readiness**
3. **Human readiness**
4. **Process and cultural readiness**

When these conditions are stronger, the organization may be better positioned to move from technology adoption toward meaningful digital maturity.

11. Proposed Digital Maturity Stages

To make the framework useful for practical assessment, five broad maturity stages are proposed.

Table 2: Proposed Digital Maturity Levels

Level	Name	General Characteristics
Level 1	Initial	Limited digital systems; activities mainly manual
Level 2	Emerging	Individual digital applications introduced; integration limited
Level 3	Integrated	Major systems connected; employees have established digital practices
Level 4	Advanced	Data analytics, digital governance and patient-facing technologies are well developed
Level 5	Transformative	Digital capabilities are embedded into organizational strategy, processes, innovation and continuous improvement

These levels should not be interpreted as absolute categories.

A hospital may be advanced in one dimension and emerging in another. For example, it may have sophisticated diagnostic technologies but relatively weak patient-facing digital services.

Therefore, the proposed maturity framework should preferably be used as a **profile** rather than as a single overall label.

12. Propositions of the Conceptual Framework

Based on the literature and the proposed relationships, the following propositions are developed.

Proposition 1

Organizational readiness is positively associated with the effective adaptation of digital technologies in healthcare organizations.

Organizations with stronger leadership commitment, adequate resources, employee capabilities and supportive processes are expected to be better positioned to implement technology.

Proposition 2

Technology adaptation contributes to healthcare digital maturity when technological systems are supported by appropriate organizational capabilities.

The presence of technology alone is insufficient. Its contribution to maturity depends on integration, governance, skills and organizational use.

Proposition 3

Interoperability and system integration are important components of healthcare digital maturity.

Fragmented systems can limit the organizational value of digital information even when individual technologies are sophisticated.

Proposition 4

Employee digital capability and organizational culture influence the development of healthcare digital maturity.

Training, employee participation, acceptance and organizational support can influence the extent to which digital systems become part of routine work.

Proposition 5

Patient-centred digital capability is an important component of healthcare digital maturity.

Digital maturity should reflect not only internal organizational capability but also the accessibility and usefulness of digital services to patients.

Proposition 6

Data governance and cybersecurity are essential components of sustainable digital maturity in healthcare organizations.

Healthcare organizations must protect sensitive information while ensuring that authorized users can access reliable information when required.

Proposition 7

Continuous innovation and organizational learning support movement from basic technology adoption toward higher levels of digital maturity.

Organizations that regularly evaluate and improve their digital capabilities may be better positioned to respond to changing technological and healthcare requirements.

13. Relevance to Multi-speciality Healthcare Organizations

The proposed framework is particularly relevant to multi-speciality hospitals because such organizations bring together multiple clinical departments, diagnostic services and administrative functions.

For example, a multi-speciality hospital may simultaneously operate:

- cardiology;
- neurology;
- oncology;
- orthopaedics;
- nephrology;
- radiology;
- pathology;
- pharmacy;
- emergency services;
- intensive care;
- billing;
- human resources; and
- patient relationship functions.

Each department can generate and require different types of information.

This creates a strong need for integration.

A digital maturity assessment in such hospitals should therefore examine whether technologies work together rather than simply counting the number of technologies available.

14. Relevance to the Indian Healthcare Context

The Indian healthcare sector presents a diverse technological environment.

Large private hospitals may have sophisticated digital systems, while smaller organizations may operate with more limited infrastructure. Even within the same hospital, digital capability may differ between departments.

The Indian systematic review by Inampudi et al. identified infrastructure limitations, implementation costs, privacy and confidentiality concerns, user barriers, communication issues and ethical/legal concerns among the barriers affecting digital transformation.

These findings suggest that a maturity framework developed for India should not focus exclusively on technological sophistication.

It should also examine whether the organization has the organizational and human capabilities required to use technology effectively.

The framework proposed in this paper therefore places organizational readiness alongside technology adaptation.

15. Managerial Implications

The proposed framework has several implications for hospital administrators.

15.1 Digital maturity assessment should be broader than IT assessment

Hospital management should avoid assessing digital progress only by counting the systems installed.

The assessment should also consider:

- employee capability;
- integration;
- data use;
- governance;
- patient experience;
- leadership; and

- continuous improvement.

15.2 Training should accompany technology investment

Training should not be treated as a one-time activity conducted immediately after implementation. Digital systems change over time, and employees may need continuous training and support.

15.3 Integration should receive greater attention

Hospitals should evaluate whether systems communicate with each other and whether information can move across departments appropriately.

15.4 Digital governance should be part of management responsibility

Data privacy, cybersecurity and information governance should be integrated into organizational risk-management practices.

15.5 Patient experience should be included in digital maturity assessments

The hospital should examine whether digital services actually make healthcare easier and more accessible for patients.

15.6 Maturity should be assessed by dimension

A single maturity score may hide important weaknesses.

A hospital may be technologically advanced but weak in employee capability or patient engagement.

A dimension-wise profile can provide more useful information for management.

16. Theoretical Contribution

The conceptual contribution of this paper lies primarily in bringing together concepts that are often considered separately.

First, it distinguishes **technology adoption** from **digital maturity**.

Second, it positions **organizational readiness** as an important connecting element between technology adoption and maturity.

Third, it combines technological, organizational, human and patient-centred dimensions within one framework.

Fourth, it introduces **continuous improvement and innovation** as part of digital maturity rather than treating maturity as a final stage that an organization permanently reaches.

The framework therefore moves away from a purely technology-oriented understanding of digital maturity.

17. Practical Contribution

The proposed framework can potentially be used by:

- hospital administrators;
- healthcare technology managers;
- hospital quality departments;
- policymakers;
- accreditation organizations;
- technology vendors;
- healthcare consultants; and
- academic researchers.

For administrators, the framework may help identify areas requiring improvement.

For researchers, the eight dimensions provide possible constructs for developing a measurement instrument.

For policymakers and accreditation organizations, the framework offers a basis for thinking about digital capability beyond basic technology availability.

18. Suggested Measurement Structure for Future Empirical Research

The proposed framework can be operationalized in future studies through measurable indicators.

Table 3: Suggested Measurement Dimensions

Dimension	Possible Indicators
Digital Strategy & Leadership	Digital strategy, leadership support, investment, monitoring
Technology Infrastructure	EHR, HMIS, connectivity, hardware, technical support

Interoperability	System integration, information exchange, departmental connectivity
Data & Analytics	Data quality, dashboards, analytics, decision support
Governance & Cybersecurity	Privacy, security, access control, compliance
People & Culture	Training, digital literacy, acceptance, change readiness
Patient-Centred Capability	Portals, telemedicine, online appointments, digital communication
Innovation	Evaluation, experimentation, continuous improvement

A future empirical study can develop Likert-scale statements for each dimension and test reliability and construct validity.

Possible statistical techniques include:

- Cronbach's alpha;
- exploratory factor analysis;
- confirmatory factor analysis;
- correlation analysis;
- multiple regression;
- structural equation modelling; and
- cluster or maturity-stage analysis.

Importantly, the conceptual relationships presented in this paper should not be treated as empirically established until they are tested with appropriate data.

19. Future Research Directions

The framework provides several opportunities for future research.

19.1 Empirical validation

Future studies can test the eight proposed dimensions using data collected from healthcare organizations.

19.2 Development of a digital maturity index

Researchers may develop a weighted maturity index for comparing hospitals.

19.3 Comparative studies

Digital maturity can be compared across:

- public and private hospitals;
- large and small hospitals;
- metropolitan and Tier-2 cities;
- teaching and non-teaching hospitals.

19.4 Stakeholder-based assessment

Future research can examine digital maturity separately from the perspectives of:

- administrators;
- doctors;
- nurses;
- technicians;
- patients; and
- technology service providers.

19.5 Relationship with organizational performance

An important empirical question is whether higher digital maturity is associated with improvements in:

- operational efficiency;
- employee productivity;
- service quality;
- patient satisfaction;
- decision-making; and

- financial or organizational performance.

19.6 Longitudinal research

Digital maturity changes over time. Longitudinal studies can therefore provide better evidence about how organizations move from one maturity stage to another.

20. Limitations of the Conceptual Paper

This paper is conceptual and does not present primary empirical data.

The proposed dimensions and maturity stages are derived from the literature and the authors' conceptual synthesis. They should therefore be considered propositions for future empirical examination rather than validated measures.

Another limitation is that digital maturity can vary according to hospital size, ownership, specialty, geographic setting, regulatory environment and available resources.

Consequently, the proposed framework may require modification when applied in different healthcare contexts.

21. Conclusion

Digital technology has become an important part of contemporary healthcare, but technology adoption should not be confused with digital maturity.

A hospital may have electronic records, telemedicine, artificial intelligence applications, digital diagnostic systems and mobile applications and still face difficulties in integrating these technologies into everyday organizational practice.

The central argument of this paper is that digital maturity is better understood as an organizational capability.

It involves the ability of a healthcare organization to combine technology with leadership, infrastructure, integrated systems, data practices, governance, employee capabilities, patient-centred services and continuous improvement.

Based on the review of literature, this paper proposes eight dimensions of healthcare digital maturity: **digital strategy and leadership; technology infrastructure and capability; interoperability and integration; data and analytics; governance, cybersecurity and risk management; people, skills and organizational culture; patient-centred digital capability; and innovation and continuous improvement.**

These dimensions are brought together with organizational readiness in the proposed **Healthcare Digital Maturity and Organizational Readiness Framework (HDMORF).**

The framework also recognizes that maturity may develop progressively, from an initial stage of limited digital capability to a stage where digital capabilities are embedded in organizational strategy, processes, patient services and continuous innovation.

The framework is particularly relevant to multi-speciality healthcare organizations because of the complexity of their clinical and administrative operations. It may help researchers and practitioners move beyond the simple question of whether technology has been adopted and instead examine whether the organization is actually prepared to use that technology effectively.

The proposed framework is not presented as a final or universally applicable maturity model. Rather, it provides a conceptual foundation that can be empirically tested, refined and adapted to different healthcare settings. Future empirical research can examine whether the proposed dimensions explain differences in organizational performance and whether stronger digital maturity is associated with better operational efficiency, employee outcomes, service quality and patient experience.

In this sense, digital maturity should be viewed not as a destination but as an organization's continuing ability to learn, adapt and make meaningful use of digital technologies.

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