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Enterprise AI Readiness in Healthcare: Development and Preliminary Evaluation of a Five-Domain Survey Framework

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Research Article

Keywords: Enterprise AI Readiness, Healthcare AI, AI-Ready Hospital, Organizational Readiness, AI Governance, AI Scalability, Digital Transformation

Posted Date: October 22nd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11012981/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

Healthcare organizations are rapidly adopting artificial intelligence, but adoption alone does not demonstrate readiness for enterprise transformation. This study defined Enterprise Artificial Intelligence Readiness as an organization's capacity to implement, govern, scale, and evaluate artificial intelligence responsibly. It developed and preliminarily evaluated a five-domain framework for assessing this capacity in healthcare organizations.

Methods

An explanatory sequential mixed-methods design was used. Survey data were collected from 150 healthcare and technology leaders, followed by semi-structured interviews with 28 participants. The survey measured leadership and strategic readiness; data, technology, and infrastructure readiness; workforce and organizational readiness; governance, security, and responsible artificial intelligence readiness; and clinical integration and evaluation readiness. Descriptive statistics and Cronbach's alpha were used to evaluate domain scores and internal consistency. Exploratory factor analysis using principal-axis factoring with oblimin rotation examined the instrument's structure. Ordinary least squares regression assessed associations between readiness and perceived implementation success, enterprise scalability, and organizational value realization. Interview data were examined using hybrid deductive-inductive thematic analysis.

Results

Leadership and strategic readiness received the highest mean score (3.89, standard deviation 0.61), followed by governance, security, and responsible artificial intelligence (3.71, standard deviation 0.64). Workforce and organizational readiness (3.34, standard deviation 0.72) and clinical integration and evaluation readiness (3.29, standard deviation 0.70) were less developed. The five-factor solution explained 68.4% of the variance, with domain-level internal consistency coefficients ranging from 0.84 to 0.90. The five domains collectively explained 58.0% of the variance in perceived implementation success. Overall readiness was positively associated with implementation success, enterprise scalability, and organizational value realization (all $p < .001$). Interviews identified workforce preparation, interoperability, operational governance, workflow integration, and outcome measurement as persistent barriers.

Conclusions

Enterprise Artificial Intelligence Readiness is a multidimensional organizational capability extending beyond technology adoption. The preliminary framework may help healthcare organizations identify capability gaps and align strategic, technological, workforce, governance, and clinical investments. External and longitudinal validation is required before the instrument is used for organizational benchmarking or predictive assessment.

Trial registration:

Not applicable. This study did not evaluate a healthcare intervention involving human participants.

Introduction

Artificial intelligence (AI) is rapidly transforming healthcare delivery, organizational operations, workforce practices, and clinical decision-making. Machine learning, predictive analytics, generative artificial intelligence (GenAI), large language models, and increasingly autonomous AI systems are being applied to clinical documentation, diagnostic support, patient engagement, resource allocation, revenue-cycle management, workflow automation, and administrative decision-making. As these applications expand, AI is evolving from a collection of isolated technologies into an enterprise capability with the potential to reshape how healthcare organizations deliver services, allocate resources, manage risk, and generate clinical and organizational value (Aminee and Taylor 2025).

However, the availability or adoption of AI does not necessarily indicate that a healthcare organization is prepared for enterprise transformation. Hospitals and health systems operate within complex socio-technical environments characterized by fragmented data, legacy information systems, interoperability limitations, cybersecurity and privacy requirements, professional autonomy, regulatory obligations, and potentially significant consequences of technological failure (Al-Bikkalli et al. 2025). An organization may operate multiple AI pilots while lacking the institutional capacity to integrate them into routine workflows, monitor their performance, manage their risks, prepare the workforce, or scale them across clinical and administrative functions.

This distinction separates AI adoption from Enterprise AI Readiness (EAIR). AI adoption indicates that an organization has acquired, piloted, or implemented AI technologies. EAIR reflects whether the organization possesses the complementary strategic, technological, workforce, governance, and clinical capabilities required to convert those technologies into safe, scalable, responsible, and measurable value. Accordingly, readiness is not a binary condition or a simple measure of the number of AI systems deployed. It is a multidimensional organizational capability that must be developed, coordinated, and continuously evaluated.

Existing research provides important foundations for understanding healthcare AI readiness (Azad et al. 2026). Organizational readiness studies emphasize leadership commitment, resource availability, stakeholder preparedness, and implementation capacity (Alami et al. 2020). Healthcare-specific

frameworks identify data management, technology infrastructure, security, risk, privacy, governance, and adoption capability as central dimensions of preparedness (Mishra 2024). Other studies emphasize workforce AI literacy, organizational change readiness, responsible governance, human oversight, and clinical validation (Boyacı and Söyük 2025; Aminee 2026a; Aminee 2026b). Recent evidence also indicates that healthcare organizations continue to encounter significant barriers involving interoperability, AI expertise, evaluation capability, and the operationalization of governance processes (Zabala et al. 2026).

Despite these contributions, the literature remains fragmented across technology preparedness, workforce readiness, governance maturity, organizational change, clinical implementation, and digital transformation. Individual capabilities are frequently examined separately, providing limited empirical evidence about how they function collectively at the enterprise level. Further research is needed to determine whether organizations with stronger readiness capabilities are more successful in implementing AI, moving beyond isolated pilots, scaling applications across the enterprise, and demonstrating measurable clinical and organizational value.

This study addresses that gap by conceptualizing Enterprise AI Readiness as a framework comprising five interdependent domains: leadership and strategy; data, technology, and infrastructure; workforce and organization; governance, security, and responsible AI; and Clinical Integration and Evaluation Readiness. These domains represent complementary organizational capabilities. Strong technical infrastructure cannot compensate fully for inadequate workforce preparation or weak governance; executive commitment cannot overcome fragmented data and limited interoperability; and successful deployment cannot demonstrate transformation without workflow integration and outcome measurement.

This study makes three contributions. First, it distinguishes enterprise readiness from AI adoption. Second, it integrates strategic, technological, workforce, governance, and clinical-integration capabilities into a healthcare-specific framework. Third, it provides preliminary empirical evidence connecting readiness with perceived implementation, scalability, and value outcomes. Together, these contributions offer healthcare leaders a structured approach for identifying capability gaps and prioritizing organizational investments.

Problem and Purpose Statement

Existing research identifies leadership, infrastructure, workforce capability, governance, and clinical integration as important conditions for healthcare AI adoption. However, these capabilities are typically examined separately, and limited empirical evidence shows whether they form distinguishable dimensions of enterprise readiness or how they relate to implementation, scalability, and value realization. This study therefore develops and preliminarily evaluates a five-domain Enterprise AI Readiness framework using an explanatory sequential mixed-methods design. It examines the

framework's preliminary measurement structure, tests associations between readiness and three perceived transformation outcomes, and uses executive interviews to explain the quantitative patterns.

Literature Review and Research Context

This section synthesizes interdisciplinary scholarship on the organizational capabilities required for enterprise AI transformation in healthcare. Consistent with the Enterprise AI Readiness (EAIR) framework, the literature is organized around five interdependent dimensions: (1) leadership and strategic readiness, (2) data, technology, and infrastructure readiness, (3) workforce and organizational readiness, (4) governance, security, and responsible AI readiness, and (5) Clinical Integration and Evaluation Readiness. Together, these dimensions shift the focus from AI adoption toward the institutional capacity to implement, govern, scale, and derive sustainable value from AI (Alami et al. 2020; Mishra 2024; Zabala et al. 2026).

1. Leadership and Strategic Readiness

Enterprise AI transformation requires leadership that aligns technological capabilities with organizational strategy, clinical priorities, and measurable outcomes. Transformational and adaptive leadership provide useful foundations for managing technological change and uncertainty (Bass 1985; Heifetz, Grashow, and Linsky 2009), but AI-enabled healthcare also requires digital literacy, cross-functional coordination, investment prioritization, and informed oversight.

Evidence supports the importance of these capabilities. Aminee (2026a) found that digital literacy significantly predicted trust in AI-mediated decision systems and was associated with stronger adoption readiness. Healthcare-specific research similarly identifies leadership literacy, multidisciplinary governance, and human oversight as important conditions for responsible AI integration (Aminee 2026b). Leadership readiness therefore extends beyond executive sponsorship to include the capacity to evaluate AI opportunities and risks, coordinate clinical and technical stakeholders, manage organizational change, and align AI investments with strategic priorities.

2. Data, Technology, and Infrastructure Readiness

Enterprise AI depends on a reliable and scalable digital foundation. Healthcare organizations frequently operate fragmented information environments involving electronic health records (EHRs), legacy applications, external data sources, and heterogeneous clinical systems. Data quality, accessibility, interoperability, governance, infrastructure, and system integration are therefore fundamental prerequisites for enterprise AI implementation (Alami et al. 2020; Mishra 2024).

These capabilities remain uneven across healthcare organizations. Zabala et al. (2026) identify interoperability and AI expertise among significant barriers to safe AI integration. Consequently, successful pilot implementation should not be equated with enterprise readiness. Scaling AI requires organizations to establish reliable data governance, interoperable architecture, sufficient computing

capacity, integration mechanisms, and lifecycle-management processes capable of supporting AI across clinical and operational environments.

3. Workforce and Organizational Readiness

AI transformation also depends on the ability of healthcare professionals to understand, use, evaluate, and appropriately challenge AI-supported decisions. Workforce readiness therefore encompasses AI literacy, role-specific competencies, training, clinician engagement, interdisciplinary collaboration, and organizational readiness for change.

Healthcare workers' AI readiness is positively associated with organizational change readiness (Boyacı and Söyük 2025). Aminee and Taylor (2025) similarly found digital literacy associated with greater trust and adoption readiness, reinforcing the importance of human capability in AI transformation. AI literacy should therefore extend beyond technical proficiency to include understanding AI limitations, interpreting outputs, communicating uncertainty, and recognizing when human intervention is necessary.

Organizational resistance remains an important implementation barrier. Clinicians may resist systems perceived as opaque, unreliable, or inconsistent with professional judgment (Rosenbaum 2024). Effective transformation consequently requires meaningful stakeholder engagement and organizational environments in which clinicians can question, validate, and override AI-supported recommendations.

4. Governance, Security, and Responsible AI Readiness

Enterprise AI introduces risks involving transparency, explainability, bias, privacy, cybersecurity, accountability, and human oversight (Floridi et al. 2018; Mittelstadt et al. 2016). Responsible AI readiness therefore requires organizations to translate ethical principles into enforceable governance practices.

Aminee (2026a) conceptualizes this institutionalization as ethics-in-structure, whereby transparency, explainability, bias assessment, oversight, accountability, and stakeholder protections are embedded within organizational processes. The study found that ethics policies and digital literacy significantly predicted trust, while explainability protocols, bias testing, and oversight mechanisms strengthened organizational confidence in AI-mediated decisions. Healthcare-specific evidence similarly emphasizes multidisciplinary governance, validation, human oversight, and transparency as important conditions for trustworthy AI integration (Aminee 2026b; Razai et al. 2024; Brynjolfsson and McAfee 2024).

Governance must also encompass cybersecurity, privacy, regulatory compliance, third-party risk, and organizational resilience. Formal policies or ethics committees alone do not constitute readiness when governance remains disconnected from operational decisions. Responsible AI readiness therefore requires continuous, auditable governance across the AI lifecycle.

5. Clinical Integration and Evaluation Readiness

The operational test of enterprise AI readiness is whether an organization has the capability to integrate AI safely into clinical and administrative workflows and evaluate its performance after deployment. Technical accuracy alone does not ensure successful implementation. AI applications must align with existing work processes, demonstrate validity and safety under real-world conditions, gain appropriate user acceptance, and operate within clearly defined human-oversight structures.

Clinical Integration and Evaluation Readiness therefore encompasses workflow assessment, clinician participation, patient-safety safeguards, real-world validation, post-deployment monitoring, and the organizational capacity to measure outcomes (Venkatesh et al. 2013)

. These capabilities allow organizations to determine whether an AI application is functioning as intended and whether it should be expanded, modified, restricted, or discontinued. In the EAIR framework, evaluation readiness is conceptually distinct from value realization: evaluation readiness reflects the organization's capacity to measure performance, whereas value realization reflects the clinical, operational, workforce, patient-experience, or financial outcomes perceived to result from implementation.

Synthesis and Research Gap

Existing frameworks identify many of these capabilities, but few studies have tested whether they operate as empirically distinguishable dimensions of healthcare enterprise AI readiness or have examined their relationships with separately measured implementation, scalability, and value outcomes. Leadership commitment cannot compensate for inadequate infrastructure; technical capability may not overcome weak workforce preparation; governance may remain symbolic when it is disconnected from implementation; and deployment alone cannot demonstrate value without systematic outcome evaluation (Witten et al. 2024). Although existing frameworks identify important readiness capabilities, limited empirical research has examined these capabilities as an integrated enterprise-level construct or connected them to separately measured implementation, scalability, and value outcomes.

The present study addresses this gap by proposing a five-domain EAIR framework and conducting a preliminary empirical examination of its measurement structure and organizational correlates. EAIR is treated as a proposed multidimensional readiness construct rather than a fully validated maturity instrument. Further confirmatory, longitudinal, and multisource research is required before the framework can be used for normative benchmarking or performance prediction.

Theoretical Foundation

Reconceptualizing Enterprise AI Readiness

AI transformation in healthcare extends beyond technology adoption. As AI becomes embedded across clinical and operational workflows, organizations require the strategic, technological, human, governance, and clinical capabilities necessary to implement and scale these systems responsibly. The

theoretical focus therefore shifts from whether organizations adopt AI to whether they possess the capabilities required for enterprise transformation (Alami et al. 2020; Mishra 2024; Northouse 2021),

).

This study conceptualizes Enterprise AI Readiness (EAIR) as a multidimensional organizational capability that develops through alignment among strategy, digital infrastructure, workforce capacity, responsible governance, and clinical integration. Rather than a binary pre-adoption condition, readiness is viewed as a developmental capability that can be measured and strengthened over time. As shown in Table 1, the EAIR framework integrates three theoretical perspectives with the five readiness domains and their expected organizational outcomes.

Table 1
Theory-to-Construct mapping

Theoretical perspective	***Central mechanism***	***EAIR domains informed***	***Expected outcome***
Organizational readiness for change	Shared commitment and implementation efficacy	Leadership; workforce	Implementation success
Socio-technical systems theory	Alignment among people, systems, data, and workflows	Data and technology; workforce; clinical integration	Implementation and scalability
Responsible AI governance	Lifecycle accountability and risk control	Governance and security; clinical evaluation	Safe scaling and value realization

Strategic Leadership and Organizational Readiness

Organizational readiness reflects both commitment to transformation and capacity to implement change. In healthcare AI, this includes executive sponsorship, strategic alignment, investment capacity, leadership AI literacy, and coordination across clinical and technology functions (Alami et al. 2020; Palmieri et al. 2026). Transformational and adaptive leadership explain how organizations establish direction and respond to uncertainty (Bass 1985; Heifetz, Grashow, and Linsky 2009). AI transformation extends these capabilities by requiring digital literacy and informed oversight. Aminee (2026a) found that digital literacy was associated with stronger trust and adoption readiness, while healthcare-specific evidence identifies leadership literacy and multidisciplinary governance as important conditions for AI integration (Aminee 2026b; Fan et al. 2025). Leadership therefore serves as an enabling capability connecting AI strategy with enterprise transformation.

Socio-Technical and Workforce Capability

Healthcare organizations operate as socio-technical systems in which technology, data, people, workflows, and institutional structures are interdependent. Enterprise readiness therefore cannot be explained by technological infrastructure alone (Scott et al. 2025). Data quality, interoperability, scalable

architecture, workforce capability, and implementation processes must develop in coordination (Mishra 2024).

Workforce readiness is equally important. Healthcare professionals must understand AI capabilities and limitations, interpret outputs, communicate uncertainty, and recognize when human intervention is required. AI readiness is associated with organizational change readiness (Boyacı and Söyük 2025), while digital literacy is associated with trust and adoption readiness (Aminee 2026a; Glikson 2018). Workforce capability therefore supports both implementation and organizational adaptation.

Responsible Governance and Institutional Capability

Responsible AI governance provides another foundation for EAIR. Ethical AI scholarship emphasizes transparency, fairness, explainability, accountability, and human oversight (Floridi et al. 2018; Mittelstadt et al. 2016). However, principles alone do not constitute readiness. Aminee (2026a) conceptualizes ethics-in-structure as embedding these principles into formal mechanisms such as explainability requirements, bias audits, oversight structures, and accountability processes. Healthcare-specific findings similarly emphasize multidisciplinary governance, human oversight, and continuous monitoring (Aminee 2026b). Governance readiness therefore reflects an organization's capacity to manage AI-related ethical, security, privacy, regulatory, and operational risks.

Clinical Integration and Evaluation Readiness Realization

Enterprise readiness requires AI capabilities to translate into clinical and organizational value. Successful implementation depends on workflow integration, clinical validation, patient safety, user acceptance, and continuous performance monitoring. Organizations must also evaluate whether AI improves quality, productivity, patient experience, workforce performance, operational efficiency, or financial outcomes.

Value realization therefore extends readiness beyond deployment. An AI-ready organization must be capable of evaluating outcomes and determining whether AI applications should be scaled, modified, retrained, restricted, or discontinued.

Integrative Enterprise AI Readiness Model

Drawing these perspectives together, EAIR consists of five complementary capabilities:

- Leadership and Strategic Readiness: strategic direction, executive capability, investment alignment, and organizational commitment.
- Data, Technology, and Infrastructure Readiness: reliable data, interoperability, integration, and scalable digital infrastructure.
- Workforce and Organizational Readiness: AI literacy, competencies, engagement, and change capacity.

- Governance, Security, and Responsible AI Readiness — transparency, accountability, oversight, privacy, cybersecurity, and risk management.
- Clinical Integration and Evaluation Readiness: organizational capability to align AI with clinical workflows, validate safety and performance, engage users, monitor deployed systems, and evaluate outcomes.

These capabilities are interdependent. Advanced technology cannot compensate for inadequate workforce readiness or weak governance; strong leadership cannot overcome fragmented data; and AI adoption cannot demonstrate success without clinical integration and measurable outcomes.

Accordingly, the study proposes that the five EAIR domains represent complementary organizational capabilities associated with successful AI implementation. It further proposes that the overall EAIR composite is associated with enterprise scalability and organizational value realization. These relationships are examined as cross-sectional associations rather than causal effects.

Proposed Enterprise AI Readiness Maturity Model

Building on the five-domain EAIR framework, this study further conceptualizes readiness as a developmental continuum. Healthcare organizations may progress through five maturity stages: Exploratory, Foundational, Operational, Scalable, and AI-Ready Enterprise. At the exploratory stage, AI initiatives are decentralized and experimental. Foundational organizations begin establishing strategy, infrastructure, governance, and workforce capabilities. Operational organizations formalize these capabilities and integrate AI into selected workflows. In contrast, scalable organizations possess the cross-enterprise infrastructure, governance, workforce readiness, and performance mechanisms necessary to expand AI beyond isolated implementations. At the highest level, an AI-ready enterprise demonstrates sustained alignment across all five EAIR dimensions and the capacity to continuously govern, evaluate, adapt, and derive measurable value from AI. The characteristics of the five proposed maturity stages are summarized in Table A1.

Maturity is conceptualized at the domain level rather than as a uniform organizational condition. For example, an organization may demonstrate scalable technology readiness while remaining foundational in workforce preparation or clinical integration. Consequently, the proposed stages should be used to identify domain-level capability gaps rather than to assign a single definitive maturity label to an organization. As shown in Table A2, maturity may develop differently across the five EAIR domains.

For the quantitative analysis, EAIR was operationalized as a multidimensional composite comprising five interrelated domains. Overall, EAIR was calculated as the unweighted mean of the 20 readiness items. The composite was subsequently examined in relation to three separately measured outcomes: perceived AI implementation success, enterprise scalability, and organizational value realization.

Research Questions and Hypotheses

The transition from isolated AI applications to enterprise-scale implementation requires healthcare organizations to develop capabilities extending beyond technology adoption. Building on organizational readiness, socio-technical, workforce, and responsible AI perspectives, this study examines whether Enterprise AI Readiness is associated with healthcare organizations' perceived capacity to implement, scale, and derive measurable value from AI (Alami et al. 2020; Mishra 2024; Aminee 2026a; Aminee 2026b; Zabala et al. 2026).

Research Question 1

To what extent are the five EAIR domains independently associated with perceived AI implementation success when examined simultaneously?

Hypothesis

- H1a: Leadership and Strategic Readiness is positively associated with perceived AI implementation success after adjustment for the other four domains.
- H1b: Data, Technology, and Infrastructure Readiness is positively associated with perceived AI implementation success after adjustment for the other four domains.
- H1c: Workforce and Organizational Readiness is positively associated with perceived AI implementation success after adjustment for the other four domains.
- H1d: Governance, Security, and Responsible AI Readiness is positively associated with perceived AI implementation success after adjustment for the other four domains.
- H1e: Clinical Integration and Evaluation Readiness is positively associated with perceived AI implementation success after adjustment for the other four domains.

Research Question 2

To what extent is overall EAIR associated with perceived implementation success, enterprise scalability, and organizational value realization?

Hypothesis

- H2a: Overall EAIR is positively associated with perceived AI implementation success.
- H2b: Overall EAIR is positively associated with enterprise scalability.
- H2c: Overall EAIR is positively associated with organizational value realization.

Research Methodology

Research Design

The study employed an explanatory sequential mixed-methods design in which quantitative survey findings informed follow-up semi-structured interviews. The quantitative phase assessed the preliminary measurement structure of EAIR and examined associations among the five readiness domains, perceived AI implementation success, enterprise scalability, and organizational value realization. The qualitative phase examined participants' experiences with organizational barriers, enabling conditions, governance, workforce preparation, clinical integration, scalability, and outcome measurement. Findings were integrated during interpretation to identify convergence, qualification, and explanatory relationships.

A total of 160 eligible leaders received individualized survey invitations, and 150 submitted complete responses, producing a completion rate of 93.8 percent among directly invited eligible participants. Participants represented hospitals, integrated health systems, academic medical centers, community and regional hospitals, and digital health organizations. Participants were recruited through professional healthcare leadership networks, direct professional contacts, and referrals involving hospital, clinical, technology, operational, and data leaders from June 2026 to August 2026. Eligibility required participants to be at least 18 years old, hold an active healthcare or technology leadership role, and possess direct knowledge of their organization's AI strategy, implementation, governance, infrastructure, or clinical integration.

Survey participants were invited to express interest in a follow-up interview. From those who volunteered, 28 participants were purposively selected to provide variation in professional role, organizational setting, and perceived AI maturity. The interview sample included technology, clinical, administrative, operational, and data leaders.

The unit of analysis was the individual leader's assessment of the organization. Organizational identifiers were not retained; therefore, the study could not determine whether multiple respondents represented the same organization. The analyses treated individual responses as independent. Potential within-organization clustering may have resulted in underestimated standard errors and is considered a limitation. The findings represent leadership perceptions rather than independently verified organizational performance.

Quantitative Survey

The Healthcare Enterprise AI Readiness Survey included 20 readiness items representing five domains: leadership and strategy; data, technology, and infrastructure; workforce and organization; governance, security, and responsible AI; and Clinical Integration and Evaluation Readiness. Each domain contained four items rated on a five-point Likert scale. Domain scores were calculated as the unweighted mean of their corresponding items, and overall EAIR was calculated as the unweighted mean of all 20 items. Higher scores indicated greater perceived organizational readiness. Internal consistency was strong across the five domains: leadership and strategy (Cronbach's $\alpha = .88$); data, technology, and infrastructure ($\alpha = .86$); workforce and organization ($\alpha = .84$); governance, security, and responsible AI (α

= .90); and Clinical Integration and Evaluation Readiness (α = .87). Internal consistency for the overall 20-item EAIR scale was α = .93.

Perceived AI implementation success was measured using three items assessing deployment, organizational adoption, and integration into routine operations (α = .85). Enterprise scalability was measured using three items assessing the organization's capacity to expand AI across departments, sites, and clinical or administrative workflows (α = .84). Organizational value realization was measured using three items assessing perceived clinical, operational, workforce, patient-experience, and financial outcomes associated with AI implementation (α = .86).

Before survey administration, five healthcare-sector leaders reviewed the instrument for clarity, relevance, and alignment with the proposed EAIR domains. The reviewers represented regulatory, health-plan, and hospital settings and held active leadership roles. Their feedback was used to refine item wording and reduce ambiguity. This process constituted a preliminary expert review of content relevance and comprehensibility rather than a formal content-validity study or psychometric pilot.

Qualitative Interview

Twenty-eight healthcare and technology leaders participated in semi-structured interviews. Interviews were conducted between June and August 2026 by the principal investigator, who has professional experience in information technology, organizational leadership, and healthcare AI research. Interviews lasted 15–32 minutes and were conducted by videoconference or telephone. Questions examined leadership alignment, data and infrastructure constraints, workforce preparation, responsible AI governance, clinical integration, scalability, and outcome evaluation. With participant permission, interviews were audio-recorded and transcribed. Identifying information was removed from transcripts before analysis.

Transcripts were analyzed by the principal investigator using a hybrid deductive–inductive thematic approach informed by Braun and Clarke (2006). Initial deductive codes reflected the five EAIR domains, while inductive coding captured patterns not fully represented by the proposed framework. Coding proceeded through repeated transcript review, initial code generation, comparison of codes across interviews, and iterative development and refinement of themes. An audit trail documented coding decisions, code definitions, theme development, and discrepant cases. Because one researcher conducted coding, intercoder agreement was not calculated. The resulting themes should therefore be interpreted as an analytically transparent but researcher-dependent interpretation of participant accounts.

Data Analysis

Quantitative analysis proceeded in three stages. First, descriptive statistics summarized participant characteristics and EAIR scores, and Cronbach's alpha assessed the internal consistency of each readiness domain, the overall EAIR scale, and the three outcome measures. Second, exploratory factor analysis evaluated the preliminary dimensional structure of the 20-item EAIR instrument. Principal-axis

factoring with oblimin rotation was used because the five domains were theoretically expected to correlate. Factor retention was determined using parallel analysis, examination of the scree plot, eigenvalues, and theoretical interpretability. Items were retained when their primary loading was at least .40, no secondary loading exceeded .30, and the difference between the primary and largest secondary loading was at least .2.

Ordinary least squares regression was used to examine associations between enterprise AI readiness and the three outcomes: AI implementation success, enterprise scalability, and organizational value realization. For each model, unstandardized coefficients (B), standard errors (SE), standardized coefficients (β), 95% confidence intervals for B, t-statistics, and p-values were reported. Overall model performance was evaluated using R^2, adjusted R^2, and the omnibus F test with corresponding degrees of freedom. Multicollinearity was assessed using variance inflation factors (VIFs) and tolerance statistics, with VIF values below 5.0 and tolerance values above .20 considered acceptable. Residual plots, standardized residuals, Cook's distance, and leverage values were examined to evaluate linearity, homoscedasticity, normality of residuals, and potentially influential observations. Statistical significance was evaluated using a two-sided α level of .05.

Respondent- and organizational-level characteristics were not included as covariates because the study's primary objective was to estimate the unadjusted associations between EAIR and each outcome rather than to develop a fully adjusted explanatory model. Consequently, the reported associations may reflect differences in respondent roles, organizational settings, or other unmeasured characteristics.

Mixed-Methods Integration

Quantitative and qualitative findings are integrated during interpretation to identify convergence, divergence, and explanatory relationships between measured readiness and organizational experience. This approach enables statistical patterns to be contextualized through executive perspectives and provides a more comprehensive understanding of how enterprise readiness develops across healthcare organizations.

For example, a health system may demonstrate high technology readiness quantitatively but report workforce resistance or weak clinical integration qualitatively. Such findings are important because EAIR is conceptualized as an interdependent organizational capability rather than a purely additive readiness score.

Ethical Considerations

This study was reviewed by the California State University - Regional Institutional Review Board, which determined that the study qualified for exemption under 45 CFR 46.104(d)(2). No approval number was issued.

Limitations

Several limitations qualify the findings. First, readiness and organizational outcomes were reported by the same respondents, creating potential common-method variance, consistency bias, and social-desirability bias. The measures represent leadership perceptions rather than independently verified organizational performance. Second, the cross-sectional design establishes association but not temporal order or causality. Third, purposive recruitment through professional networks may overrepresent leaders and organizations already engaged with AI, potentially inflating readiness estimates.

The leadership-focused sample may underrepresent the experiences of frontline clinicians, technical staff, patients, and other stakeholders affected by AI implementation. Because organizational identifiers were not retained, potential clustering of respondents within the same organization could not be evaluated. Treating responses as independent may have underestimated the regression standard errors. The proposed maturity stages were not independently validated, and the EAIR instrument requires confirmation in an external sample. Future studies should use longitudinal and multisource designs, include objective implementation indicators, test measurement invariance across organizational groups, and conduct confirmatory factor analysis with an independent sample.

Methodological Contribution

The methodological contribution of this study is the operationalization and empirical evaluation of Enterprise AI Readiness as a multidimensional healthcare organizational capability. Rather than measuring AI adoption alone, the approach examines whether organizations possess the aligned strategic, digital, workforce, governance, and clinical capabilities required to move from experimentation to enterprise scale.

By combining readiness measurement with implementation and outcome analysis, the study provides a foundation for developing a validated Healthcare Enterprise AI Readiness Framework that can support organizational benchmarking, capability-gap assessment, investment prioritization, and AI transformation planning.

Results

Participant Profile

Of the 160 eligible leaders who received direct survey invitations, 150 submitted complete responses, resulting in a completion rate of 93.8%. Participants represented a cross-functional leadership sample that included information technology, digital transformation, clinical services, administration and operations, and data and analytics. As presented in Table 2, IT, digital, and technology leaders constituted the largest leadership group (34.7%), followed by clinical leaders (30.7%), administrative and operational leaders (20.7%), and data and analytics leaders (14.0%).

Participants also represented several healthcare organization types. Table 2 shows that 46.7% worked in hospitals or integrated health systems, 25.3% in academic medical centers, 17.3% in community or regional hospitals, and 10.7% in digital health organizations. Most participants had more than 10 years of professional experience (74.7%), and 74.0% held a postgraduate or doctoral degree.

This cross-functional sample was appropriate because Enterprise AI Readiness encompasses clinical, technological, operational, workforce, and governance capabilities. Nevertheless, the sample was purposively selected and should not be interpreted as statistically representative of all healthcare leaders or organizations.

Table 2
Participant and Organizational Characteristics (N = 150)

Characteristic	***Number***	***Percentage***
IT/Digital/Technology leadership	52	34.7
Clinical leadership	46	3.7
Administrative/Operational leadership	31	2.7
Data/Analytics leadership	21	14
Hospital or integrated health system	70	46.7
Academic medical center	38	25.3
Community/regional hospital	26	17.3
Digital health organization	16	1.7
> 10 years professional experience	112	74.7
Postgraduate or doctoral education	111	74

Enterprise AI Readiness

Descriptive results indicated that readiness varied across the five EAIR domains. Leadership and Strategic Readiness had the highest mean score (M = 3.89, SD = .61), followed by Governance, Security, and Responsible AI Readiness (M = 3.71, SD = .64) and Data, Technology, and Infrastructure Readiness (M = 3.52, SD = .68). Workforce and Organizational Readiness (M = 3.34, SD = .72) and Clinical Integration and Evaluation Readiness (M = 3.29, SD = .70) had comparatively lower scores.

Clinical Integration and Evaluation Readiness had the lowest mean among the five domains. This domain assessed organizational capacity for workflow integration, clinical validation, patient-safety safeguards, post-deployment monitoring, and the definition and measurement of AI-related outcomes. It measured the organization’s capacity to evaluate AI implementation rather than the clinical, operational, or financial value resulting from that implementation.

An exploratory factor analysis was conducted to examine the preliminary dimensional structure of the 20-item EAIR instrument. The Kaiser–Meyer–Olkin measure indicated adequate sampling adequacy (KMO = .89), and Bartlett's test of sphericity was statistically significant, $\chi^2(190) = 1{,}784.60$, $p < .001$. The retained five-factor solution explained 68.4% of the total variance. As presented in Table 3, each item loaded most strongly on its theoretically intended factor. Primary factor loadings ranged from .67 to .88, communalities ranged from .64 to .87, and no secondary loading reached .30.

Table 3
Exploratory Factor Analysis of the Enterprise AI Readiness Items

Item	*F1*	*F2*	*F3*	*F4*	*F5*	h^2
LSR1. Enterprise AI strategy	.86	.18	.14	.21	.12	.84
LSR2. Executive sponsorship	.83	.15	.19	.22	.11	.79
LSR3. Strategic resource alignment	.78	.24	.2	.16	.18	.77
LSR4. Leadership AI literacy	.72	.17	.28	.19	.13	.68
DTI1. Data quality and accessibility	.17	.84	.16	.2	.19	.83
DTI2. Data interoperability	.19	.81	.12	.18	.22	.78
DTI3. Scalable AI infrastructure	.25	.76	.13	.21	.24	.76
DTI4. AI lifecycle management	.2	.69	.17	.28	.23	.68
WOR1. Workforce AI literacy	.19	.14	.82	.16	.18	.75
WOR2. Role-appropriate training	.24	.16	.79	.12	.2	.74
WOR3. Frontline user engagement	.18	.13	.74	.17	.26	.67
WOR4. Organizational change capacity	.27	.18	.67	.2	.24	.64
GSR1. Formal AI governance	.21	.2	.13	.88	.15	.87
GSR2. Validation and transparency	.17	.23	.16	.84	.22	.82
GSR3. Human oversight and accountability	.23	.15	.19	.8	.24	.78
GSR4. Privacy, security, and compliance	.19	.26	.12	.74	.17	.68
CIV1. Workflow integration	.18	.25	.22	.16	.85	.86
CIV2. Clinical validation	.14	.21	.17	.27	.81	.79
CIV3. Defined outcome measures	.2	.19	.24	.23	.76	.72
CIV4. Routine value evaluation	.16	.24	.21	.28	.7	.67

Note. N = 150. F1 = Leadership and Strategic Readiness; F2 = Data, Technology, and Infrastructure Readiness; F3 = Workforce and Organizational Readiness; F4 = Governance, Security, and Responsible AI

Readiness; F5 = Clinical Integration and Evaluation Readiness. Loadings below .10 are suppressed. h^2 = communality. KMO = .89; Bartlett's test of sphericity, $X^2(190) = 1{,}784.60$, $p < .001$. The five factors explained 68.4 percent of the total variance.

Internal consistency estimates ranged from α = .84 to α = .90 across the five domains and reached α = .93 for the overall 20-item scale. Together, the factor-loading pattern and reliability estimates provide preliminary, rather than confirmatory, support for the proposed five-domain EAIR structure.

Important correction: The table note originally reported N = 15, but the manuscript describes 150 survey respondents. Therefore, the corrected note states N = 150.

Leadership and Strategic Readiness

Leadership readiness reflected executive sponsorship, enterprise AI strategy, investment alignment, leadership AI literacy, and change capacity. The strong score suggests that AI is increasingly treated as an enterprise strategic priority rather than solely an IT initiative.

This finding is consistent with earlier evidence showing that digital literacy and governance capability are associated with AI trust and adoption readiness (Aminee 2026a; Aminee 2026b). However, strategic commitment alone does not establish enterprise readiness if corresponding workforce, infrastructure, and implementation capabilities remain underdeveloped.

Data, Technology, and Infrastructure Readiness

Data and technology readiness reflected data quality, interoperability, scalable infrastructure, system integration, and AI lifecycle capabilities. The results suggest favorable technological preparedness but also indicate remaining opportunities for improvement. This distinction is important because possessing AI applications does not necessarily mean that organizations can scale them. Enterprise deployment requires interoperable data, reliable integration, scalable architecture, and mechanisms for maintaining and monitoring AI throughout its lifecycle (Mishra 2024; Sittig and Singh 2010; Zabala et al. 2026)

Workforce and Organizational Readiness

Workforce and Organizational Readiness were comparatively less mature. This domain examined AI literacy, employee competencies, training, clinician engagement, interdisciplinary collaboration, and organizational capacity for change.

The findings suggest that workforce capability may lag organizational investment in AI technology and strategy. This pattern is consistent with prior research demonstrating relationships between AI readiness, digital literacy, and organizational change readiness (Aminee 2026a; Boyacı and Söyük 2025; Weiner 2009). Enterprise AI transformation therefore requires not only technical investment but sustained workforce development and engagement.

Governance, Security, and Responsible AI Readiness

Governance, Security, and Responsible AI Readiness represented one of the stronger dimensions. This domain incorporated AI validation, transparency, explainability, human oversight, accountability, cybersecurity, privacy, compliance, and risk management.

The findings reinforce the importance of moving from formal governance to operational governance. Policies and committees contribute to readiness only when embedded within AI selection, validation, deployment, monitoring, and escalation processes. This interpretation aligns with the concept of ethics-in-structure, in which responsible AI principles become operational through enforceable organizational mechanisms (Aminee 2026a).

Clinical Integration and Evaluation Readiness

Clinical Integration and Evaluation Readiness produced the lowest mean among the five domains. This dimension assessed workflow integration, clinical validation, patient safety, implementation capacity, performance measurement, and value realization.

This finding identifies a potentially important enterprise transformation gap. Healthcare organizations may be increasingly capable of acquiring and governing AI while remaining less mature in translating deployment into routine workflows and measurable outcomes. Enterprise readiness therefore extends beyond implementation to an organization's ability to determine whether AI improves quality, productivity, patient experience, workforce outcomes, or financial performance.

Measurement and Validation of the EAIR Framework

To examine whether the five EAIR dimensions were independently associated with perceived AI implementation success, all five dimensions were entered simultaneously into a multiple regression model. This approach estimated the association between each readiness dimension and implementation success while statistically accounting for the other four dimensions. As presented in Table 4, the overall model was statistically significant, $F(5, 144) = 39.77$, $p < .001$, and explained 58.0% of the variance in perceived AI implementation success ($R^2 = .58$; adjusted $R^2 = .565$).

Table 4
Multiple Regression of EAIR Dimensions Predicting AI Implementation Success

Predictor	B	SE	β	95% CI for B	t	p	VIF
Constant	.62	.21	—	[.20, 1.04]	2.92	.004	—
Leadership and strategic readiness	.24	.07	.25	[.10, .38]	3.41	< .001	1.8
Data, technology, and infrastructure readiness	.19	.07	.2	[.05, .33]	2.69	.008	1.9
Workforce and organizational readiness	.11	.06	.12	[− .01, .23]	1.81	.072	1.7
Governance, security, and responsible AI readiness	.15	.07	.16	[.01, .29]	2.14	.034	1.9
Clinical Integration and Evaluation Readiness	.2	.07	.21	[.06, .34]	2.86	.005	1.8

Note. N = 150. The dependent variable was perceived as AI implementation success. All five EAIR domains were entered simultaneously. Model R^2 = .58, adjusted R^2 = .565, $F(5, 144) = 39.77$, $p < .001$. B = unstandardized regression coefficient; SE = standard error; β = standardized regression coefficient; CI = confidence interval; VIF = variance inflation factor. The model was not adjusted for respondent- or organizational-level characteristics. All tests were two-sided.

Leadership and Strategic Readiness demonstrated the strongest independent association with perceived AI implementation success (β = .25, p < .001). This finding suggests that a clearly defined enterprise AI strategy, executive sponsorship, strategic resource alignment, and leadership AI literacy may be particularly important to successful implementation. Clinical Integration and Evaluation Readiness had the second-largest association (β = .21, p = .005), emphasizing the importance of incorporating AI into clinical workflows, validating its performance, establishing outcome measures, and routinely evaluating its effects.

Data, Technology, and Infrastructure Readiness was also significantly associated with implementation success (β = .20, p = .008), indicating that accessible data, interoperability, scalable infrastructure, and AI lifecycle-management capabilities remain important foundations for implementation. Governance, Security, and Responsible AI Readiness made a smaller but statistically significant independent contribution (β = .16, p = .034), supporting the importance of formal oversight, transparency, human accountability, privacy, security, and regulatory compliance.

Workforce and Organizational Readiness was positively but not statistically significantly associated with implementation success after the other four dimensions were considered (β = .12, p = .072). This result does not indicate that workforce readiness is unimportant. Its contribution may overlap with leadership, technology, governance, and clinical-integration capabilities, or its effects may operate indirectly through those dimensions. Additional research is needed to examine these relationships.

Variance inflation factor values ranged from 1.7 to 1.9, indicating that multicollinearity was not a substantial concern in the model. Collectively, the results support the conceptualization of EAIR as five related but distinguishable organizational capabilities. They also demonstrate that enterprise readiness extends beyond technological preparedness to include leadership, governance, workforce capacity, clinical integration, and outcome evaluation. Because the analysis was cross-sectional and based on self-reported organizational assessments, these findings should be interpreted as associations rather than causal or predictive effects.

Hypothesis Testing

Readiness Capabilities and AI Implementation

Hypothesis 1

Results. Four of the five EAIR domains were independently and positively associated with perceived AI implementation success when entered simultaneously. Leadership and Strategic Readiness demonstrated the largest standardized coefficient ($\beta = .25$, $p < .001$), followed by Clinical Integration and Evaluation Readiness ($\beta = .21$, $p = .005$), Data, Technology, and Infrastructure Readiness ($\beta = .20$, $p = .008$), and Governance, Security, and Responsible AI Readiness ($\beta = .16$, $p = .034$). Workforce and Organizational Readiness demonstrated a positive but statistically nonsignificant association after adjustment for the other readiness domains ($\beta = .12$, $p = .072$). Accordingly, H1a, H1b, H1d, and H1e were supported, whereas H1c was not supported.

Four EAIR dimensions were positively and significantly associated with perceived implementation success. Leadership and Strategic Readiness demonstrated the strongest independent association, followed by Clinical Integration and Evaluation Readiness, Data, Technology, and Infrastructure Readiness, and Governance, Security, and Responsible AI Readiness. Workforce and Organizational Readiness was positively but not significantly associated with implementation success after the other domains were considered simultaneously. These findings indicate that implementation success is associated with complementary strategic, technological, governance, and clinical-integration capabilities, while the independent contribution of workforce readiness requires further examination.

EAIR, Scalability, and Value Realization

Hypothesis 2

Enterprise AI Readiness will be positively associated with AI implementation success, enterprise scalability, and organizational value realization.

Three separate ordinary least squares regression models were estimated to examine the association between overall EAIR and each transformation outcome. The models evaluated whether higher overall readiness scores were associated with greater perceived implementation success, increased capacity to

scale AI across the enterprise, and stronger organizational value realization. As presented in Table 5, overall EAIR was positively and statistically significantly associated with all three outcomes.

Table 5
Enterprise AI Readiness and Transformation Outcomes

Outcome	*B*	*SE*	*β*	*95% CI for B*	*t*	*R^2*	*Adjusted R^2*	*F(1, 148)*	*p*
Perceived AI implementation success	.64	.069	.61	[.50, .78]	9.32	.37	.366	86.92	< .001
Enterprise scalability	.7	.064	.67	[.57, .83]	11.00	.45	.446	121.09	< .001
Organizational value realization	.6	.069	.58	[.46, .74]	8.73	.34	.336	76.24	< .001

Note. *N* = 150. Each row represents a separate ordinary least squares regression model in which overall EAIR was the predictor. The dependent variables perceived AI implementation success, enterprise scalability, and organizational value realization, respectively. *B* = unstandardized regression coefficient; *SE* = standard error; β = standardized regression coefficient; CI = confidence interval. Models were not adjusted for respondent- or organizational-level characteristics. All tests were two-sided.

Overall EAIR was positively associated with perceived AI implementation success (β = .61, R^2 = .37, p < .001). The model explained 37% of the variance in perceived implementation success, indicating that organizations with stronger readiness across the five EAIR domains tended to report more successful AI implementation. This finding is consistent with the view that implementation success depends on the combined alignment of leadership, technology, workforce, governance, and clinical integration capabilities.

The strongest association was observed between overall EAIR and enterprise scalability (β = .67, R^2 = .45, p < .001). EAIR explained 45% of the variance in scalability, suggesting that organizational readiness may be especially relevant to the ability to expand AI beyond isolated pilots or individual departments. Scaling AI across an enterprise requires more than a technically successful application; it also requires coordinated strategy, interoperable infrastructure, organizational capacity, responsible governance, and integration into routine workflows.

Overall EAIR was also positively associated with organizational value realization (β = .58, R^2 = .34, p < .001), explaining 34% of the variance in that outcome. This result suggests that organizations with greater enterprise readiness were more likely to report that AI contributed to measurable clinical, operational, workforce, patient-experience, or financial value. Readiness therefore appears relevant not only to implementing AI systems but also to translating those systems into meaningful organizational outcomes.

Collectively, these findings support Hypothesis 2. Higher overall EAIR was associated with greater perceived implementation success, stronger enterprise scalability, and increased organizational value realization. However, because the models were cross-sectional, based on self-reported measures, and not adjusted for respondent- or organizational-level characteristics, the results should not be interpreted as evidence that EAIR causes these outcomes or predicts future performance. Rather, they provide preliminary evidence of meaningful relationships that should be evaluated through longitudinal research and independent organizational measures.

Qualitative Findings from Executive Interviews

Thematic analysis of the 28 semi-structured interviews identified five major themes concerning enterprise AI readiness: (1) strategic commitment was advancing faster than operational execution; (2) data quality, interoperability, and infrastructure constrained implementation; (3) workforce preparation lagged technology investment; (4) governance structures were developing but were not consistently operationalized; and (5) Clinical Integration and Evaluation Readiness measurement remained underdeveloped. Collectively, the interview findings provided contextual explanations for the readiness patterns observed in the quantitative analysis.

Theme 1: Strategic commitment was advancing faster than operational execution.

Interview participants commonly described AI as an increasingly important executive and organizational priority. Participants discussed growing leadership interest, expanding investment, and the development of formal or informal AI strategies. However, they also distinguished strategic commitment from operational readiness. Several participants reported that their organizations had established AI priorities or initiated pilot projects without fully defining implementation responsibilities, enterprise standards, resource requirements, or pathways for scaling successful applications.

One participant explained, “Successful AI transformation requires sustained executive commitment, a clear strategy, and accountable leadership” (Participant 04, Health system Technology leader). Another observed, “We have an AI strategy, but translating it into consistent operational practice remains our greatest challenge” (Participant 11, Technology leader). These accounts contextualize the comparatively high Leadership and Strategic Readiness score (M = 3.89, SD = .61). They also indicate that executive commitment did not consistently extend to implementation responsibilities, resource allocation, and scaling processes.

Theme 2: Data quality, interoperability, and infrastructure constrained implementation

Participants identified data and technology conditions as central to the implementation and scaling of AI. Although some organizations had developed modern analytical platforms or cloud-based capabilities, interviewees frequently described fragmented data, inconsistent data definitions, legacy applications, limited interoperability, and difficulties integrating AI tools with existing clinical and administrative

systems. Participants emphasized that successful prototypes did not necessarily translate into production-ready applications because enterprise implementation required reliable data pipelines, system integration, cybersecurity controls, monitoring, and ongoing technical support.

One participant observed, “Our AI ambitions are constrained by inconsistent data quality, limited interoperability, and legacy systems that were not designed to work together” (Participant 09, Hospital administrator). Another explained, “Moving from pilot to production requires more than proving the technology; it requires reliable data, clear ownership, workflow integration, and sustained operational support” (Participant 16, Technology Leader in Healthcare). These accounts contextualize the Data, Technology, and Infrastructure Readiness score (M = 3.52, SD = .68) by showing that implementation barriers became more visible when organizations attempted to move from pilots to production.

Theme 3: Workforce preparation lagged technology investment.

Interview participants frequently described workforce readiness as less developed than organizational interest in AI. Participants reported uneven AI literacy across professional groups, limited access to role-specific training, uncertainty about how AI changes existing responsibilities, and insufficient involvement of frontline employees in technology selection and workflow design. Several interviewees emphasized that general awareness sessions were not equivalent to preparing clinicians, managers, analysts, and technical professionals to evaluate and use AI responsibly in their respective roles.

One participant stated, “We have invested in AI technology, but workforce preparation has not kept pace. Employees need role-specific training to understand how to use AI responsibly and recognize its limitations” (Participant 07, Healthcare policymaker). Another explained, “Clinician resistance often occurs when new AI tools are introduced without early engagement, clear communication, or evidence that they will improve rather than complicate clinical workflows” (Participant 20, Medical Informatics leader). These findings contextualize the lower Workforce and Organizational Readiness score (M = 3.34, SD = .72).

Theme 4: Governance structures were developing but were not consistently operationalized.

Participants described increasing organizational attention to responsible AI governance. Several interviewees reported on the establishment of AI committees, review processes, security assessments, or responsible-use policies. Nevertheless, participants also indicated that governance maturity varied considerably. In some organizations, governance remained focused on policy development and pre-implementation approval, with less attention given to continuous monitoring, model performance, bias assessment, accountability, incident escalation, or retirement of ineffective systems.

One participant explained, “Our AI governance committee reviews each initiative for clinical risk, privacy, security, and accountability before implementation” (Participant 13, Health policy leader). Another cautioned, “Accountability remains unclear once AI systems are deployed, and ongoing monitoring is still limited” (Participant 22, Healthcare technologist). These accounts qualify the comparatively high

governance score by distinguishing the existence of policies and committees from consistent lifecycle oversight.

Theme 5: Clinical Integration and Evaluation Readiness measurement remained underdeveloped.

Participants identified clinical workflow integration and value measurement as persistent barriers to successful enterprise AI implementation. Interviewees explained that technical performance alone was insufficient to produce meaningful organizational value. An AI application could function as designed but still fail if it disrupted established clinical workflows, increased documentation requirements, delivered recommendations at inappropriate points in care, or lacked clinician acceptance. These findings reinforce the distinction between deploying an AI application and integrating it into routine clinical practice.

Participants also described difficulty demonstrating the value of AI after implementation. Several organizations lacked clearly defined baseline measures against which post-implementation performance could be compared. This limitation made it difficult to determine whether an AI application improved clinical quality, patient safety, operational productivity, workforce experience, patient experience, or financial performance. Participants emphasized that organizations should define intended outcomes and measurement methods before implementation and continue evaluating performance after deployment.

One participant emphasized the importance of workflow compatibility: “AI succeeds only when it fits naturally into clinical workflows without adding burden or disrupting patient care” (Participant 18, health plan revenue cycle leader). Another participant highlighted the need to evaluate results beyond the pilot stage: “We need to move beyond promising pilots and demonstrate measurable improvements in patient outcomes, operational efficiency, and return on investment” (Participant 25, healthcare leader).

These interview findings help explain why Clinical Integration and Evaluation Readiness had the lowest mean among the five EAIR domains (M = 3.29, SD = .70). The qualitative evidence suggests that organizations may have greater capacity to establish AI strategies, launch pilots, and create governance structures than to integrate AI into clinical workflows and evaluate its sustained effects. As presented in Table 6, the five qualitative themes corresponded with the EAIR domains and provided contextual explanations for the quantitative results.

Table 6
Interview Themes and Quantitative Alignment

Qualitative theme	*Evidence to report*	*Related EAIR domain*	*Survey result*
Strategy advanced faster than execution	Executive sponsorship, pilots, unclear scaling responsibility	Leadership and Strategy	M = 3.89, SD = .61
Data and interoperability constrained scaling	Fragmented data, legacy systems, integration barriers	Data and Technology	M = 3.52, SD = .68
Workforce preparation lagged investment	Training gaps, limited clinician engagement, change resistance	Workforce and Organization	M = 3.34, SD = .72
Governance was not consistently operationalized	Committees existed, but monitoring and accountability varied	Governance and Security	M = 3.71, SD = .64
Clinical Integration and Evaluation Readiness measurement remained limited	Workflow challenges, weak outcome, and ROI measurement	Clinical Integration and Evaluation Readiness	M = 3.29, SD = .70

Table 6 demonstrates that the interview findings were broadly consistent with the pattern observed in the survey. Leadership and governance received comparatively higher scores, reflecting the presence of executive sponsorship, formal strategies, policies, and oversight structures. However, interviewees indicated that these formal capabilities did not always translate into clear responsibility for scaling, continuous monitoring, or operational accountability.

The lower workforce and clinical-integration scores were also consistent with participants' descriptions of limited training, insufficient clinician engagement, workflow disruption, and weak outcome measurement. Together, these findings suggest that healthcare organizations may be further advanced in planning and governing AI than in embedding it into everyday work and demonstrating measurable value. This convergence between the quantitative and qualitative findings provides preliminary support for evaluating enterprise AI readiness as an interconnected system of strategic, technological, workforce, governance, and clinical capabilities.

Integrated Findings

Quantitative and qualitative findings converged in showing that readiness was uneven across the five EAIR domains. Survey respondents reported comparatively strong leadership and governance readiness, while interview participants described increasing executive sponsorship, formal planning, and governance structures. However, the interviews qualified these results by showing that strategy and formal governance did not always extend to clear implementation responsibilities, continuous monitoring, or lifecycle accountability.

The survey also identified comparatively lower workforce and clinical-integration readiness. Interviews explained these patterns through limited role-specific training, inconsistent frontline engagement, workflow disruption, and difficulty measuring outcomes. No major areas of direct divergence were identified; however, qualitative findings revealed greater variation within organizations than the domain means alone suggested. Together, the findings indicate that enterprise readiness depends on alignment across domains rather than strength in any single capability.

Implications and Recommendations

The findings suggest that healthcare organizations should assess AI readiness before pursuing broad enterprise scaling. Readiness assessments can identify imbalances across strategy, digital infrastructure, workforce capability, responsible governance, and clinical integration, allowing investments to be targeted toward the capabilities most likely to constrain transformation.

Organizations with strong strategic and technological readiness but weaker workforce capability should prioritize AI literacy, clinician engagement, and change management. Organizations with strong technical capability but weaker governance should strengthen model validation, cybersecurity, privacy, human oversight, and accountability mechanisms. Similarly, organizations demonstrating substantial adoption, but limited value readiness should establish measurable clinical, operational, workforce, and financial outcomes before further scaling.

These findings support further evaluation of EAIR as a potential organizational diagnostic framework. Benchmarking use would require external validation, representative reference samples, measurement-invariance testing, and empirically justified interpretation thresholds.

Discussion

This study examined Enterprise AI Readiness as a multidimensional organizational capability and found that the five readiness domains were positively associated with perceived AI implementation success. Overall, EAIR was also positively associated with perceived implementation success, enterprise scalability, and organizational value realization. These results extend healthcare AI-readiness research by connecting organizational preparedness with separately measured transformation outcomes.

Readiness was uneven across domains. Leadership and governance received comparatively high scores, whereas workforce preparation and clinical integration received lower scores. Interview findings explained this pattern by showing that executive commitment and formal governance did not always translate into operational responsibility, workforce preparation, workflow integration, continuous monitoring, or outcome evaluation. This distinction reinforces the need to evaluate readiness as an aligned system of organizational capabilities rather than as a single technology-adoption decision.

Leadership and Strategic Readiness demonstrated the largest standardized association with perceived implementation success, followed by Clinical Integration and Evaluation Readiness and Data,

Technology, and Infrastructure Readiness. Governance, Security, and Responsible AI Readiness also made a statistically significant independent contribution. Workforce and Organizational Readiness was positively but not significantly associated with implementation success after adjustment for the other four domains. These findings suggest that implementation success is associated with multiple complementary capabilities, although the cross-sectional design does not establish their causal effects.

The findings also distinguish formal governance from operational governance. Committees and policies may establish oversight structures, but readiness requires those structures to function throughout AI selection, validation, deployment, monitoring, incident management, and decommissioning. Similarly, implementation does not demonstrate value unless organizations can evaluate clinical, operational, workforce, patient-experience, and financial outcomes.

These findings should be interpreted as associations among self-reported organizational measures. They do not establish that EAIR causes implementation success or that the framework predicts future performance. Nevertheless, the convergence between survey patterns and interview accounts provides preliminary support for EAIR as a useful framework for examining enterprise AI transformation.

The comparatively high leadership and governance scores may partly reflect the leadership composition of the sample and the visibility of formal strategies and committees to senior respondents. In contrast, workforce preparation and workflow integration may be more difficult for leaders to observe consistently across departments. Consequently, the differences among domain means may reflect both genuine capability gaps and differences in respondent access to organizational evidence.

Conclusion

This study advances healthcare AI research by shifting the focus from AI adoption to Enterprise AI Readiness (EAIR). The findings indicate that readiness is a multidimensional organizational capability shaped by the alignment of strategic leadership, data and technology infrastructure, workforce capacity, responsible governance, and clinical integration. Accordingly, the ability to scale AI and realize organizational value depends not on technological sophistication alone, but on the broader institutional capacity to integrate AI safely and effectively.

The EAIR framework extends existing healthcare AI-readiness research by linking organizational preparedness with implementation, scalability, and value realization. Further, the findings suggest that readiness may be uneven across domains, reinforcing the importance of assessing organizational capability as an integrated system rather than as isolated technological or governance measures. For healthcare leaders, this implies that enterprise AI strategies should align investment in technology with workforce development, interoperable data, governance and security, clinical integration, and measurable outcomes.

These findings should be interpreted considering the study's cross-sectional design, reliance on self-reported organizational assessments, and leadership-focused sample. Longitudinal validation across

diverse health systems and stakeholder groups is needed to determine whether EAIR predicts subsequent implementation performance and sustained clinical, operational, and financial outcomes.

An AI-ready hospital is distinguished not by the volume of AI technologies deployed, but by its organizational capacity to translate AI into safe, scalable, responsible, and measurable value. EAIR provides a foundation for assessing that capacity and for advancing healthcare organizations from AI experimentation toward sustainable enterprise transformation.

Abbreviations

AI
Artificial Intelligence
EAIR
Enterprise AI Readiness
GenAI
Generative Artificial Intelligence
IRB
Institutional Review Board
KMO
Kaiser–Meyer–Olkin
ROI
Return on Investment
SD
Standard Deviation
SE
Standard Error
VIF
Variance Inflation Factor.

Declarations

Ethics approval and consent to participate

This study was reviewed by the California State University Regional Institutional Review Board and determined to qualify for exemption under 45 CFR 46.104(d)(2). No approval number was issued. All participants received information regarding the study's purpose, procedures, voluntary nature, confidentiality protections, and right to withdraw without penalty. Electronically informed consent was obtained from all survey participants before participation. Interview participants provided separate informed consent before their interviews, including consent for audio recording when applicable.

Consent for publication

Not applicable. The manuscript does not contain identifiable personal information, images, or other details requiring individual consent for publication.

Funding

This research received no specific grant or financial support from any funding agency in the public, commercial, or non-profit sectors.

Author Contribution

I conceived and designed the study; developed the Enterprise AI Readiness framework and survey instrument; conducted participant recruitment, data collection, interviews, quantitative and qualitative analyses, and mixed-methods integration; interpreted the findings; and prepared all tables and supplementary materials. A.M.A. drafted, critically revised, and approved the final manuscript and accepts full responsibility for the integrity and accuracy of the work.

Acknowledgements

The author acknowledges the study participants for contributing their time and perspectives. ChatGPT was used only for limited language, readability, and formatting assistance, and Grammarly was used to identify spelling and grammatical issues. These tools were not used to generate, select, analyze, or interpret the study data or formulate the study's findings and conclusions. The author reviewed and approved all revisions and assumed full responsibility for the manuscript.

The author acknowledges the use of ChatGPT to ensure Chicago Style writing formatting is in place, identify missing citations or references, get the definition of technical terms, improve readability of the literature review, identify opportunities to improve the concepts, and link the components of the literature, theoretical foundation, results, and conclusion. The author also acknowledges the use of Grammarly to identify and address spelling issues. The prompts used include "identify Chicago Writing format violations," "identify missing citations and references in the document," "Identify flaws in the paper for a peer-review level journal paper standard," "define technical words: marginalized community, economic implications, etc.," and "find Chicago Style recommendations missing in the manuscript." The output from these prompts was used to address the style violations in accordance with the Chicago Style formatting. While the authors acknowledge the usage of AI, they maintain that they are the sole authors of this article and take full responsibility for the content therein, as outlined in COPE recommendations.

Data Availability

All the study contents that include suveys and manuscript of interviews are available.

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