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Hospital Change Management in the Digital Era: A Systematic Literature Review of Leadership, Ambidexterity, and Innovation

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Abstract

Purpose: Hospitals are undergoing digital transformation through electronic health records, telemedicine, virtual care, artificial intelligence, patient portals, and data-driven operations. Yet the implementation of these technologies frequently produces organizational tensions that cannot be explained by technology-adoption logic alone. This systematic literature review examines hospital change management in the digital era by integrating evidence on leadership, ambidexterity, and innovation. **Design/methodology/approach**: The review followed the SPAR-4-SLR logic of assembling, arranging, and assessing the literature and used a PRISMA-informed screening flow. The evidence boundary was deliberately restricted to Scopus-confirmed Q1/Q2 journal articles. From 1,343 raw records, 1,323 unique records were retained after deduplication. After source-quality, document-type, and topical screening, 175 articles were included in qualitative synthesis. **Findings**: The review identifies five interrelated patterns. First, hospital digital change is a sociotechnical process that reshapes workflow, accountability, professional identity, and care coordination. Second, readiness is multidimensional, combining digital competence, technological self-efficacy, managerial capability, psychological safety, and learning climate. Third, leadership operates as a translation mechanism between executive digital strategy and frontline clinical practice. Fourth, ambidexterity provides a strategic explanation for how hospitals balance reliability, standardization, and safety with experimentation and innovation. Fifth, innovative work behaviour is a proximal behavioural pathway through which digital change becomes embedded in practice. **Originality/value:** The review develops a paradox-informed digital leadership framework for hospital change management. It contributes by connecting hospital digital transformation, paradoxical leadership, digital leadership, ambidexterity, and innovative work behaviour into a coherent agenda for future empirical research.

Keywords: Hospital Change Management, Digital Transformation, Digital Leadership, Paradoxical Leadership, Ambidexterity, Innovative Work Behaviour, Psychological Safety, SPAR-4-SLR.

1. Introduction

Digital transformation has become a defining strategic concern for hospitals. It is visible in electronic medical records, telemedicine, virtual care, artificial intelligence, patient portals, data-driven quality monitoring, digital human resource systems, and digitalized administrative processes. These technologies promise improved coordination, efficiency, safety, transparency, and patient experience. However, they also alter clinical routines, documentation practices, professional boundaries, governance arrangements, and the everyday relationship between healthcare workers and patients. For that reason, hospital digital transformation is not simply a technological upgrade; it is an organizational change process that reaches into the social, clinical, and managerial architecture of hospital work (Scott et al., 2019; Cannavacciuolo et al., 2023; Brady et al., 2024).

Hospitals are difficult settings for change because they are knowledge-intensive, professionally pluralistic, resource-constrained, and ethically sensitive organizations. A change that improves operational efficiency may simultaneously increase documentation burden. A digital tool that standardizes a workflow may also challenge

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professional autonomy. A platform designed to improve patient access may create new concerns about privacy, trust, usability, and equity. Studies of hospital digital readiness, digital competence, safety reporting, and electronic patient records show that transformation depends on more than the technical quality of the system; it depends on whether staff perceive the change as useful, legitimate, safe, learnable, and aligned with patient care (Cartland et al., 2022; Scherrenberg et al., 2023; Lessios et al., 2024; Ibrahim et al., 2026; Mikkonen et al., 2026).

A central challenge in this literature is fragmentation. Health-services studies often analyse digital transformation in relation to implementation, readiness, adoption barriers, or patient-safety outcomes. Leadership studies often focus on leadership style, psychological safety, voice, or employee performance. Innovation studies often examine innovative work behaviour outside hospital settings or without explicit reference to digital transformation. Meanwhile, organizational ambidexterity research explains how organizations balance exploitation and exploration, but its implications for hospital digital change remain underdeveloped. The result is a set of literatures that speak to different parts of the same problem without yet producing an integrated change-management explanation.

This review addresses that gap by synthesizing Scopus Q1/Q2 evidence on hospital change management, digital transformation, leadership, ambidexterity, and innovative work behaviour. The guiding argument is that hospital digital change is best understood as paradoxical change. Hospitals must standardize care while protecting professional judgement; accelerate digital implementation while safeguarding patient safety; pursue efficiency while preserving humanisation; and exploit reliable routines while exploring new models of care. These tensions are not temporary implementation problems. They are enduring features of hospital change in the digital era.

To advance this argument, the review introduces the notion of paradox-informed digital leadership. This does not treat paradoxical digital leadership as a fully established construct. Rather, it uses the hospital evidence and the theory-bridge evidence to develop an integrative lens: digital leaders in hospitals need not only technological vision and data capability, but also the ability to hold competing demands together, legitimize frontline concerns, build psychological safety, and enable ambidextrous innovation. Paradoxical leadership research is therefore used as a theoretical bridge for interpreting digital change-management demands in hospitals (Hu et al., 2024; Pearce & van Knippenberg, 2024; Xi et al., 2025; Zhang & Zhang, 2025).

The review makes three contributions. First, it reframes hospital digital transformation as a sociotechnical and paradoxical change process. Second, it integrates leadership, readiness, safety, ambidexterity, and innovative work behaviour into a single framework for hospital change management. Third, it provides a future research agenda for empirical studies that can test how digital leadership and paradox-informed leadership shape change readiness, ambidexterity, and innovation outcomes in hospitals.

2. Methods

Review design

This study used a systematic literature review design guided by SPAR-4-SLR, which structures the review process into three main stages: assembling, arranging,

and assessing the literature (Paul et al., 2021). The protocol was appropriate because the aim of this review was not only to summarize a body of work, but also to justify the boundaries of the review, organize a multidisciplinary corpus, and develop an agenda for future research. A PRISMA-informed flow was also used to report identification, screening, eligibility, and inclusion decisions (Page et al., 2021).

The review is best described as a hybrid domain- and framework-based SLR. It is domain-based because the central domain is hospital change management in the digital era. It is framework-based because the synthesis integrates leadership, ambidexterity, readiness, psychological safety, and innovative work behaviour into a conceptual framework. The use of a theory-bridge stream was intentional: not all leadership and ambidexterity studies are hospital-specific, but they provide theoretical mechanisms for interpreting the tensions observed in hospital digital change.

Assembling: identification and acquisition

The assembling stage defined the review domain, source type, source quality, search logic, and evidence boundary. The domain was hospital change management in the digital era. Source type was restricted to journal articles. The quality threshold was restricted to Scopus-confirmed Q1/Q2 journal articles as recorded in the screening matrix. Non-journal materials, conference proceedings, editorials, commentaries, non-Scopus records, and records without confirmed Q1/Q2 status were excluded from the main synthesis.

The search logic was built around four conceptual blocks: (1) hospital and healthcare organization, (2) change management and organizational change, (3) digital transformation and digital readiness, and (4) leadership, paradox, ambidexterity, and innovative work behaviour. The Scopus exports used in the review were generated on 21 May 2026. PubMed-derived and supplementary records were used only to support abstract inspection and were not treated as primary evidence unless the article was also retained as Scopus-confirmed Q1/Q2 in the screening matrix.

Table 1. Operationalization of SPAR-4-SLR in this review.

SPAR-4-SLR stage	Operational decision	Application in this review	Rationale
Assembling - identification	Define domain and research questions	Hospital change management in the digital era; five RQs on evolution, mechanisms, leadership integration, ambidexterity, and future agenda.	Establishes a bounded review domain and prevents a generic review of healthcare digitalization.
Assembling - acquisition	Define source type, source quality, and search logic	Peer-reviewed journal articles; Scopus-confirmed Q1/Q2; search blocks covering hospital change, digital transformation, leadership/paradox, ambidexterity, and innovation.	Aligns the corpus with a high-quality evidence boundary and the interdisciplinary nature of the topic.
Arranging - organization	Code and classify records	Records coded for year, rank, source bucket, document type, hospital context, change focus, digital focus, leadership focus,	Enables transparent separation of direct hospital evidence from construct-

		ambidexterity focus, and innovation-behaviour focus.	support and theory-bridge evidence.
Arranging purification	- Remove duplicates and ineligible records	Duplicates, non-Scopus records, non-Q1/Q2 records, non-articles, reviews/commentaries, wrong-domain records, and topically misaligned records were removed.	Improves replicability and protects the review from scope drift.
Assessing evaluation	- Synthesize descriptive and thematic patterns	Descriptive mapping was combined with qualitative thematic synthesis across the final corpus.	Supports both state-of-the-art mapping and theory-building.
Assessing reporting	- Report PRISMA flow, themes, framework, propositions, and future agenda	The manuscript reports screening counts, evidence streams, thematic findings, conceptual framework, and research agenda.	Makes the review auditable and useful for future empirical research.

Arranging: organization, screening, and purification

All records were organized in a screening matrix. Screening was conducted sequentially. First, duplicate records were removed. Second, records were filtered for Scopus confirmation and Q1/Q2 status. Third, document type was restricted to journal articles. Fourth, records were assessed by title, abstract, author keywords, index keywords, and available metadata for fit with hospital change management, digital transformation, leadership, ambidexterity, and innovative work behaviour. Finally, included records were categorized into one of three evidence roles: core hospital change management, construct support, or theory bridge.

Table 2. Eligibility criteria.

Criterion	Inclusion rule	Exclusion rule
Database/source	Scopus-confirmed records retained in the screening matrix.	Non-Scopus records and records without Scopus confirmation.
Journal quality	Q1 or Q2 journal status recorded in the screening matrix.	Q3/Q4 records, unranked records, or records requiring unresolved quartile verification.
Document type	Journal article.	Conference paper, book chapter, editorial, commentary, note, correction, protocol-only record, thesis, or grey literature.
Domain fit	Hospital, hospital system, healthcare organization, clinical unit, or healthcare workforce setting with change-management relevance.	Non-healthcare studies unless retained as theory bridge for paradoxical leadership, ambidexterity, or innovation mechanisms.
Topical fit	Change management, digital transformation, organizational change, readiness, leadership,	Purely clinical, biomedical, epidemiological, or technical studies without

	psychological safety, ambidexterity, innovative work behaviour, or implementation change.	organizational/change-management relevance.
Evidence role	Core, construct support, or theory bridge.	Background-only records without contribution to the review questions.

PRISMA-informed screening flow

The raw evidence pool contained 1,343 records. After removal of 20 duplicates, 1,323 unique records remained. Before topical screening, 118 records were removed because they were not Scopus-confirmed and 457 were removed because Q1/Q2 status was not confirmed. This left 748 Scopus Q1/Q2 records for screening. Thirty-eight non-article records were excluded, leaving 710 Q1/Q2 journal articles for eligibility assessment. At eligibility, 20 review or concept-analysis articles, 41 wrong-domain/comment/correction records, and 474 topically misaligned articles were excluded. The final qualitative synthesis included 175 articles.

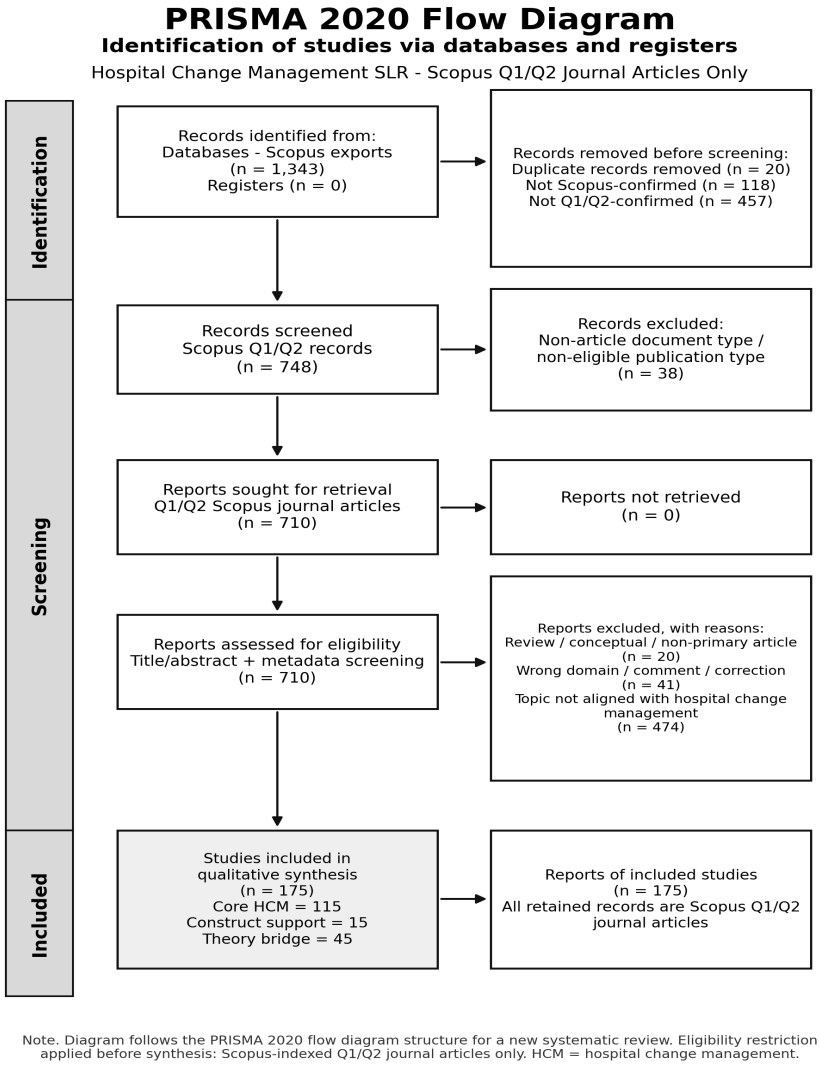

Figure 1. PRISMA 2020 flow diagram for strict Scopus Q1/Q2 screening.

Assessing: data extraction and synthesis

Data extraction used a structured codebook. Bibliographic fields included record ID, title, year, journal, Scopus status, quartile, document type, authors, DOI, Scopus EID, source bucket, and final inclusion rationale. Analytical fields captured hospital context, healthcare context, change focus, digital focus, leadership focus, paradoxical focus, digital leadership focus, ambidexterity focus, and innovation-behaviour focus. The final corpus was then synthesized through descriptive mapping and interpretive thematic analysis.

The synthesis followed three principles. First, descriptive mapping was used to show corpus composition, quartile distribution, evidence role, and publication trend. Second, thematic synthesis was used to identify mechanisms that recur across hospital digital change, readiness, leadership, safety, and innovation studies. Third, theory-bridge studies were used cautiously: they informed conceptual development but were not interpreted as direct hospital evidence unless the study itself was hospital- or healthcare-specific.

Review trustworthiness and evidence boundary

To reduce over-claiming, the review distinguishes between direct hospital evidence and theory-bridge evidence. Records with incomplete author or DOI metadata were retained for descriptive corpus mapping and thematic classification, but author-year citations in the narrative were restricted to records with validated bibliographic metadata available in the screening file or Scopus export. Because the corpus spans qualitative studies, surveys, conceptual measurement studies, implementation research, and theory-bridge management research, a single risk-of-bias score was not imposed. Instead, transparency was maintained through source-quality thresholds, explicit inclusion criteria, evidence-role classification, and traceable screening counts.

3. Result and Discussion

Corpus profile

The final corpus consisted of 175 Scopus Q1/Q2 journal articles. The quartile distribution was weighted toward Q1 journals, with 108 Q1 articles and 67 Q2 articles. The evidence-role distribution comprised 115 core hospital change-management articles, 15 construct-support articles, and 45 theory-bridge articles. Publication years ranged from 1971 to 2026, but the strongest concentration occurred after 2020, reflecting the acceleration of digital health, virtual care, AI, and organizational readiness research in the hospital sector.

Table 3. Final corpus profile.

Profile item	Count
Raw records identified	1,343
Unique records after duplicate removal	1,323
Scopus Q1/Q2 records screened	748
Q1/Q2 journal articles assessed for eligibility	710
Included in qualitative synthesis	175
Core hospital change management	115
Construct support	15
Theory bridge	45

Q1 articles	108
Q2 articles	67

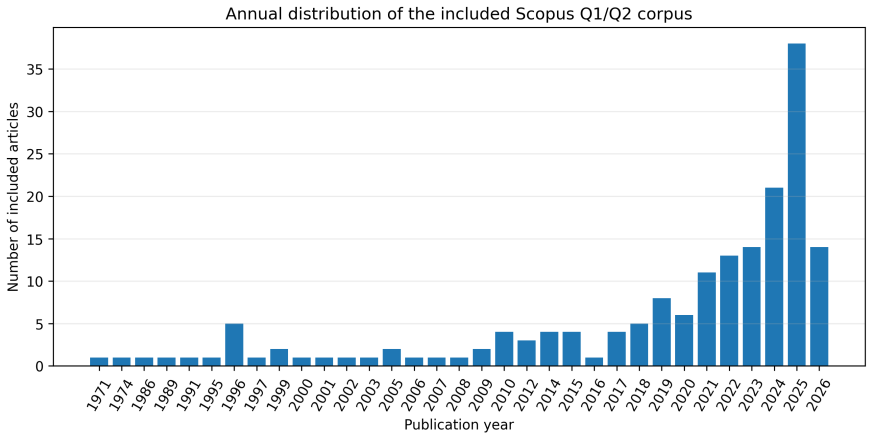

Figure 2. Annual distribution of the included Scopus Q1/Q2 corpus.

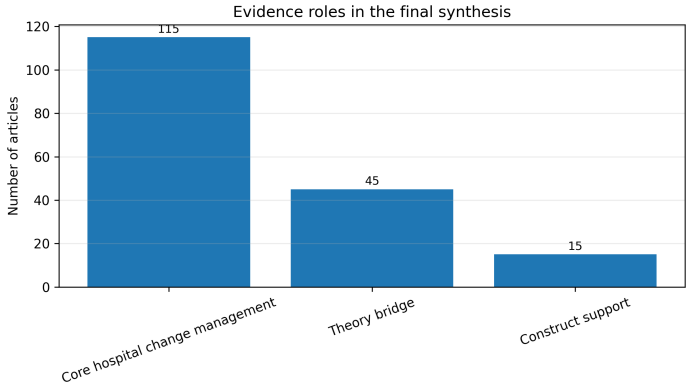

Figure 3. Evidence roles in the final synthesis.

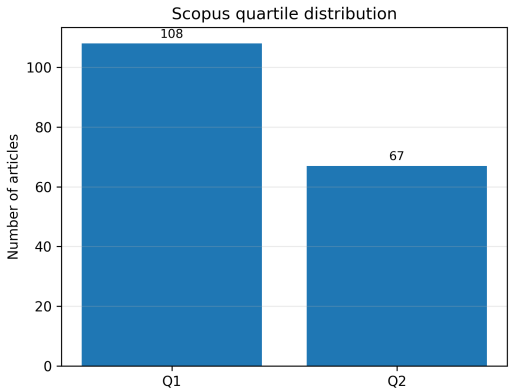

Figure 4. Scopus quartile distribution of the final corpus.

RQ1: Evolution of hospital change-management literature in the digital era

The corpus shows a shift from classic organizational change concerns toward digital transformation, digital readiness, safety culture, and workforce adaptation. Early hospital change studies in the corpus focused on restructuring, mergers, decentralization, professional role change, and resistance to change. More recent studies increasingly examine digitalized workflows, electronic health records,

telemedicine, virtual care, AI-enabled tools, safety-reporting systems, and digital competence. This transition suggests that hospital change management has moved from a primarily structural and administrative agenda toward a sociotechnical change agenda.

Recent hospital studies demonstrate that digital transformation is embedded in operational and clinical realities. Scott et al. (2019) describe hospital-wide electronic medical record implementation as requiring preparation beyond technical deployment. Cannavacciuolo et al. (2023) show that telemedicine implementation is intertwined with organizational change across healthcare cases. Brady et al. (2024) show that newly implemented electronic patient records are experienced through multidisciplinary user routines, not merely through system functions. These findings indicate that digital hospital change must be understood through the interaction of technology, workflow, professional sensemaking, and governance.

RQ2: Leadership, readiness, safety, and learning mechanisms

Across the core stream, readiness emerges as a multidimensional mechanism. Digital readiness is not simply infrastructure availability. It includes staff competence, technological self-efficacy, learning agility, confidence in the usefulness of change, managerial capability, and perceived alignment with patient care. Scherrenberg et al. (2023) developed and validated a digital health readiness questionnaire, while Ibrahim et al. (2026) linked nurses' digital competence with technological self-efficacy, learning agility, and career adaptability. Mikkonen et al. (2026) extend this pattern by showing that digital health competence varies across healthcare professionals in different countries and regions.

Psychological safety is another recurring change mechanism. Cartland et al. (2022) position psychological safety and local learning as conditions for high-reliability organizational change. Schwappach and Gehring (2014) show that staff decisions to speak up about safety concerns involve trade-offs between voice and silence. Pavithra et al. (2022) and Bagot et al. (2023) further demonstrate that unprofessional behaviours, accountability culture, and middle-manager responses shape whether hospital staff feel able to engage constructively in change. These findings suggest that digital transformation cannot be separated from the interpersonal climate in which staff report problems, question workflows, and propose improvements.

Organizational culture also shapes the interpretation of change. Malik et al. (2021) define open organizational culture through stakeholder consensus, while Mengstie et al. (2023) identify culture and change barriers in a specialized hospital cardiac unit. Together, these studies indicate that readiness is not a static precondition but a socially produced capability. Hospitals become ready for change when leadership, culture, trust, learning, and staff competence reinforce one another.

RQ3: Integrating digital leadership and paradoxical leadership

The leadership evidence suggests that digital leadership in hospitals requires more than digital vision or technology sponsorship. Hospital leaders must translate digital strategy into clinical practice while maintaining safety, legitimacy, professional voice, and care quality. This is where paradoxical leadership becomes useful as a theory bridge. Paradoxical leadership research explains how leaders manage competing yet interdependent demands, such as control and autonomy, stability and

change, standardization and flexibility, or short-term efficiency and long-term innovation (Pearce & van Knippenberg, 2024; Hu et al., 2024; Xi et al., 2025).

The synthesis therefore reframes digital leadership as paradox-informed digital leadership. A digital champion may advocate for technology adoption; a paradox-informed digital leader additionally recognizes tensions, legitimizes concerns, protects voice, and turns contradictions into learning. In the hospital context, this means balancing humanisation and efficiency, exploitation and exploration, managerial direction and frontline adaptation, and digital standardization and professional judgement. This framing is not a claim that paradoxical digital leadership is already a fully validated hospital construct. It is a conceptual contribution generated by integrating the hospital change-management corpus with the paradoxical leadership and ambidexterity literature.

RQ4: Ambidexterity and innovative work behaviour

Ambidexterity provides a strategic explanation for how hospitals manage the dual demands of reliability and innovation. Exploitation refers to strengthening existing routines, documentation standards, safety systems, and operational efficiency. Exploration refers to experimenting with new digital tools, virtual care models, AI applications, redesigned roles, and data-driven service innovations. Hospital change is fragile when either side dominates. Excessive exploitation can preserve outdated routines and suppress innovation; excessive exploration can overload staff and threaten reliability.

The innovation literature clarifies the behavioural pathway through which change becomes embedded. Innovative work behaviour is not merely individual creativity; it includes recognizing problems, generating ideas, mobilizing support, testing alternatives, and implementing improvements. In healthcare settings, Fu et al. (2022) link inclusive leadership, psychological safety, and polychronicity with employee creativity. Binsaeed et al. (2023) connect emotional intelligence, cultural intelligence, and innovative work behaviour with innovation performance in healthcare. Atalla et al. (2025) and Elsehrawy et al. (2025) demonstrate the relevance of paradoxical leadership for nurses' career maturity and job performance through learning and thriving mechanisms. These studies indicate that innovation behaviour should be treated as a change-management outcome, not only an employee trait.

RQ5: Integrative thematic synthesis

Table 4. Thematic synthesis of the final evidence corpus**.**

Theme	Core insight	Representative evidence	Implication for hospital change management
Digital transformation as sociotechnical change	Digital tools alter routines, roles, documentation, communication, and governance.	Scott et al. (2019); Cannavacciuolo et al. (2023); Brady et al. (2024)	Implementation should be managed as organizational redesign, not only system deployment.

Readiness as a multidimensional capability	Readiness combines competence, technological self-efficacy, learning agility, managerial capability, and perceived usefulness.	Scherrenberg et al. (2023); Ibrahim et al. (2026); Mikkonen et al. (2026); Tenggono et al. (2025)	Readiness assessment should include workforce, leadership, process, and digital maturity dimensions.
Psychological safety and voice	Staff need safe conditions to report usability problems, near misses, workflow mismatches, and implementation concerns.	Schwappach & Gehring (2014); Cartland et al. (2022); Pavithra et al. (2022); Bagot et al. (2023)	Digital change governance should build feedback loops and non-punitive reporting mechanisms.
Paradox-informed digital leadership	Leaders must balance efficiency and humanisation, standardization and autonomy, top-down direction and frontline adaptation.	Hu et al. (2024); Pearce & van Knippenberg (2024); Xi et al. (2025); Zhang & Zhang (2025)	Leadership development should include paradox management, sensemaking, and translation capabilities.
Ambidexterity and innovation behaviour	Hospitals need to exploit reliable routines while exploring new digital care models and innovation pathways.	Fu et al. (2022); Binsaeed et al. (2023); Zhao & Mohd Kamil (2025); Elsehrawy et al. (2025)	Innovation behaviour should be designed as a proximal outcome of change-management capability.

Discussion

Hospital digital change as paradoxical organizational change

The central finding of this review is that hospital digital change should not be framed as a linear adoption sequence in which technology is selected, implemented, and then routinized. The evidence suggests a more complex pattern: digital technologies generate simultaneous gains and tensions. They may improve access, documentation, coordination, and efficiency, while also producing workload burden, workflow disruption, anxiety, resistance, inequity, and new safety risks. This is why hospital digital transformation is better understood as paradoxical organizational change.

Four tensions recur across the corpus. The first is standardization versus professional autonomy. Digital tools often require standardized templates, pathways, or protocols, while clinical work requires situated judgement. The second is efficiency versus humanisation. Digital transformation promises speed and coordination, but

patient-centred care also depends on relational continuity, empathy, and attention to lived experience. The third is exploration versus exploitation. Hospitals need experimentation with telemedicine, AI, patient portals, and digital workflows, but must also maintain reliable routines and safety governance. The fourth is top-down strategy versus frontline adaptation. Executive leadership can set the direction, but change becomes real only when frontline staff reinterpret and adapt it in practice.

From digital leadership to paradox-informed digital leadership

A key implication is that digital leadership should be conceptualized more broadly. Digital leadership in hospitals cannot be reduced to technology investment, digital vision, or data strategy. It must also include relational and paradox-management capabilities. Leaders need to make digital transformation meaningful for clinicians, support staff, managers, and patients; create conditions for speaking up; and sustain trust during disruption. This is particularly important because digital change often exposes contradictions between managerial aspirations and frontline realities.

Paradox-informed digital leadership is therefore defined here as the capability to advance digital transformation while constructively managing the interdependent tensions it creates. It combines digital direction with psychological safety, sensemaking, learning, and ambidextrous resource orchestration. It is expressed when leaders protect experimentation while maintaining clinical governance, encourage staff voice while sustaining accountability, and pursue efficiency while preserving humanisation. This conceptualization extends digital leadership research by embedding it in the paradoxical nature of hospital work.

Ambidexterity as the strategic mechanism of hospital change

Ambidexterity explains how hospitals can avoid two common change failures. The first failure is over-standardization, where digital transformation is implemented as compliance and documentation rather than learning and improvement. The second failure is uncontrolled experimentation, where innovation proliferates without sufficient governance, integration, or evidence of value. Ambidextrous hospitals are able to exploit reliable processes and explore new possibilities at the same time.

In the proposed framework, paradox-informed digital leadership enables ambidexterity through two pathways. The first pathway is readiness and safety: leaders create the psychological and competence conditions needed for staff to test, learn, and speak up. The second pathway is resource and governance orchestration: leaders align digital investments, professional roles, workflow redesign, training, and evaluation. In this sense, ambidexterity is not an abstract strategic property. It becomes visible in how hospitals allocate time, attention, trust, and resources between reliable care delivery and innovation.

Innovative work behaviour as the behavioural pathway

Innovative work behaviour is the behavioural mechanism through which change moves from policy to practice. Hospital staff often know where digital tools fail, where workflows create waste, where patients experience friction, and where safety risks emerge. When staff are psychologically safe and digitally competent, they are more likely to report problems, suggest improvements, and participate in adaptation. When

they are not safe, change problems remain hidden, workarounds become normalized, and digital transformation may appear successful on paper while failing in practice.

This interpretation shifts innovative work behaviour from the periphery to the centre of hospital change management. It is not enough to measure whether a digital system has been installed or whether users have logged in. A stronger change-management lens asks whether staff are using their professional knowledge to improve the change, whether digital tools support rather than distort care, and whether the hospital learns from implementation tensions over time.

Integrative framework

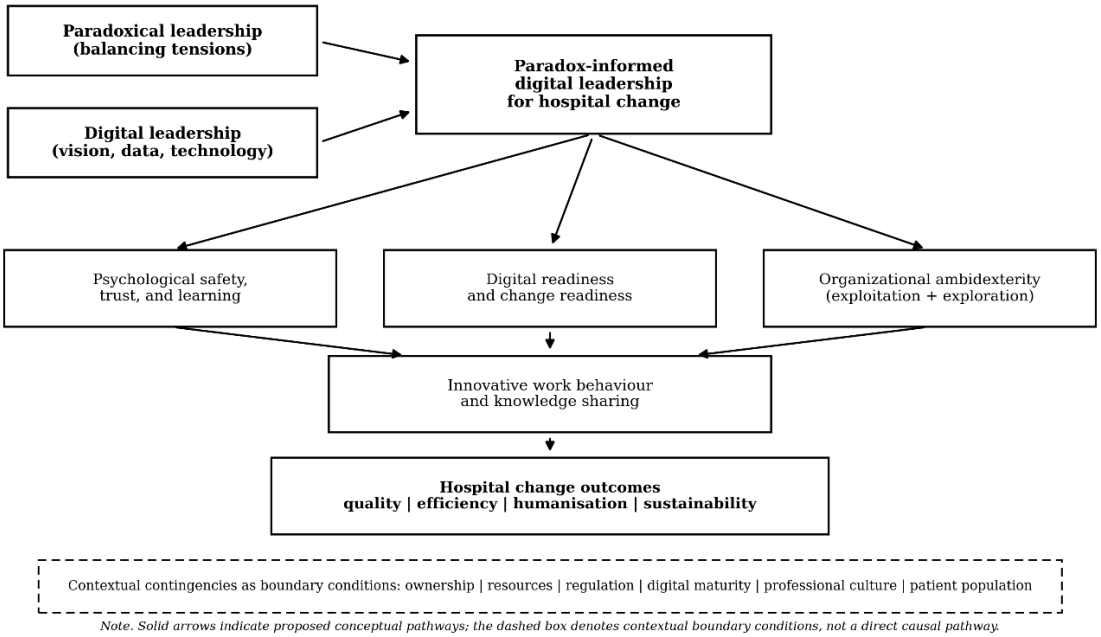

Figure 5. Proposed paradox-informed digital leadership framework for hospital change management.

The proposed framework begins with two leadership inputs: digital leadership and paradoxical leadership. Their integration produces paradox-informed digital leadership for hospital change. This leadership capability shapes readiness and safety mechanisms, including digital readiness, change readiness, psychological safety, trust, and learning. It also supports organizational ambidexterity by balancing exploitation of reliable routines with exploration of new digital possibilities. These mechanisms enable innovative work behaviour and knowledge sharing, which in turn support hospital change outcomes such as quality, efficiency, humanisation, and sustainability. Contextual contingencies - including ownership, resources, regulation, digital maturity, professional culture, and patient population - influence the strength and direction of these relationships.

Propositions for future empirical research

Table 5. Propositions emerging from the synthesis.

Proposition	Statement	Empirical implication

P1	Paradox-informed digital leadership is positively associated with hospital change readiness and digital readiness.	Test using multilevel surveys of executive, middle-manager, and frontline staff perceptions.
P2	Psychological safety and trust mediate the relationship between paradox-informed digital leadership and innovative work behaviour.	Examine voice, error reporting, usability feedback, and perceived non-punitive climate as mediating variables.
P3	Organizational ambidexterity mediates the relationship between leadership and hospital change outcomes.	Measure simultaneous exploitation of standard workflows and exploration of new digital models of care.
P4	Technological self-efficacy and learning agility strengthen the effect of digital readiness on innovative work behaviour.	Use moderated mediation designs with staff digital competence indicators.
P5	Resource availability, regulation, ownership, and digital maturity moderate the effectiveness of paradox-informed digital leadership.	Compare public, private, research, rural, and lower-middle-class hospitals.

Implications

Theoretical implications

The review contributes to theory in three ways. First, it extends hospital change-management research by positioning digital transformation as a paradoxical sociotechnical process. This provides a richer explanation than models that treat digital transformation primarily as adoption, readiness, or implementation. Second, it integrates leadership and ambidexterity into hospital digital change. By linking paradoxical leadership and digital leadership, the review shows how hospitals may manage the contradictory demands of safety, efficiency, humanisation, professional autonomy, and innovation. Third, it repositions innovative work behaviour as a proximal change outcome that translates leadership and ambidexterity into practical improvement.

Managerial implications

For hospital directors and senior leaders, the findings suggest that digital transformation should be managed as a change-management portfolio. A portfolio view includes technology selection, governance, workforce readiness, training, workflow redesign, psychological safety, patient communication, evaluation, and learning loops. Digital projects should therefore be assessed not only by implementation milestones but also by staff readiness, usability feedback, safety signals, and patient experience.

For middle managers, the review highlights the importance of translation work. Middle managers connect executive strategy with the realities of clinical units. They interpret new digital requirements, negotiate professional tensions, protect staff voice, and help teams integrate change into daily routines. Hospitals should therefore

invest in middle-manager development for digital sensemaking, facilitation, and paradox management.

For frontline implementation teams, the review suggests that psychological safety should be designed into digital change processes from the start. Staff need safe channels to report usability problems, near misses, workarounds, workflow mismatches, and unintended consequences. If digital change suppresses voice, the organization loses its most important source of local learning.

Policy and governance implications

For policymakers and regulators, the synthesis indicates that digital hospital change is affected by infrastructure, resource availability, digital inequality, professional competence, and trust. Policy frameworks should therefore move beyond procurement and interoperability requirements to include workforce development, safety governance, patient involvement, ethical oversight, and equitable digital access. This is particularly important for lower-resource hospitals where digital transformation may amplify existing inequalities if implementation capacity is weak (Majcherek et al., 2024; Binsar et al., 2026).

Future research agenda

Table 6. Future research agenda.

Agenda area	Current limitation	Recommended direction	Potential design
Theory	Digital leadership, paradoxical leadership, and ambidexterity are rarely integrated in hospital studies.	Develop and validate paradox-informed digital leadership as a hospital change construct.	Scale development; longitudinal SEM; multilevel modelling.
Mechanisms	Readiness, safety, and learning are often studied separately.	Test how psychological safety, trust, digital competence, and learning agility jointly mediate change outcomes.	Mediation and moderated mediation designs.
Context	Evidence is uneven across hospital types, ownership models, maturity levels, and countries.	Compare public, private, research, rural, and lower-middle-class hospitals.	Comparative case study; cross-country survey.
Outcomes	Many studies measure adoption or perception rather than sustained change outcomes.	Measure quality, efficiency, humanisation, staff well-being, patient experience, and sustainability.	Mixed-method longitudinal evaluation.
Methods	The literature is dominated by	Use longitudinal, realist, ethnographic,	Realist evaluation; process

	cross-sectional and single-site designs.	and implementation-science designs.	evaluation; longitudinal qualitative study.

Limitations

This review has several limitations. First, the evidence boundary was intentionally restricted to Scopus Q1/Q2 journal articles. This improves source-quality control but may exclude relevant work from Q3/Q4 journals, regional journals, conference proceedings, policy reports, and grey literature. Second, the corpus includes a theory-bridge stream. These studies strengthen conceptual development but should not be interpreted as direct evidence of hospital outcomes when they are not hospital-specific. Third, some older records in the screening matrix contained complete title, year, journal, and quartile data but incomplete author and DOI metadata. These records were retained for descriptive mapping and classification but not used as author-year citations in the manuscript narrative. Fourth, the synthesis is qualitative and framework-oriented. Because the included studies vary substantially in method, context, construct definition, and outcome measurement, meta-analysis was not appropriate.

4. Conclusion

This systematic literature review examines hospital change management in the digital era by integrating Scopus Q1/Q2 evidence on digital transformation, leadership, readiness, psychological safety, ambidexterity, and innovative work behaviour. The synthesis shows that digital hospital change is not a purely technical transition. It is a paradoxical sociotechnical change process in which hospitals must manage competing demands of standardization and autonomy, efficiency and humanisation, exploration and exploitation, and top-down strategy and frontline adaptation.

The review proposes paradox-informed digital leadership as an integrative lens for understanding this challenge. Such leadership combines digital direction with the capacity to hold tensions constructively, build trust, create psychological safety, and enable ambidextrous innovation. Ambidexterity, in turn, explains how hospitals can preserve reliable routines while experimenting with new digital models of care. Innovative work behaviour provides the behavioural pathway through which staff translate change into practical improvement. Together, these insights provide a framework and research agenda for scholars, hospital directors, and policymakers seeking to make digital transformation safer, more human, and more sustainable.

5. References

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