

INTEGRATING TRANSFORMATIONAL, PARTICIPATIVE, AND DIGITAL LEADERSHIP FOR EFFECTIVE HEALTHCARE DIGITAL TRANSFORMATION

MOHAMMAD ADNDN M ARIF* & GUNAVATHY SELVARAJH

School of Nursing and Applied Science, Lincoln University College,
Selangor, Malaysia

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ABSTRACT

The rapid evolution of digital technologies in healthcare has created unprecedented opportunities and challenges for healthcare organizations. Successful digital transformation requires not only technological innovation but also strategic leadership that aligns human, organizational, and technological resources. This study discovers the integration of transformational, participative, and digital leadership styles as a holistic approach to fostering effective digital transformation in healthcare settings. Transformational leadership inspires and motivates staff to embrace change, participative leadership engages stakeholders in decision-making processes, and digital leadership ensures strategic alignment with emerging digital trends. Through a conceptual synthesis of existing literature, this study identifies the synergistic impact of these leadership styles on organizational readiness, employee engagement, and the successful implementation of digital health initiatives. The findings underscore that a combined leadership approach enhances innovation, accelerates technology adoption, and strengthens patient-centered care, offering healthcare leaders actionable insights for navigating the complexities of digital transformation.

Keywords: Digital transformation, transformational leadership, participative leadership, digital leadership, organizational readiness

1.0 INTRODUCTION

Digital transformation in healthcare refers to the comprehensive process of integrating advanced digital technologies such as electronic health records (EHRs), telemedicine, data analytics, and remote monitoring into the organization's operations, workflows, and culture to enhance care delivery, operational efficiency, and patient outcomes (Ahsan & Siddique, 2022; Alanazi, 2022). Rather than merely digitizing existing practices, effective digital transformation implies rethinking how care is delivered, managed, and coordinated redefining roles, communication flows, decision-making pathways, and even organizational values (Ahsan & Siddique, 2022). The advent of technologies under the umbrella of Industry 4.0 The IoT, big data, cloud computing, and AI have accelerated this trend, rendering digital transformation a strategic necessity rather than optional innovation for modern healthcare institutions (Ahsan & Siddique, 2022; Alanazi, 2022).

Despite its promise, digital transformation in healthcare is far from straightforward. Healthcare organizations operate in complex, high-stakes contexts where data security, patient safety,

regulatory compliance, and ethical considerations are paramount. These contexts make implementation particularly challenging in technological readiness alone is insufficient (Kolukisa et al., 2020; Taher et al., 2025). In many settings, infrastructural constraints (e.g., limited internet connectivity or unstable power supply), insufficient IT resources, and lack of interoperability hinder consistent adoption of digital tools (Taher et al., 2025; Hameed & Hameed, 2023). In addition, human and organizational factors such as limited digital literacy, resistance to change, lack of training, and unclear governance structures often undermine efforts to integrate digital systems sustainably (Taher et al., 2025; Kaihlanen et al., 2025). Thus, digital transformation in healthcare must be approached not only as a technical upgrade but as a complex socio-organizational change process.

In this light, leadership plays a central role in enabling and sustaining digital transformation in healthcare. Traditional leadership models may offer some value, but the digital context demands more: leaders need to combine vision, technical and digital competence, inclusive decision-making, and adaptability. The concept of Leadership 4.0 has been proposed as a suitable leadership paradigm for the digital era, one that merges transformational, digital, ethical, and distributed leadership dimensions to address the multifaceted demands of digital transformation in healthcare organizations (Tsekouropoulos et al., 2025). According to this framework, effective digital-era leaders must exhibit digital literacy, strategic foresight, emotional intelligence, adaptability, and a capacity to foster a culture of continuous learning and innovation (Tsekouropoulos et al., 2025).

Empirical evidence supports the growing importance of “digital leadership” (or “e-leadership”) in healthcare. For example, a recent qualitative study among health and social care professionals revealed that effective e-leadership requires managers to possess strong understanding of digital work, supportive interpersonal engagement, clear communication, and provision of appropriate resources for digital work (Kaihlanen et al., 2025). Similarly, research involving nurse managers in a hospital context identified the need for informatics competencies, proactive leadership behaviour, and training in digital leadership to successfully guide teams through digital transformation (Abou Hashish et al., 2025). These studies highlight that without leadership that is committed and equipped for digital change, even well-intentioned digitization efforts may falter.

Yet, while digital leadership is increasingly recognized as vital, there remains a conceptual and empirical gap regarding the integration of multiple leadership styles, particularly combining transformational (vision, inspiration), participative/democratic (inclusion, stakeholder engagement), and digital (technical–strategic) leadership to create a more robust, blended leadership model for healthcare digital transformation. The theoretical grounding for such a blended model lies in the idea that no single leadership style can address all dimensions of change: transformational leadership may inspire and motivate, participative leadership ensures shared ownership and engagement, and digital leadership provides the technical–strategic competence needed for digital adoption. The blended approach aligns with Leadership 4.0’s holistic view but has been rarely examined explicitly in empirical healthcare research (Tsekouropoulos et al., 2025; Kaihlanen et al., 2025).

Therefore, this study aims to fill this gap by examining how a blended leadership approach combining transformational, participative, and digital leadership could influence

organizational readiness for digital transformation and the adoption of digital health tools in healthcare settings. Specifically, it investigates how such a leadership blend affects factors such as organizational culture, staff engagement, change readiness, and successful implementation of digital health initiatives. By doing so, the study seeks to contribute to both academic theory, extending Leadership 4.0 conceptualization and practical guidance for healthcare administrators navigating digital transformation.

2.0 LITERATURE REVIEW

2.1 Digital Transformation in Healthcare and Need for Leadership

Digital transformation in healthcare encompasses the integration of digital technologies such as electronic health records (EHRs), telehealth platforms, mobile health applications, and data analytics into clinical and administrative workflows to improve quality, efficiency, and patient-centered outcomes (Ahsan & Siddique, 2022; Alanazi, 2022). Despite its potential, adoption of these technologies often encounters significant challenges, particularly in healthcare settings where organizational culture, technological readiness, and staff empowerment vary. Studies have identified barriers such as resistance to change, low digital literacy, inadequate training, lack of technical infrastructure, and concerns about data security, privacy, and interoperability as major obstacles to successful implementation (Kruse et al., 2016; Alami et al., 2017; Gagnon et al., 2016). These factors highlight that digital transformation is not only a technical process but a complex socio-organizational endeavour that requires alignment among technology, people, and processes.

The successful adoption of EHRs, telehealth, and other digital systems is particularly sensitive to organizational culture and staff engagement. Research shows that when healthcare staff are included in decision-making about digital initiatives, feel supported, and receive adequate training, adoption rates increase and resistance decreases, compared with top-down implementations lacking such inclusion and support (Kruszyńska-Fischbach et al., 2022; Kruse et al., 2016). This underscores the importance of addressing human and cultural factors alongside technological implementation, since technology alone cannot drive sustainable change in healthcare settings (Kruse et al., 2016).

Leadership plays a pivotal role in overcoming these challenges and enabling successful digital transformation. Leaders who combine strategic vision, digital literacy, and the ability to inspire and engage staff can foster an organizational climate conducive to innovation and change (Alanazi, 2022; Keesara et al., 2020). Transformational leadership can motivate employees to embrace new technologies, participative leadership ensures inclusion and shared ownership of change processes, and digital leadership provides the necessary expertise to guide technology adoption effectively (Alanazi, 2022). By aligning technological, cultural, and human factors, capable leadership serves as the critical enabler for adoption, innovation, and sustainable improvement in healthcare delivery.

2.2 Transformational Leadership and Innovation in Healthcare

Transformational leadership is characterized by inspirational motivation, intellectual stimulation, individualized consideration, and idealized influence has been widely linked to enhanced innovation and creative behaviour among healthcare professionals. Empirical studies

show that transformational leadership positively influences nurses' psychological empowerment including feelings of autonomy, competence, and meaningful work which in turn promotes innovative behaviours and proactive problem-solving in clinical settings (Boamah et al., 2018; Wong & Cummings, 2007). This suggests that when nursing leaders adopt transformational behaviours, they can foster an organizational environment that encourages experimentation, creative solutions, and adoption of new practices — essential elements for innovation in healthcare.

Beyond nursing, transformational leadership has been found to enhance employee creativity and overall innovative capacity across diverse organizational contexts. For example, transformational leaders facilitate psychological empowerment, which mediates the relationship between leadership and employees' creative output, enabling teams to adapt to changing conditions and implement new ideas effectively (Özaralli, 2003; Hughes et al. 2013). In healthcare settings, where service delivery is dynamic and demands adaptive responses, transformational leadership can support integration of new digital tools and innovative patient-centred practices.

Considering these findings, transformational leadership emerges as a powerful enabler for innovation and change in healthcare. By promoting empowerment, motivation, engagement, and psychological safety, transformational leaders help overcome common barriers such as staff resistance, risk aversion, and organizational inertia. This leadership style supports not only incremental improvements, such as process optimization, but also deeper transformations, including the adoption of digital health systems, innovative care models, and creative problem-solving approaches. Integrating transformational leadership into healthcare management and change strategies is therefore critical for organizations aiming to achieve sustainable innovation and high-quality care delivery.

2.3 Participative, Inclusive and Digital-Oriented Leadership for Modern Healthcare

Participative, inclusive, democratic, and digital-oriented leadership styles are increasingly vital for navigating the complexities of modern healthcare. These approaches move away from traditional, hierarchical models to distribute power and decision-making, which is crucial for managing the continuous cycles of technological adoption and cultural change inherent in healthcare transformation.

2.3.1 Participative Leadership, Organizational Justice, and Employee Well-being

Participative leadership which involves leaders actively sharing influence and inviting subordinates to be involved in the decision-making process is a cornerstone of inclusive and democratic management (Usman et al., 2021). The benefits of this approach are multifaceted and supported by robust organizational behaviour research:

- **Enhanced Well-being and Thriving:** By giving employees a voice, participative leadership fosters feelings of respect and control, which are direct buffers against work-related stress and burnout. In high-stress, crisis contexts, such as the COVID-19 pandemic, this approach helped healthcare professionals nurture workplace thriving a state characterized by vitality (energy) and learning (growth) and increased organizational citizenship behaviours, such as helping colleagues (Usman et al., 2021).

- **Organizational Justice:** A mechanism is the perceived increase in procedural justice and distributive justice. When employees feel they have input into decisions (procedural justice), they are more likely to accept the outcome, even if unfavourable. This sense of fairness strengthens trust in the leadership and the organization (Usman et al., 2021).
- **Reduced Resistance to Change:** This style is especially important when implementing new digital systems (e.g., EHRs or telemedicine platforms). Involving frontline staff (nurses, physicians) in the design, testing, and implementation decisions helps mitigate technical and cultural resistance, significantly improving system adoption rates and user satisfaction (Usman et al., 2021).

2.3.2 Digital Leadership for Guiding Transformation

While participative leadership focuses on how decisions are made, Digital Leadership focuses on the specific competencies required to drive Health Information Technology (HIT) innovation and manage technological change (Abdelwahab et al., 2022). It is the strategic application of leadership to a digitally enabled environment. Effective digital leadership in healthcare requires a blend of technological understanding, strategic foresight, and exceptional interpersonal acumen (Abdelwahab et al., 2022). The essential traits for HIT success are as follows:

- **Strategic Vision:** Leaders must articulate an ambitious, bold, and clear future for the organization, demonstrating a deep understanding of how technology (AI, IoT, big data) can redefine patient care, operational efficiency, and cost management (Abdelwahab et al., 2022). This involves linking short-term technology investments to long-term strategic goals.
- **Interpersonal Skills (Collaboration and Emotional Intelligence):** Successful digital transformation is less about the technology and more about the people (Abdelwahab et al., 2022). Digital leaders must exhibit emotional intelligence to navigate staff anxieties, foster collaboration across traditional departmental silos (e.g., IT, Clinical, Finance), and build consensus for major systemic change.
- **Ability to Communicate Digital Vision:** Acting as a charismatic and effective communicator, the leader must translate complex technical jargon into understandable organizational value. They must continuously communicate the "why" behind the digital investments to all stakeholders, from the board to the bedside staff, to maintain momentum and commitment (Abdelwahab et al., 2022).
- **Manage Change (Strategic Manager and Turnaround Leader):** This encompasses the skills of a strategic manager and a turnaround leader. It involves proactively formulating strategies, taking initiative to overcome setbacks, and fostering a culture of continuous learning and experimentation that accepts digital failures as stepping stones to success (Abdelwahab et al., 2022).

2.4 Empirical Evidence of Leadership Impact on Digital Adoption

Empirical evidence consistently shows that leadership plays a decisive role in shaping digital adoption and Health IT implementation within healthcare organisations. Transformational and participative leadership styles have been linked to increased readiness for change, improved staff engagement, and greater acceptance of digital tools, primarily because effective leaders

help staff make sense of new workflows, reduce uncertainty, and build confidence in digital systems. Strong leadership also influences socio-technical factors such as communication quality, interprofessional collaboration, and alignment between technology and clinical practice, all of which are crucial for successful implementation. Research further demonstrates that when leadership support is weak or inconsistent, digital systems face higher risks of non-adoption, abandonment, or poor integration into routine practice. Collectively, empirical studies highlight that leadership is central to sustaining digital transformation, promoting innovation, and ensuring the long-term viability of Health IT initiatives (Greenhalgh et al., 2017; Cresswell & Sheikh, 2013).

2.5 Gaps and Rationale for Integrated Leadership Approach

Despite the empirical evidence linking specific leadership styles to successful Health Information Technology (HIT) implementation, a critical gap remains in the current academic literature regarding the efficacy of integrated, blended, or participative leadership models within complex digital health settings (Ingebrigtsen et al., 2014; Laukka et al., 2020). This gap necessitates a focused investigation into how multiple, complementary leadership behaviors can be synergistically applied to optimize outcomes during digital transformation.

2.5.1 Identified Research Gaps in Leadership Studies

While the literature provides strong support for the positive influence of transformational leadership on organizational performance (Suhara et al. 2024) and the necessity of digital leadership competencies (Abdelwahab et al., 2022), two significant gaps persist:

- **Focus on Singular Models:** Most studies tend to focus on a singular, isolated leadership construct (e.g., only transformational leadership, or general management support), often failing to capture the multidimensional reality of leadership during complex organizational change (Laukka et al., 2020). Few investigations explicitly examine the blended application of digital competencies alongside relational styles like participative or distributed leadership in healthcare (Kludacz-Alessandri et al., 2025).
- **Neglect of Integrated Relational Approaches:** Although the benefits of participative leadership on employee well-being and reduced resistance are acknowledged (Usman et al., 2021), the mechanisms by which participative and inclusive styles interact with the necessary digital strategic vision remain underdeveloped. The field lacks sufficient empirical data on how leaders effectively balance the need for visionary, top-down direction (Digital/Transformational) with the necessity for bottom-up engagement and empowerment (Participative/Democratic) during major system overhauls.

2.5.2 Rationale for a Blended Leadership Model

The inherent complexity of digital transformation in healthcare provides a strong theoretical and practical rationale for investigating a blended or integrated leadership model. This complexity is characterized by the convergence of three major factors (Abdelwahab et al., 2022):

- **Technical Factors:** Managing sophisticated, safety-critical systems (EHRs, AI diagnostics) requires technical proficiency, strategic foresight, and the rapid decision-making characteristic of Digital Leadership.
- **Organizational Factors:** Successful implementation necessitates profound organizational agility, workflow redesign, and overcoming resistance across diverse professional groups (nurses, physicians, administrators), demanding the systemic oversight of a Transformational Leader.
- **Human Factors (HFs):** Digital change impacts clinical autonomy, professional identity, and workload, making employee engagement, stress reduction, and well-being paramount (Usman et al., 2021). These outcomes are optimally addressed through Participative, inclusive, and democratic leadership approaches that foster trust and procedural justice.

Therefore, a single, isolated leadership style is unlikely to meet the diverse demands of simultaneous technical implementation and cultural overhaul (Kludacz-Alessandri et al., 2025). A blended leadership model (Figure 1), one that integrates the strategic vision and urgency of Digital Leadership with the inclusive, empowering mechanisms of Participative Leadership is theoretically posited to offer superior outcomes by addressing technical requirements, ensuring organizational agility, and safeguarding critical human factors concurrently. Investigating this integrated approach is thus necessary to move beyond simple correlation and establish a more context-specific, nuanced model for effective digital health leadership.

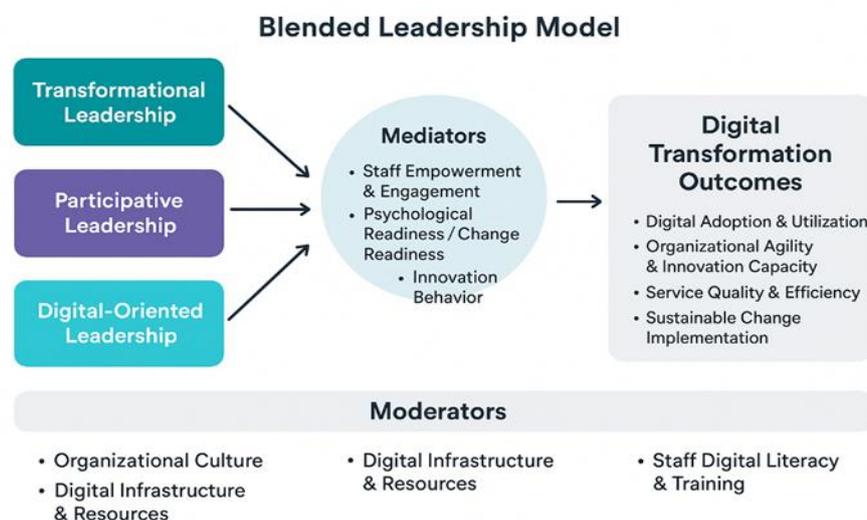


Figure 1: Blended Leadership Model

3.0 CONCEPTUAL FRAMEWORK

Digital transformation in healthcare and organisational settings increasingly depends on leadership behaviours that shape employees' readiness, perceptions of change, and willingness to adopt new technologies. The proposed conceptual framework in this review synthesises theoretical and empirical understandings on transformational leadership,

participative/inclusive leadership, and digital-oriented leadership to explain how these leadership styles jointly influence innovation readiness, empowerment, organisational culture, and ultimately the success of digital adoption. By integrating these leadership constructs, the model highlights how leadership practices directly and indirectly support a culture conducive to digital transformation, organisational agility, and innovative service delivery.

3.1 Transformational Leadership and Innovation Readiness

Transformational leadership plays a foundational role in preparing organisations for technological change. Through behaviours such as articulating a compelling digital vision, encouraging intellectual stimulation, modelling desired behaviours, and providing individualised support, transformational leaders enhance employees' readiness for innovation and their psychological capacity to engage with new digital systems. Transformational leaders tend to create a climate where experimentation is supported, mistakes are treated as learning opportunities, and staff feel intrinsically motivated to contribute to change. Such leaders enhance organisational adaptability, future orientation, and internal capability for innovation, which are crucial precursors for digital adoption (Bass & Riggio, 2006). A strong transformational presence also reduces uncertainty associated with digital transformation by fostering trust, promoting open communication, and aligning technological goals with shared organisational values. This improves employees' cognitive evaluation of the change and strengthens their readiness for digital innovation.

3.2 Participative and Inclusive Leadership as Drivers of Engagement

While transformational leadership sets the strategic tone for innovation, participative and inclusive leadership strengthen staff engagement and ownership during the implementation phase. Participative leaders involve employees in decision-making processes, seek diverse input, and encourage shared responsibility for outcomes. These behaviours enhance employees' sense of control, transparency, and connectedness to organisational goals, which, in turn, increase commitment to new technologies and reduce resistance (Somech, 2006).

Inclusive leadership further reinforces these effects by promoting psychological safety, encouraging open dialogue, and acknowledging contributions from staff at all levels. Such leadership is particularly important in healthcare settings, where hierarchical cultures can hinder open discussion about digital challenges. Inclusive leadership reduces ambiguity, supports learning behaviours, and fosters a climate of respect that enhances acceptance of digital tools (Nembhard & Edmondson, 2006). When staff perceive that their perspectives are valued, they demonstrate higher trust in leadership decisions, greater willingness to adopt digital innovations, and increased satisfaction with organisational changes.

3.3 Digital-Oriented Leadership as a Moderating Capability

Beyond traditional leadership styles, digital transformation requires leaders who possess digital-specific competencies. Digital-oriented leadership refers to leaders' ability to articulate a clear digital vision, understand technological trends, communicate the importance of digital change, and model digital-supportive behaviours. These leaders promote a forward-looking orientation and help staff interpret technological change in a meaningful way.

Digital-oriented leadership strengthens the effects of transformational and participative leadership by reducing ambiguity, offering clarity on digital strategies, and building employee confidence in their ability to cope with technological demands. Leaders with strong digital orientation enhance organisational learning, digital capability development, and information flow—thereby amplifying conditions required for successful digital innovation (Avolio et al., 2014; El Sawy et al., 2016). In the conceptual framework, digital-oriented leadership functions as a moderator, intensifying the positive influence of other leadership styles on innovation readiness, psychological empowerment, and digital acceptance. In cases where digital transformation is complex and resource-intensive, such leadership becomes even more critical for sustaining momentum and supporting staff through uncertainty.

3.4 Digital Adoption, Innovation Intensity, and Organisational Agility Outcomes

When transformational, participative, and digital-oriented leadership coexist, organisations are far better positioned to achieve effective digital adoption and cultivate a strong digital culture (Figure 2). The collective impact of these leadership behaviours enhances innovation readiness, accelerates decision-making, supports continuous learning, and fosters a climate that values experimentation.

Such an environment contributes to:

1. Higher levels of digital adoption due to reduced resistance and increased staff confidence.
2. Greater digital intensity, as staff actively use digital tools in routine operations.
3. Improved organisational agility, enabling quick adjustments to technological changes and emerging industry demands.
4. Innovation in care delivery, including new models of patient engagement, data-driven decision-making, and integrated digital workflows.
5. Higher staff satisfaction, resulting from supportive leadership, psychological empowerment, and meaningful involvement in change processes.

These outcomes align with research showing that leadership-driven digital capability is strongly linked to performance, innovation, and transformation effectiveness (Khin & Ho, 2019).

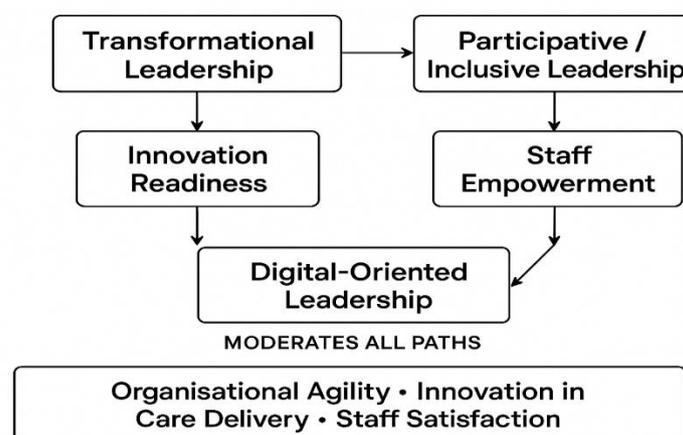


Figure 2: Leadership styles lead to digital oriented leadership

4.0 METHODOLOGY

The literature examining leadership and digital transformation in healthcare shows a consistent reliance on theoretically grounded, empirically validated methodological traditions. Most empirical studies on leadership in digital health settings employ quantitative, survey-based research designs conducted across hospitals, regional health systems, or clinical departments. Validated psychometric instruments are frequently used to capture transformational leadership behaviors, participative or inclusive leadership practices, and staff perceptions of digital readiness, including measures of empowerment, technology acceptance, and readiness for change (Boamah et al., 2018; Wong & Cummings, 2007). These instruments often focus on dimensions such as visionary leadership, inspirational motivation, intellectual stimulation, shared decision-making, and psychological safety.

Research examining digital transformation and digital maturity frequently assesses adoption and intensity through indicators such as Electronic Health Record (EHR) utilization, telehealth usage, integration of digital tools into clinical and administrative workflows, and perceived digital maturity (Kane et al., 2015; Boonstra & Broekhuis, 2010). In addition, several studies incorporate staff-level psychosocial constructs such as empowerment, psychological readiness, technology acceptance, and innovation behavior, which serve as critical mediators linking leadership behaviors to digital adoption outcomes (Alami et al., 2017; Gagnon et al., 2016). Organizational performance indicators—such as efficiency, care quality, coordination, and organizational agility—are also frequently examined to evaluate downstream impacts of digital transformation (Kruszyńska-Fischbach et al., 2022).

Although quantitative surveys dominate the field, a growing stream of research uses mixed-methods or qualitative approaches, including case studies, semi-structured interviews, document analysis, and observations. These designs provide rich contextual insight into how leadership behaviors influence digital workflows, staff experiences, and implementation climates within complex healthcare environments (Greenhalgh et al., 2017; Cresswell & Sheikh, 2013). Mixed-methods enhance the triangulation of data and strengthen theoretical validity.

The theoretical grounding across these studies is anchored in leadership theory (especially transformational leadership theory), inclusive/participative leadership theory, and technology adoption models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), alongside digital capability and digital transformation frameworks that link leadership with organizational agility and innovation (Vial, 2021; Avolio et al., 2014). By integrating these methodological trends and theoretical visions, this review constructs an evidence-based foundation for understanding how transformational, participative, and digital-oriented leadership interact to advance digital adoption, innovation, organizational agility, and staff empowerment in healthcare settings, providing the conceptual scaffolding for the integrated leadership model proposed in this manuscript.

5.0 DISCUSSION AND IMPLICATIONS

The synthesis of evidence suggests that a blended leadership approach—integrating transformational, participative, and digital-oriented leadership—offers significant potential for overcoming persistent barriers to digital transformation in healthcare settings. Resistance to change, limited digital confidence, cultural rigidity, and insufficient stakeholder buy-in remain well-documented obstacles to successful implementation of digital systems (Greenhalgh et al., 2017). Transformational leadership contributes by articulating a compelling digital vision, fostering psychological readiness, and motivating staff to engage in innovation-oriented behaviors (Bass & Riggio, 2006). Participative leadership complements these behaviors by increasing ownership, enhancing communication, and reducing perceptions of top-down imposition, which is particularly important in clinical environments where autonomy is deeply embedded in professional culture (Nembhard & Edmondson, 2006). Digital-oriented leadership ensures that the organization’s strategic direction aligns with technological capabilities, enabling leaders to guide teams through the complexities of digital workflows and data-driven care (Kane et al., 2015).

Practically, the integration of these leadership styles has meaningful implications for hospital administration and policy. Hospital executives may incorporate blended leadership competencies into recruitment, leadership development programs, and succession planning. Structured training on digital literacy, change communication, inclusive decision-making, and innovation facilitation could equip leaders to operate effectively in digitally intensive environments. Workforce development strategies may also benefit from embedding participatory mechanisms—such as co-design, interdisciplinary committees, and staff-led innovation groups—to strengthen engagement and reduce resistance during digital rollouts (Cresswell & Sheikh, 2013). Policymakers and health system regulators can additionally encourage blended leadership by providing frameworks that emphasize leadership adaptability, collaborative governance, and investment in digital capability building.

Theoretically, this review contributes to leadership scholarship in digital health by moving beyond binary distinctions such as transformational versus transactional leadership. Healthcare digital transformation requires a multivariate, context-sensitive leadership model that accounts for technological complexity, clinical autonomy, and organizational interdependence. Integrating digital leadership perspectives with foundational behavioral leadership theories expands understanding of how leaders influence technology acceptance, innovation behaviors, and organizational learning processes (Avolio et al., 2014). The proposed blended leadership model thus provides a conceptual foundation for future empirical exploration into how different leadership dimensions dynamically interact to shape digital transformation outcomes, and may support more nuanced models incorporating digital maturity, analytics capability, and implementation climate as boundary conditions.

6.0 CONCLUSION AND FUTURE RESEARCH

This review underscores the importance of an integrated leadership model that brings together transformational, participative, and digital-oriented leadership to support effective digital transformation in healthcare organisations. The collective evidence suggests that digital change is too complex to be guided by any single leadership style. Instead, an approach that simultaneously inspires innovation, promotes inclusive involvement, and aligns organisational

strategy with technological capability offers the strongest foundation for building digital readiness, enhancing staff engagement, and improving organisational agility.

While the conceptual value of blended leadership is clear, the current evidence base remains limited. Much of the existing literature relies on cross-sectional designs, single-country settings, or isolated organisational cases, which restricts the ability to generalise findings. There is also limited empirical research that directly tests integrated leadership models or explores how different leadership behaviours interact during digital transformation.

Future studies should prioritise longitudinal and multi-site research designs to capture how leadership influences digital adoption over time and across diverse healthcare environments. Cross-national comparisons would also help reveal how cultural, policy, and organisational factors shape leadership effectiveness in digital contexts. Mixed-method approaches—combining surveys, interviews, and observational data—could provide a more comprehensive understanding of staff experiences, digital maturity, and implementation dynamics. Developing robust measurement tools for assessing blended leadership constructs would further support empirical testing and strengthen theoretical refinement.

Overall, advancing research in these directions will deepen understanding of how integrated leadership can accelerate digital transformation and enhance the sustainability of innovation in healthcare.

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Conflict of Interest

The authors declare there is no conflict of interest.

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