

The Determinants of Digital Leadership: A Systematic Review

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Abstract: *Digital leadership has become a critical organizational capability as firms, public agencies, universities, and healthcare systems increasingly depend on digitally mediated work, data-intensive decision-making, platform infrastructures, and artificial intelligence. Yet its determinants remain conceptually fragmented because the literature often treats digital leadership as a broad mixture of managerial style, technological knowledge, organizational culture, and transformation readiness. This systematic review addresses that problem by synthesizing evidence on four focal determinants: technological competence, strategic vision, innovation orientation, and organizational agility. Guided by PRISMA 2020, the review applied a structured search, screening, and thematic synthesis protocol across scholarly search engines, publisher databases, DOI-linked records, and backward citation tracing for studies published between January 2020 and April 2026. Of 286 records initially identified, 40 peer-reviewed studies met the inclusion criteria for thematic synthesis. The evidence indicates that technological competence enables leaders to interpret digital tools, data, and AI-enabled systems; strategic vision converts technological awareness into coherent organizational direction; innovation orientation legitimizes experimentation; and organizational agility translates digital intent into adaptive execution. The synthesis further shows that these determinants do not operate independently. Digital leadership is strongest when leaders combine technological credibility with strategic direction, innovation-supportive routines, and agile organizational structures. The review contributes a focused framework that clarifies the antecedent structure of digital leadership and offers a precise basis for future empirical testing.*

Keywords: Digital leadership, technological competence, strategic vision, innovation orientation, organizational agility.

1. Introduction

Digital leadership has shifted from a niche idea in information systems research to a central concern in organizational studies because contemporary organizations increasingly operate through digitally mediated communication, analytics, platforms, automation, and artificial intelligence. This shift has changed what leaders must understand, how they coordinate work, and how they make strategic choices under technological uncertainty. Digital leadership is therefore not simply traditional leadership performed through digital tools. It involves the capacity to interpret technological change, mobilize people around digital priorities, govern technology-enabled risks, and align digital transformation with organizational purpose. Recent reviews show rapid growth in digital leadership scholarship after 2020, but they also identify persistent ambiguity regarding the construct and its relationship with adjacent concepts such as e-leadership, digital transformation leadership, technology leadership, and virtual leadership (López-Figueroa et al., 2025). This ambiguity matters because digital leadership is used in several ways. Some studies treat it as a personal competence of managers who understand digital tools, while others frame it as a strategic capability for implementing digital transformation. It is also described as a cultural mechanism that encourages innovation, a governance mechanism that shapes technology adoption, and a coordination mechanism that supports distributed work. As a result, the literature is expanding but remains difficult to cumulate

theoretically. Without sharper determinant categories, digital leadership risks becoming an umbrella label that explains everything and therefore explains little.

The literature nonetheless converges on one claim: successful digital transformation depends not only on technology acquisition but also on leadership capable of orchestrating technological change, mobilizing people, and aligning digital initiatives with long-term strategic objectives (Sacavém et al., 2025). This is important because organizations often invest in digital systems without developing the leadership capabilities needed to use them effectively. Technology adoption alone does not create digital leadership; leaders must understand technological possibilities, communicate digital priorities, support experimentation, and coordinate adaptive implementation. Earlier work on digitally mediated teams similarly showed that leaders in digital environments require different patterns of coordination, communication, trust-building, and sensemaking than leaders in conventional co-located settings (Larson & DeChurch, 2020). The COVID-19 period intensified this debate because remote work, online education, digital public services, telehealth, and virtual collaboration forced organizations to rely on digital coordination at unprecedented scale. Under these conditions, leadership effectiveness depended less on physical supervision and more on digital fluency, communication discipline, trust, responsiveness, and the ability to maintain social connection through technology. Research on e-leadership during and after the pandemic emphasized that leaders had to manage uncertainty, support distributed workers, and maintain organizational continuity through digital channels rather than face-to-face interaction alone (Contreras et al., 2020).

Studies from emerging economies and resource-constrained settings also show that digital leadership is shaped by infrastructure gaps, regulatory pressure, digital maturity, and uneven organizational readiness. Its determinants are therefore context-sensitive rather than universally identical across sectors and countries (Hai et al., 2021). A leader in a digitally mature technology firm faces different constraints from a leader in a public agency, school, hospital, or small enterprise with limited resources. Even so, the cross-sector literature points to recurring determinant patterns: technological competence, strategic vision, innovation orientation, and organizational agility. Recent sector-specific reviews confirm the need for tighter synthesis. Research on digital leadership in education, public administration, and broader organizational settings has grown rapidly, but much of it remains organized around sectoral silos rather than shared determinant structures (Juknevičienė et al., 2025). Education studies emphasize digital competence and technology-enabled pedagogy; public-sector studies emphasize digital government, coordination, and service modernization; management studies emphasize digital transformation, innovation, and dynamic capabilities. These streams are useful, but the field needs a cross-sector synthesis that identifies recurring determinant categories. This paper addresses that gap by systematically reviewing recent studies on digital leadership and synthesizing evidence around four determinants: technological competence, strategic vision, innovation orientation, and organizational agility. Adjacent concepts such as digital literacy, AI literacy, innovation climate, change orientation, and dynamic capabilities are included only when they clarify one of these determinants. This approach provides a cleaner structure in which digital leadership is treated as the dependent construct shaped by four determinant conditions.

2. Methodology

This study is a secondary-data systematic review based entirely on published academic literature. No primary data were collected, and the review did not use surveys, interviews, questionnaires, field observations, experiments, or organizational records. The purpose was to synthesize existing peer-reviewed evidence on the determinant conditions associated with digital leadership. This design was appropriate because the digital leadership literature has expanded rapidly since 2020 and now requires conceptual consolidation rather than another isolated empirical study. The review followed the reporting logic of PRISMA 2020 to make the search, screening, and synthesis process transparent and replicable (Page et al., 2021). It covered studies published from January 2020 to April 2026, a period in which post-pandemic scholarship accelerated conceptual and empirical work on digitally mediated leadership. The search strategy combined terms such as digital leadership, e-leadership,

digital leader, technological competence, digital competence, strategic vision, innovation orientation, innovation climate, organizational agility, digital transformation leadership, dynamic capabilities, data literacy, AI literacy, and related expressions.

Records were identified through scholarly search engines, publisher databases, DOI-linked records, and backward citation tracing. This multi-source approach reduced reliance on a single database vocabulary and captured studies using adjacent terminology. After duplicate removal, titles, abstracts, and full texts were screened against explicit inclusion criteria. Studies were included when they were peer-reviewed, written in English, published within the review window, and addressed digital leadership or e-leadership as a focal construct. Conceptual papers, empirical articles, systematic reviews, and bibliometric reviews were retained when they contributed directly to identifying determinant conditions. Editorials, opinion pieces, descriptive non-scholarly sources, and studies lacking a clear scholarly method were excluded. The screening process yielded 286 initial records, 52 duplicate removals, 234 title-and-abstract screenings, 66 full-text assessments, and 40 final studies for thematic synthesis. A structured extraction matrix captured study focus, sector, method, evidence related to technological competence, strategic vision, innovation orientation, organizational agility, and reported digital leadership outcomes. It also recorded adjacent variables, including innovation climate, change orientation, dynamic capabilities, and data or AI literacy. These variables were not treated as separate determinants unless they clarified one of the four focal categories.

Iterative thematic coding mapped the literature onto the four determinant categories. The coding process was interpretive because different studies used different terminology for similar explanatory mechanisms. For example, technological competence appeared under labels such as digital literacy, technology capability, data literacy, and AI-related leadership capability. Innovation orientation appeared through constructs such as innovation climate, exploratory innovation, employee creativity, and innovative work behavior. Organizational agility overlapped with strategic agility, flexibility, resilience, and dynamic capability. The synthesis therefore prioritized conceptual equivalence while preserving determinant specificity. The findings should be interpreted as a conceptual synthesis rather than a causal test. By narrowing the determinant structure, the review provides a more testable model than broad lists of digital leadership attributes. Figure 1 summarizes the identification and selection process.

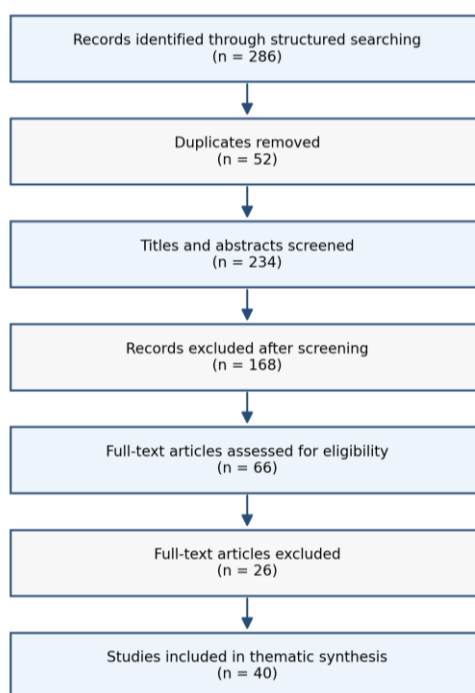


Figure 1 : PRISMA-aligned study identification and selection process

2.1 Determinants of Digital Leadership

Across the 40 included studies, the evidence was resynthesized around the four focal independent variables of this paper: technological competence, strategic vision, innovation orientation, and organizational agility. This narrower structure was necessary because the broader literature frequently uses adjacent terms such as digital literacy, technological capability, innovation climate, change orientation, resilience, and dynamic capabilities to discuss overlapping explanatory space. In this review, those adjacent concepts were retained only when they clarified one of the four focal determinants. Accordingly, digital leadership is treated as the dependent variable explained by the combined strength of these four determinants rather than by a diffuse list of loosely connected antecedents. The determinant structure is not meant to imply that digital leadership is reducible to four simple skills. Rather, the four determinants represent the strongest recurring mechanisms found across the reviewed studies. Technological competence explains whether leaders can understand and evaluate digital tools. Strategic vision explains whether they can translate that understanding into organizational direction. Innovation orientation explains whether they can encourage experimentation and opportunity recognition. Organizational agility explains whether the organization can execute and adapt digital initiatives quickly enough for leadership intent to matter. The four determinants therefore operate as a system rather than as isolated variables.

2.2 Technological Competence

Technological competence refers to the leader's ability to understand digital tools, platforms, data-intensive systems, and the operational implications of technological change. Digital leadership loses credibility when leaders cannot evaluate technologies well enough to guide implementation decisions or communicate meaningfully with technical specialists (Klus & Müller, 2021). This competence does not require leaders to become software engineers, data scientists, or system architects. Instead, leaders need functional digital fluency: they must understand what technologies can do, where risks lie, how implementation affects work processes, and how technological choices influence coordination and performance. Technological competence is also relational because digital leaders must bridge the interpretive gap between technical teams and nontechnical stakeholders. A leader who understands only strategic language but not technological constraints may approve unrealistic projects, underestimate risks, or fail to challenge vendor claims. Conversely, a leader who understands technical features but not organizational consequences may promote sophisticated tools that are poorly aligned with user needs. Studies on digital transformation competencies therefore emphasize the leader's ability to translate between technology, strategy, people, and process (Philip et al., 2023).

Recent work extends technological competence beyond general digital literacy to include data and AI literacy. As organizations rely more heavily on analytics and AI-enabled systems, digital leaders are expected to interpret data outputs, question algorithmic assumptions, evaluate AI-related opportunities, and exercise judgment over technology-enabled decisions (Hossain et al., 2025). Leaders need not build AI systems, but they must ask informed questions about data quality, bias, explainability, accountability, privacy, and organizational consequences. Without this competence, leaders may overtrust digital systems or resist them without a clear basis. Technological competence is therefore a foundational determinant because it gives leaders the interpretive and practical capacity to lead digital transformation rather than merely endorse it. Leaders lacking it may still authorize digital projects, but they are less able to evaluate feasibility, prioritize resources, anticipate risks, or explain digital change credibly. Technological competence is thus the cognitive entry point into digital leadership.

2.3 Strategic Vision

Strategic vision emerges as the second core determinant. In the reviewed studies, digital leadership is consistently associated with the ability to read technological change early, define a coherent digital direction, and link digital initiatives to wider organizational goals rather than allowing technology

adoption to proceed in a fragmented way (Sacavém et al., 2025). Strategic vision matters because digital transformation creates competing priorities, uncertain investment choices, and pressure to adopt technologies for symbolic rather than strategic reasons. Leaders with clear vision are better able to prioritize initiatives, sequence implementation, allocate resources, and explain why digital investments matter for long-term positioning. Strategic vision also prevents digital transformation from becoming a collection of disconnected projects. Many organizations introduce cloud systems, analytics platforms, automation tools, digital channels, or AI applications without clarifying how these initiatives serve a shared direction. Such fragmentation can generate duplication, employee fatigue, incompatible systems, and weak accountability. Digital leaders need strategic vision because it provides the interpretive frame through which technological possibilities are translated into organizational priorities. The literature on digital strategy similarly shows that leadership, agility, and strategy must be aligned if digital transformation is to create coherent organizational value (AlNuaimi et al., 2022).

The review also shows that strategic vision connects directly with technological competence. Competence allows leaders to understand the digital landscape, but vision determines how that understanding is converted into direction, commitment, and organizational alignment (Ongena et al., 2024). A technologically competent leader without vision may identify useful tools but fail to prioritize them, while a visionary leader without technological competence may lack the capacity to judge feasibility. The strongest digital leadership appears when technological understanding and strategic direction reinforce one another. Strategic vision should therefore be treated as a distinct determinant of digital leadership rather than as a generic leadership trait. Vision is not simply optimism about technology; it is the disciplined ability to connect digital possibilities with organizational purpose, stakeholder expectations, and implementation capacity.

2.4 Innovation Orientation

Innovation orientation captures the leader's and organization's willingness to experiment, support new ideas, and pursue digitally enabled improvement rather than routine preservation. The reviewed evidence shows that digital leadership is stronger where experimentation and opportunity recognition are treated as legitimate parts of organizational action (Wang et al., 2022). In practical terms, innovation orientation allows digital leaders to move beyond administrative technology adoption by supporting exploratory thinking, creative problem-solving, and new digital business or service possibilities. Digital leadership is weakened when innovation is rhetorically encouraged but procedurally punished. Employees are unlikely to experiment with digital tools if errors are treated as personal failures, approval processes are slow, or leaders demand innovation while preserving rigid routines. Studies linking digital leadership with innovative work behavior suggest that leadership influence is mediated by conditions that make idea generation, learning, and experimentation psychologically and operationally possible (Ahmed et al., 2024). Innovation orientation therefore concerns both leader behavior and organizational climate.

The literature also suggests that innovation orientation amplifies the other determinants. Strategic vision identifies where digital change should go, and technological competence clarifies what is possible, but innovation orientation determines whether leaders and organizations pursue unfamiliar pathways (Yang et al., 2025). This is especially important because digital transformation often requires experimentation before full certainty is available. Leaders must allow controlled exploration, rapid learning, and iterative adjustment rather than demand perfect predictability before action begins. Innovation orientation is therefore a proactive determinant of digital leadership. Without it, digital leadership tends to become reactive, compliance-driven, or limited to incremental adaptation. The determinant does not imply reckless experimentation; rather, it refers to disciplined exploration, learning from failure, and turning digital opportunities into improvements in products, services, processes, or stakeholder experience.

2.5 Organizational Agility

Organizational agility refers to the capacity to reconfigure structures, processes, resources, and routines in response to technological change while maintaining strategic coherence. In digital leadership, agility is critical because transformation is judged through execution, not intention. Leaders may possess technological competence and strategic vision, but digital initiatives can still fail when organizations are too siloed, slow, or rigid to coordinate cross-functional change and absorb new digital practices. Agile organizations are therefore better able to integrate technical, operational, and strategic knowledge, especially when supported by flexible digital infrastructures and adaptive innovation processes (Benitez et al., 2022). Organizational agility also overlaps with change orientation, resilience, and dynamic capabilities because it reflects the ability to sense change, seize opportunities, and reconfigure capabilities under digital pressure (Albannai et al., 2025). As the final determinant discussed in this section, organizational agility also provides the basis for comparing the overall pattern of evidence across the reviewed studies. Table 1 reinforces this argument by showing that organizational agility is one of the most frequent determinants, appearing in 33 of the 40 reviewed studies. This pattern indicates that digital leadership depends not only on direction and technological understanding but also on the organizational capacity to implement, adapt, and scale digital initiatives.

Table 1 : Binary synthesis matrix aligned with the focal and adjacent variables

No.	Study	TC	SV	IO	OA	DAIL	IC	CO	DC
1	Larson & DeChurch (2020)	✓	✓		✓				
2	Contreras et al. (2020)	✓	✓		✓			✓	
3	Hai et al. (2021)	✓	✓		✓			✓	
4	Klus & Müller (2021)	✓	✓		✓	✓			
5	Karakose et al. (2021)	✓	✓			✓			
6	Banks et al. (2022)	✓	✓		✓				
7	Jameson et al. (2022)	✓	✓						
8	Erhan et al. (2022)		✓	✓	✓		✓		
9	Wang et al. (2022)		✓	✓	✓		✓		
10	Karippur & Balaramachandran (2022)	✓	✓		✓				
11	Philip & Gavrilova Aguilar (2022)	✓	✓		✓	✓			
12	Khaw et al. (2022)	✓	✓	✓	✓				
13	Karakose et al. (2022)	✓	✓		✓				
14	AlNuaimi et al. (2022)		✓	✓	✓			✓	
15	Benítez et al. (2022)	✓			✓				✓
16	Sunu (2022)	✓	✓						
17	Ghamrawi & Tamim (2023)	✓	✓		✓				
18	Ahuja et al. (2023)	✓	✓		✓			✓	
19	Philip et al. (2023)	✓	✓		✓	✓			
20	Kristensen & Andersen (2023)		✓		✓				
21	Ongena et al. (2024)	✓	✓		✓	✓			
22	Shahzad (2024)	✓	✓		✓	✓			
23	Albannai et al. (2026)		✓	✓	✓		✓	✓	
24	Ahmed et al. (2024)		✓	✓	✓				
25	Sacavém et al. (2025)		✓		✓				
26	López-Figueroa et al. (2025)	✓	✓	✓	✓				

No.	Study	TC	SV	IO	OA	DAIL	IC	CO	DC
27	Tigre et al. (2025)	✓	✓		✓				
28	Liu et al. (2025)	✓	✓		✓				
29	Zhu et al. (2025)	✓	✓		✓				
30	Juknevičienė et al. (2025)		✓		✓				
31	Bauwens & Cortellazzo (2025)	✓	✓		✓				
32	Hossain et al. (2025)	✓	✓		✓	✓			✓
33	Palmucci et al. (2025)		✓		✓				
34	Alam et al. (2025)		✓		✓			✓	
35	Yang et al. (2025)		✓	✓			✓		
36	Wang et al.(2025)		✓						
37	Tarsuslu et al. (2025)	✓	✓			✓			
38	Ren et al. (2025)		✓		✓		✓		✓
39	Çetinkaya & Sürücü (2025)		✓	✓			✓		
40	Albannai et al. (2025)	✓	✓		✓				✓

TC = technological competence; **SV** = strategic vision; **IO** = innovation orientation; **OA** = organizational agility; **DAIL** = digital, data, and AI literacy-related evidence; **IC** = innovation climate and experimentation-related evidence; **CO** = change orientation; **DC** = dynamic capabilities.

Table 2 condenses the four focal determinants into a clearer conceptual structure. Technological competence provides the knowledge base for credible digital decision-making, strategic vision provides direction, innovation orientation supports experimentation and renewal, and organizational agility supplies the execution capacity required to implement, adapt, and scale digital initiatives. Read together, Tables 1 and 2 show that digital leadership should not be reduced to a single leadership trait, technical skill, or transformation slogan. Instead, it is best understood as a multidimensional capability shaped by the interaction between technological understanding, strategic direction, innovation-supportive behavior, and adaptive organizational execution.

Table 2 : Summary of focal determinant variables identified in the review

Variable	Illustrative synthesis
Technological competence	Working knowledge of digital tools, platforms, data, and AI implications needed for credible digital decision-making and implementation.
Strategic vision	Ability to interpret technological change, set a coherent digital direction, and align digital initiatives with long-term organizational goals.
Innovation orientation	Support for experimentation, creative problem-solving, and opportunity recognition that encourages novel digital initiatives and continuous improvement.
Organizational agility	Capacity to reconfigure processes, structures, and resources quickly so digital initiatives can be implemented, adapted, and scaled under changing conditions.

3. Discussion

The review shows that digital leadership is best explained through a connected four-variable configuration: technological competence, strategic vision, innovation orientation, and organizational agility. These determinants are analytically distinct but practically interdependent. Technological competence provides the knowledge required for credible digital decision-making, while strategic vision converts that knowledge into organizational direction. Innovation orientation enables experimentation and opportunity recognition, whereas organizational agility allows digital initiatives

to be implemented, adapted, and scaled. This relationship is important because none of the determinants is sufficient on its own. Technological competence without strategic vision may produce operational capability without direction; strategic vision without technological competence risks becoming rhetorical; innovation orientation without agility may generate ideas the organization cannot execute; and agility without vision may lead to reactive rather than purposeful transformation. This framing improves conceptual precision by treating digital leadership as an outcome of interacting determinant conditions rather than as a loose combination of skills, culture, and organizational context (Tigre et al., 2025). The framework also clarifies why digital leadership cannot be developed through short-term training alone. Training may improve digital literacy, but it cannot by itself create strategic direction, innovation-supportive routines, agile structures, or appropriate governance mechanisms. Organizations that treat digital leadership as only an individual skill problem may invest in workshops while leaving decision processes, incentives, resource allocation, and cross-functional coordination unchanged. Such approaches are unlikely to produce sustained digital leadership. The findings therefore suggest that digital leadership development requires both leader-level capability and organization-level conditions that allow digital initiatives to be interpreted, prioritized, tested, and executed.

The interdependence of the four determinants is especially visible in AI-related leadership. AI adoption requires technological competence because leaders must understand data quality, algorithmic limitations, automation risks, and ethical implications. It also requires strategic vision because AI initiatives should be linked to organizational objectives rather than adopted for symbolic or prestige reasons. Innovation orientation is needed because AI use cases often emerge through experimentation and iterative learning, while organizational agility is required because AI adoption can alter workflows, role expectations, governance responsibilities, and accountability structures. Recent research on AI-driven leader capabilities therefore supports the four-determinant framework by showing that digital leadership depends on the combined ability to understand, direct, experiment with, and operationalize emerging technologies (Hossain et al., 2025). The framework also helps explain sectoral variation in digital leadership. In education, digital leadership often focuses on technology-enabled teaching, institutional readiness, digital infrastructure, and teacher competence. In public administration, it is more closely connected to digital service delivery, data governance, citizen expectations, and interdepartmental coordination. In corporate settings, it is commonly linked to platform strategies, innovation performance, digital business models, and dynamic capabilities. These differences do not weaken the framework. Instead, they show that the relative importance of technological competence, strategic vision, innovation orientation, and organizational agility varies according to sectoral context, institutional constraints, regulatory pressure, and digital maturity.

The determinant framework bridges individual, strategic, cultural, and structural explanations of digital leadership. Technological competence is primarily cognitive and skill-based, strategic vision is directional, innovation orientation is cultural and behavioral, and organizational agility is structural and capability-based. This multilevel interpretation avoids reducing digital leadership to personal charisma, technical proficiency, or organizational infrastructure alone. An organization may possess many digital tools and still lack digital leadership if adoption is fragmented, poorly governed, or disconnected from strategy. Conversely, an organization at an earlier stage of digital maturity may demonstrate stronger digital leadership if its leaders understand digital priorities, communicate direction, support experimentation, and build adaptive implementation capacity. For practice, organizations should assess digital leadership across all four determinants rather than focusing narrowly on tool proficiency. Recruitment, promotion, leadership development, and governance systems should evaluate whether leaders can understand digital technologies, articulate strategic direction, support innovation, and operate within agile organizational settings. Thus, digital leadership is strongest when the four determinants operate together, while contextual factors such as sector, regulation, resources, and digital maturity function as boundary conditions rather than substitutes for the determinant framework.

3.1 Gap within the Literature

Despite the rapid growth of the field, five gaps remain significant. First, the four focal determinants are not operationalized consistently across studies. Technological competence is variously measured as digital literacy, technology capability, data-related fluency, or confidence with digital systems. Innovation orientation is treated as a leader attitude, organizational climate, or even an outcome of digital leadership rather than a determinant. These inconsistencies reduce comparability and weaken cumulative evidence (López-Figueroa et al., 2025). Second, sectoral coverage remains uneven. Education and service settings receive considerable attention, while manufacturing, logistics, healthcare, small and medium-sized enterprises, and public administration are less consistently examined. This matters because the four determinants may vary in importance across sectors. Technological competence may be more visible in highly digitized industries, whereas organizational agility may be more constrained in public agencies or regulated environments. Sector-comparative research is therefore needed to test whether the same determinant structure applies across institutional conditions (Liu et al., 2025). Third, cross-sectional self-report designs continue to dominate the empirical evidence base. These designs identify perceived relationships but are weak for establishing causality. Digital leadership may influence innovation and agility, but innovation-supportive organizations may also develop more digitally capable leaders. Similarly, strategic vision may shape digital transformation, but successful transformation may retrospectively strengthen perceptions of leader vision. Longitudinal, multilevel, mixed-method, and quasi-experimental designs are needed to clarify causal direction.

Interaction effects among the determinants are rarely modeled directly. Most studies examine one or two variables in isolation, although the evidence suggests that digital leadership depends on their combination rather than on any single determinant (Albannai et al., 2025). Future research should test whether technological competence has stronger effects when paired with strategic vision, whether innovation orientation mediates leadership effects on creative behavior, and whether organizational agility moderates transformation outcomes. Fifth, technological competence is evolving rapidly as AI-related capabilities become central to digital leadership. Existing measures often treat digital competence too generically and do not distinguish basic tool use, data literacy, AI literacy, ethical judgment, and governance capability. This is problematic because AI-enabled systems introduce distinct challenges involving bias, transparency, accountability, explainability, and human oversight. Recent studies on AI anxiety and attitudes in nursing show that leadership perceptions can shape responses to AI-enabled work environments (Tarsuslu et al., 2025). Future research should therefore use clearer construct definitions, sector-comparative designs, longitudinal evidence, interaction models, and more precise measures of AI-related leadership competence.

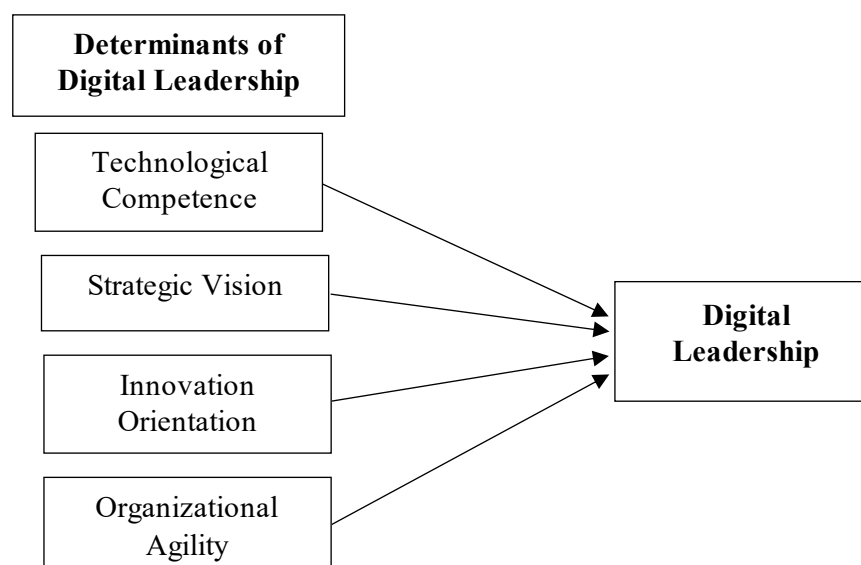


Figure 2 : Conceptual framework of the review

4. Conclusion

This systematic review shows that digital leadership is best understood as the outcome of four interacting determinants: technological competence, strategic vision, innovation orientation, and organizational agility. Technological competence provides the operational understanding needed to assess digital tools, data systems, and AI-enabled technologies. Strategic vision aligns digital efforts with long-term organizational direction. Innovation orientation sustains experimentation, creative problem-solving, and opportunity recognition. Organizational agility enables execution, coordination, and adjustment. Together, these variables offer a sharper explanation of digital leadership than broad lists of loosely connected antecedents. The contribution of this paper is not merely to summarize prior studies but to reorganize the literature into a clearer independent-dependent variable structure. This structure shows why digital leadership cannot be reduced to digital skills, charismatic communication, innovation culture, or agile processes alone. Each determinant addresses a different part of the digital leadership problem. Leaders must understand technology, define direction, legitimize experimentation, and work through adaptive organizational systems. Weakness in any one determinant limits the effectiveness of the others. For scholarship, the framework provides a stronger basis for theory-building and empirical testing. Researchers can use the four determinants to design precise measures, test interaction effects, compare sectors, and examine causal pathways. For practice, organizations will not strengthen digital leadership by investing only in technology or appointing leaders with generic transformation rhetoric. They must build all four determinants in combination. As AI, data governance, cybersecurity, and platform-based work become more embedded in organizational life, future research should examine how these determinants shape ethical technology use, stakeholder trust, employee adaptation, and organizational resilience under accelerated technological change.

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