



AI-Enabled Personalization and Customer Loyalty in Digital Platforms: The Mediating Roles of Experience and Trust

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Abstract

Artificial intelligence has become an important component of customer relationship management in digital platforms, where algorithmic recommendations, tailored offers, and automated service interactions shape customer perceptions and relationship outcomes. This study proposes an empirically testable framework for examining how AI-enabled personalization influences customer loyalty through customer experience and trust. The model treats AI personalization as the principal exogenous construct, customer experience and trust as mediating relational mechanisms, and customer loyalty as the final endogenous outcome. A quantitative cross-sectional survey design is proposed for users of e-commerce, food-delivery, mobility, travel, subscription, and other digitally mediated platform services. Data are collected through a structured questionnaire using multi-item Likert-scale measures adapted from established literature. Partial least squares structural equation modeling is employed to assess indicator reliability, internal consistency, convergent validity, discriminant validity, direct structural paths, mediation effects, explained variance, effect sizes, and predictive performance. The proposed model evaluates direct relationships from AI personalization to customer experience, trust, and loyalty, as well as indirect paths through customer experience, trust, and sequential experience–trust mediation. The theoretical framework suggests that personalization is more likely to generate sustainable loyalty when customers perceive the resulting interactions as relevant, convenient, and valuable and when the platform maintains confidence regarding reliability, integrity, and responsible use of personal data. Because no primary dataset is supplied, the study specifies expected directional relationships and a transparent PLS-SEM reporting framework rather than fabricated empirical coefficients. The proposed methodology provides a rigorous basis for evaluating the relational mechanisms through which AI personalization can contribute to long-term customer loyalty in digital platform environments.

Introduction

Artificial intelligence has moved from a specialized technical domain into the core of organizational decision making, work design, communication, and strategy. AI systems can search large information spaces, identify patterns, recommend actions, automate routines,

and support decisions at a speed and scale that challenge conventional managerial assumptions. Yet the organizational significance of AI does not arise from algorithms alone. It emerges from the interaction among technology, leadership, employee capabilities, routines, and institutional

choices. Jarrahi (2018) argues that the future of organizational decision making is better understood through human–AI symbiosis than through a simple replacement logic, while Duan, Edwards, and Dwivedi (2019) emphasize the opportunities and unresolved challenges associated with AI-supported managerial decision making. These insights shift the leadership question from whether AI will replace managers to how leadership must be redesigned when cognition and judgment are increasingly distributed across humans and intelligent systems.

Leadership theory has historically emphasized influence, vision, motivation, coordination, and adaptation. In digitally mediated environments, however, leadership also involves technology-mediated interaction, the design of digital work systems, and the strategic interpretation of technological change. Early e-leadership research described leadership as a social influence process embedded in advanced information technology and argued that technology both shapes and is shaped by leadership structures (Avolio, Kahai, & Dodge, 2001). Later work showed that the sources and transmission of leadership themselves can change when interaction becomes technologically mediated (Avolio, Sosik, Kahai, & Baker, 2014). A broad review by Cortellazzo, Bruni, and Zampieri (2019) consequently identified digitalization as a context that requires leaders to combine communication, technological awareness, adaptability, and relational capability.

The digital transformation literature reinforces this view by conceptualizing transformation as a change in organizational value creation, structures, processes, and capabilities rather than as the isolated implementation of technology. Bharadwaj et al. (2013) described digital business strategy as a fusion of IT and business strategy, while Vial (2019) synthesized digital transformation as a process in which digital technologies trigger disruptions that induce organizations to alter value creation paths and organizational arrangements. Warner and Wäger (2019) showed that successful transformation depends on dynamic capabilities that allow firms to sense digital opportunities, seize them, and continually transform organizational resources. These perspectives imply that leadership in the AI era should be analyzed as a capability for orchestrating strategic renewal.

Three constructs are especially important for this reconceptualization. The first is digital

competence: the knowledge, judgment, and behavioral ability needed to use digital technologies critically, collaboratively, creatively, and responsibly. van Laar et al. (2017) connect digital skills with information management, communication, collaboration, creativity, critical thinking, and problem solving, suggesting that digital competence is not merely technical proficiency. In an AI context, leaders require enough digital understanding to interrogate model outputs, recognize limitations, communicate uncertainty, and translate technological possibilities into organizational choices.

The second construct is employee adaptability. AI changes tasks, work roles, information flows, and required skills, thereby making adaptive performance a central workforce outcome. Pulakos et al. (2000) developed a taxonomy of adaptive performance that includes dealing with uncertainty, learning new tasks and technologies, solving problems creatively, and adapting interpersonal behavior. Griffin, Neal, and Parker (2007) further argued that performance under uncertainty requires adaptive and proactive forms of behavior. Park and Park (2019) reviewed the antecedents of employee adaptive performance and highlighted individual, job, group, and organizational factors. Leadership that introduces AI without cultivating adaptability may therefore generate resistance, skill erosion, or fragmented adoption rather than transformation.

The third construct is organizational transformation. In the present paper, transformation refers to coordinated changes in strategy, processes, roles, decision rights, capabilities, and value creation associated with AI-enabled digitalization. It is deliberately distinguished from digitization or automation. A firm may automate isolated tasks without changing how decisions are made, how employees learn, or how value is produced. By contrast, transformation involves the reconfiguration of organizational resources and routines. This view is consistent with dynamic capabilities theory, which explains how organizations renew competencies in changing environments (Teece, 2007), and with digital transformation research emphasizing continuous strategic renewal (Warner & Wäger, 2019).

Trust and decision architecture also become central because AI can influence decisions without making its reasoning fully transparent. Shrestha, Ben-Menahem, and von Krogh (2019) show that organizations can combine human and

AI decision making in different structures depending on factors such as interpretability, decision speed, and the size of the alternative set. Glikson and Woolley (2020) demonstrate that human trust in AI depends on characteristics such as reliability, transparency, tangibility, and the behavior of the system. Leaders therefore require not only digital competence but also governance competence: the ability to allocate decision rights, establish oversight, communicate system limitations, and prevent inappropriate reliance on AI.

This paper addresses a gap created by the fragmentation of these literatures. E-leadership studies explain technology-mediated influence; digital transformation research explains strategic and organizational renewal; adaptive performance research explains how employees respond to changing demands; and AI decision research explains human–algorithm complementarity. These streams rarely operate within one integrated leadership model. The present methodology paper therefore proposes a unified framework and a replicable empirical design for studying how digital competence and AI-era leadership influence organizational transformation through employee adaptability and human–AI collaboration. All theoretical sources used in constructing the framework are restricted to publications available by the end of 2020, consistent with the requested reference boundary.

Literature Review

1. *E-Leadership and the Digitalization of Leadership*

Avolio, Kahai, and Dodge (2001) provided one of the earliest systematic accounts of e-leadership, defining it as a social influence process mediated by advanced information technology. Their framework is important because it rejects technological determinism: leaders influence how technology is appropriated, while technological structures simultaneously constrain and enable leadership behavior. Avolio et al. (2014) extended this argument by showing that digital media can change both the source of leadership and the mechanisms through which leadership is transmitted. These foundations suggest that AI-era leadership cannot be conceptualized simply as traditional leadership plus a new tool. The medium itself alters visibility, timing, authority, information access, and the distribution of expertise.

Cortellazzo et al. (2019) reviewed leadership in a digitalized world and found recurring emphasis on communication, openness to change, digital

literacy, team empowerment, ethical awareness, and the ability to manage virtual and networked work. The review supports the idea that contemporary leadership is increasingly hybrid: leaders must integrate social and technological competencies. This is particularly relevant to AI because algorithmic systems do not merely mediate communication; they can generate recommendations, classifications, predictions, and automated actions that compete with or augment human judgment.

2. *Artificial Intelligence and Organizational Decision Making*

Jarrahi (2018) proposes human–AI symbiosis as a productive way to understand AI in organizational decision making. Humans contribute contextual knowledge, intuition, holistic judgment, and sensitivity to ambiguous situations, whereas AI contributes computational scale, consistency, and pattern recognition. Leadership therefore becomes an orchestration task: deciding where AI should augment, advise, or automate and where human accountability should remain dominant. Duan et al. (2019) similarly identify AI as a major opportunity for decision support while emphasizing challenges related to knowledge integration, explainability, data, organizational readiness, and managerial use.

Shrestha et al. (2019) deepen the issue by proposing alternative organizational decision-making structures that combine humans and AI. Their analysis indicates that the appropriate structure depends on decision characteristics including interpretability and search-space complexity. Glikson and Woolley (2020) add a behavioral foundation by demonstrating that trust in AI is neither automatic nor purely technical; it depends on how AI is represented, how reliably it behaves, and how users perceive its transparency and immediacy. Taken together, these studies imply that leadership in AI-enabled organizations must include governance of decision rights, calibration of trust, and the design of responsible human–AI collaboration.

3. *Digital Competence as a Leadership Resource*

Digital competence is treated in this paper as a multidimensional leadership resource rather than a narrow technical skill. van Laar et al. (2017) systematically connected digital skills with broader twenty-first-century competencies such as critical thinking, information management, communication, collaboration, creativity, and problem solving. For leaders, these capabilities enable informed technology

selection, credible communication with technical specialists, interpretation of data-intensive evidence, and assessment of the organizational consequences of digital systems. In AI settings, digital competence also supports meaningful questioning of algorithmic recommendations and more realistic judgments about what automated systems can and cannot do.

Digital competence further supports strategic integration. Bharadwaj et al. (2013) argued that digital technologies blur the traditional separation between IT strategy and business strategy. This means that senior leaders can no longer delegate digital reasoning exclusively to technology functions. Leadership teams require sufficient competence to incorporate digital affordances into business models, customer value propositions, operational processes, and competitive positioning. In the proposed framework, digital competence thus precedes effective AI-era leadership because it improves the quality of sensing, interpretation, communication, and governance.

4. *Employee Adaptability and Adaptive Performance*

Pulakos et al. (2000) established adaptive performance as a distinct domain of job performance and identified behaviors such as handling emergencies, dealing with uncertain situations, learning new tasks and technologies, creative problem solving, and interpersonal adaptation. The taxonomy is especially relevant to AI implementation because employees must often learn new interfaces, reinterpret task boundaries, collaborate with automated systems, and cope with uncertainty about changing roles. Griffin et al. (2007) further conceptualized performance in uncertain and interdependent contexts as involving proficiency, adaptivity, and proactivity at individual, team, and organizational levels.

Park and Park (2019) synthesized antecedents of adaptive performance and showed that

adaptability is shaped by more than personality. Learning conditions, job characteristics, social support, leadership, and organizational context can all facilitate or constrain adaptive behavior. This supports the proposed mediating role of employee adaptability. A leader may possess strong digital competence and a compelling AI strategy, but organizational transformation will remain limited if employees do not translate strategic direction into changed routines, learning behaviors, experimentation, and cross-functional coordination.

5. *Organizational Transformation and Dynamic Capabilities*

Digital transformation research provides the organizational-level outcome logic for the framework. Vial (2019) explains digital transformation as a process through which digital technologies generate disruptions that trigger strategic responses and changes to value creation and organizational structures. Warner and Wäger (2019) empirically develop a process model of dynamic capabilities for digital transformation, showing that firms repeatedly engage in digital sensing, digital seizing, and transforming. These capabilities are consistent with Teece's (2007) broader dynamic capabilities framework, which emphasizes the sensing of opportunities and threats, the seizing of opportunities, and the reconfiguration of assets.

From this perspective, leadership contributes to transformation by connecting environmental sensing with resource mobilization and organizational reconfiguration. AI may increase the speed and richness of sensing, but leadership remains responsible for interpreting strategic significance, allocating resources, redesigning roles, and sustaining learning. Consequently, organizational transformation is modeled as a capability-based outcome produced by a sequence linking digital competence, leadership behavior, human-AI collaboration, and employee adaptability.

Table 1. Synthesis of Key Literature Used to Build the Framework

Study	Core Lens	Key Contribution	Use in Proposed Model
Avolio et al. (2001)	E-leadership	Technology and leadership mutually shape social influence processes.	Leadership must be studied within technology-mediated structures.
Avolio et al. (2014)	E-leadership	Digital technologies alter leadership source and transmission.	AI changes how influence and authority are exercised.
Jarrahi (2018)	Human-AI symbiosis	Human judgment and AI analytics can be complementary.	Leadership should orchestrate augmentation rather than assume replacement.

Duan et al. (2019)	AI decision making	AI creates decision opportunities and managerial challenges.	Leaders need readiness, governance, and interpretation capabilities.
Shrestha et al. (2019)	Decision architecture	Human and AI decision roles should vary by task characteristics.	AI-era leadership includes allocation of decision rights.
Glikson & Woolley (2020)	Trust in AI	Reliability, transparency and representation shape trust.	Leaders must calibrate employee trust in AI.
van Laar et al. (2017)	Digital skills	Digital skills integrate information, communication, critical and creative capabilities.	Digital competence is a multidimensional leadership resource.
Pulakos et al. (2000)	Adaptive performance	Adaptability includes learning, uncertainty management and creative problem solving.	Employee adaptability is central to AI-enabled work change.
Park & Park (2019)	Adaptive performance antecedents	Adaptive performance is shaped by individual and contextual factors.	Leadership can create conditions that enable adaptability.
Vial (2019)	Digital transformation	Digital technologies trigger strategic and organizational changes.	Transformation is more than technology adoption.
Warner & Wäger (2019)	Dynamic capabilities	Digital sensing, seizing and transforming drive renewal.	Leadership acts as an orchestration mechanism for transformation.

Methodology

1. Research Design

The paper adopts an integrative conceptual methodology designed to construct a testable model from established but fragmented streams of research. The unit of analysis is the organization as experienced through leaders and employees engaged with digital and AI-enabled work systems. The methodology has two stages. Stage 1 is a structured conceptual synthesis of pre-2021 research. Stage 2 specifies an empirical validation design that can be implemented in a subsequent field study. This separation avoids presenting hypothetical relationships as already observed empirical facts while still producing a research-ready methodology.

2. Literature Boundary and Selection Logic

The literature boundary is January 2000 through December 2020, with limited inclusion of earlier foundational theory where essential to the conceptual logic. For the reference list supplied in this manuscript, all cited sources fall at or before 2020. Studies were selected when they contributed directly to at least one of five domains: (1) e-leadership or digitally mediated leadership, (2) AI-supported organizational

decision making, (3) digital competence or digital skills, (4) employee adaptability/adaptive performance, and (5) digital or organizational transformation. Priority was given to peer-reviewed journal articles with DOI identifiers and to highly cited conceptual, review, or empirical contributions that define constructs or mechanisms.

3. Construct Development

Construct development follows a concept-mapping procedure. First, recurring capabilities and mechanisms were extracted from the five literature domains. Second, overlapping ideas were consolidated into four principal constructs and one process mechanism. Third, directional relationships were defined using theoretical consistency rather than statistical results. Digital competence is modeled as an antecedent; AI-era leadership is the central orchestration construct; employee adaptability and human-AI collaboration are mechanisms; and organizational transformation is the outcome. The framework deliberately treats AI-era leadership as behavior and capability rather than as mere formal position or self-reported technology usage.

4. Proposed Conceptual Model

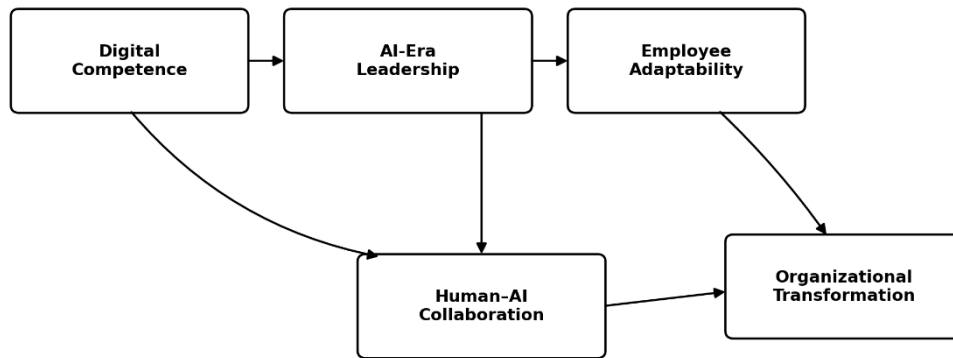


Figure 1. Proposed methodology framework for leadership in the AI era

Figure 1 expresses the core causal logic. Leaders with greater digital competence are expected to interpret AI opportunities and limitations more effectively. Effective AI-era leadership should then strengthen employee adaptability by creating learning conditions, psychological clarity, role support, and experimentation. It should also improve human-AI collaboration by assigning appropriate decision rights, calibrating trust, and maintaining human accountability. Adaptability and human-AI collaboration is expected to enable broader organizational transformation by converting technology investments into changed routines, structures, and strategic capabilities.

5. Proposed Hypotheses

- H1: Digital competence has a positive effect on AI-era leadership effectiveness.
- H2: AI-era leadership has a positive effect on employee adaptability.
- H3: AI-era leadership has a positive effect on the quality of human-AI collaboration.
- H4: Employee adaptability has a positive effect on organizational transformation.
- H5: Human-AI collaboration has a positive effect on organizational transformation.
- H6: Employee adaptability mediates the relationship between AI-era leadership and organizational transformation.
- H7: Human-AI collaboration mediates the relationship between AI-era leadership and organizational transformation.
- H8: Digital competence has an indirect positive effect on organizational transformation through AI-era leadership and the two mediating mechanisms.

6. Proposed Population, Sample, and Data Collection

For empirical validation, the target population should consist of employees and managers working in organizations that have implemented AI-enabled tools in decision support, analytics, customer service, operations, human resources, finance, marketing, or knowledge work. A multi-industry sample is preferable because the theoretical model concerns organizational mechanisms rather than a single technology. Respondents should have at least six months of exposure to an AI-enabled system used in their work context. A minimum sample of approximately 300 respondents is recommended for covariance-based structural equation modeling when the final measurement model contains multiple latent constructs and mediation paths. Stratified or purposive sampling can be used to secure representation across managerial levels, functions, and organizational sizes.

Data can be collected through a structured questionnaire using five- or seven-point Likert-type scales. To reduce common method bias, the survey should separate predictor and outcome blocks, assure anonymity, avoid ambiguous wording, and, where feasible, collect organizational transformation ratings from managers while collecting adaptability and leadership ratings from employees. A time-lagged design would further improve causal inference by measuring digital competence and leadership at Time 1, adaptability and human-AI collaboration at Time 2, and transformation outcomes at Time 3.

7. Measurement and Operationalization

Table 2. Construct operationalization for future empirical testing

Construct	Operational Definition	Indicative Dimensions	Suggested Source Base	Role in Model
Digital competence	Leader capability to understand, evaluate and apply digital technologies responsibly.	Information evaluation; digital communication; critical thinking; problem solving; technology judgment	van Laar et al. (2017)	Antecedent
AI-era leadership	Technology-aware social influence and orchestration that integrates AI with strategy, people and governance.	Digital vision; AI interpretation; empowerment; ethical oversight; change communication	Avolio et al. (2001, 2014); Cortellazzo et al. (2019)	Central predictor
Employee adaptability	Behavioral capacity to adjust to changing tasks, technologies and uncertainty.	Learning; uncertainty handling; creative problem solving; interpersonal adaptation	Pulakos et al. (2000); Griffin et al. (2007); Park & Park (2019)	Mediator
Human-AI collaboration	Quality of task and decision complementarity between employees and AI systems.	Decision-right fit; calibrated trust; interpretability; augmentation; accountability	Jarrahi (2018); Shrestha et al. (2019); Glikson & Woolley (2020)	Mediator
Organizational transformation	Coordinated reconfiguration of strategy, processes, structures and capabilities enabled by digital technologies.	Strategic renewal; process redesign; structural change; capability reconfiguration; value creation	Vial (2019); Warner & Wäger (2019)	Outcome

8. Data Analysis Plan

The empirical analysis should proceed in five steps. First, data screening should examine missing values, outliers, normality, response patterns, and non-response bias. Second, the measurement model should be assessed using confirmatory factor analysis. Internal consistency may be evaluated using Cronbach's alpha and composite reliability, while convergent validity may be assessed using factor loadings and average variance extracted. Discriminant validity should be examined before testing structural paths. Third, structural equation modeling should test H1-H5. Fourth, bootstrapped indirect effects should test the mediation hypotheses H6-H8. Fifth, robustness checks may compare managerial and non-managerial respondents, high- and low-AI-intensity contexts, and small versus large organizations.

The model should not infer transformation from AI adoption intensity alone. Organizational

transformation measures should capture actual changes in decision processes, coordination, roles, learning routines, customer or stakeholder value creation, and strategic resource allocation. Similarly, human-AI collaboration should measure appropriate complementarity rather than frequency of AI use. This distinction is essential because frequent use may coexist with poor judgment, blind trust, weak accountability, or superficial automation.

9. Ethical and Methodological Safeguards

Empirical implementation should include informed consent, protection of respondent identity, and explicit disclosure that participation is voluntary. Because AI use can involve surveillance, performance scoring, and sensitive organizational data, the survey should avoid collecting proprietary algorithmic information unless a secure protocol is available. Methodologically, the study should distinguish perceived AI capability from verified system

performance and should avoid language that assumes AI is inherently beneficial. The questionnaire should include neutral items that allow respondents to report ineffective, distrusted, or poorly governed AI implementations.

10. Results of the Conceptual Synthesis

The first result of the conceptual synthesis is that leadership in the AI era is best represented as an orchestration capability rather than a technology-adoption behavior. E-leadership research establishes that leadership is transformed by technology-mediated interaction (Avolio et al., 2001, 2014), while AI research shows that leaders must actively configure relationships between human and machine judgment (Jarrahi, 2018; Shrestha et al., 2019). Therefore, an AI-era leader is not defined by frequent use of AI but by the ability to align AI with strategy, roles, accountability, and human capability.

The second result is that digital competence operates as a foundational enabling resource. The digital skills framework of van Laar et al. (2017) shows that effective digital capability combines technical, cognitive, information, communication, and problem-solving skills. This supports the proposition that leaders require sufficient competence to evaluate AI outputs, recognize data and model limitations, communicate with technical specialists, and make responsible adoption decisions. Digital competence is thus positioned upstream of leadership effectiveness rather than as an organizational outcome.

The third result is the identification of employee adaptability as a core conversion mechanism.

Adaptive performance research demonstrates that employees must adjust to uncertainty, learn technologies, and modify behaviors when roles change (Pulakos et al., 2000; Griffin et al., 2007). Park and Park (2019) further show that context and support shape adaptive performance. In the proposed model, leadership affects transformation partly because it creates or fails to create conditions in which employees can learn and adapt.

The fourth result is the separation of human-AI collaboration from general adaptability. Employees may adapt to AI without collaborating with it effectively; for example, they may comply with automated recommendations without appropriate scrutiny. Conversely, well-designed collaboration requires calibrated trust, task complementarity, interpretability, and clear decision rights (Jarrahi, 2018; Shrestha et al., 2019; Glikson & Woolley, 2020). Treating collaboration as a distinct mediator allows future empirical studies to test whether leadership improves transformation through decision-process quality in addition to workforce adaptability.

The fifth result is a stricter definition of organizational transformation. Digital transformation literature indicates that technology becomes strategically significant when it changes value creation and organizational arrangements (Vial, 2019) and when firms develop sensing, seizing, and transforming capabilities (Warner & Wäger, 2019). The model therefore predicts stronger transformation only when leadership, adaptability, and human-AI collaboration translates AI into coordinated changes across processes and capabilities.

Table 3. Proposed Relationships and Expected Conceptual Results

Path	Expected Direction	Primary Rationale	Interpretation
Digital competence → AI-era leadership	Positive	Digital skills improve technology interpretation and strategic integration.	Competent leaders can make more informed AI-related choices.
AI-era leadership → Employee adaptability	Positive	Leadership shapes learning, role clarity and support under change.	Leadership helps employees adjust to AI-enabled work.
AI-era leadership → Human-AI collaboration	Positive	Leaders allocate decision rights and calibrate trust.	Leadership improves complementarity between people and AI.
Employee adaptability → Transformation	Positive	Adaptive behavior converts change initiatives into new routines.	Transformation depends on workforce behavioral change.
Human-AI collaboration → Transformation	Positive	Complementarity improves decision quality and responsible use.	AI creates value when integrated into accountable work systems.

Leadership Transformation mediators	→ via	Positive indirect	Adaptability and collaboration are conversion mechanisms.	Leadership affects transformation through people and decision architecture.
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Conclusion and Discussion

This methodology paper reconceptualizes leadership in the AI era by integrating five bodies of scholarship that were substantially developed by 2020: e-leadership, AI-supported decision making, digital competence, adaptive performance, and digital transformation. The central argument is that AI-era leadership is not a replacement for established leadership theory but a contextual extension that changes what leaders must understand, coordinate, and govern. Influence and vision remain important, yet they must now operate in environments where algorithms participate in information processing and decision making, where digital systems mediate relationships, and where employees repeatedly adapt to changing task boundaries. The proposed framework assigns digital competence a foundational role. Leaders do not need to become machine-learning engineers, but they do need enough digital judgment to ask meaningful questions about data, reliability, explainability, uncertainty, and organizational fit. This conclusion follows from the broader digital-skills literature (van Laar et al., 2017) and from AI decision research that highlights the limits as well as the strengths of algorithmic systems (Duan et al., 2019; Shrestha et al., 2019). Without this competence, leadership can become dependent on technical specialists or vendor narratives, weakening accountability for technology-mediated decisions. Employee adaptability is equally central because AI changes organizations through work practices rather than through procurement decisions. The adaptive performance literature demonstrates that effective functioning under change requires learning, creative problem solving, coping with uncertainty, and behavioral adjustment (Pulakos et al., 2000; Griffin et al., 2007). Park and Park (2019) show that such adaptability is context-dependent, making leadership and organizational support legitimate explanatory variables. The proposed model therefore treats adaptability as a mediator: leaders influence transformation partly by enabling employees to change how they work. Human-AI collaboration forms a second mediation pathway. Jarrahi (2018) emphasizes complementarity between human and machine capabilities, while Shrestha et al. (2019) show that the structure of human and AI decision making should vary with task properties. Glikson and Woolley (2020) further

demonstrate that trust must be calibrated rather than maximized. A useful leadership approach therefore avoids both algorithm aversion and automation bias. It establishes conditions in which employees know when to rely on AI, when to challenge it, who remains accountable, and how exceptions are handled. The organizational transformation outcome is deliberately demanding. Vial (2019) and Warner and Wäger (2019) demonstrate that transformation involves strategic responses and capability renewal, not simply the installation of digital tools. The implication for research is that studies should not use AI adoption as a substitute for transformation. Empirical validation should measure process redesign, changes in decision rights, learning routines, cross-functional coordination, resource reconfiguration, and value creation. This stronger criterion can help distinguish organizations that are genuinely transformed from those that merely automate existing routines. The framework also contributes methodologically. It provides a sequence from construct definition to measurement, hypotheses, sampling, and structural testing. Researchers can use the proposed model in cross-sectional studies, but time-lagged or multi-source designs are preferable because leadership, adaptability, and transformation unfold over time. Structural equation modeling is suitable for testing the direct and mediated relationships, while qualitative interviews can be added to explain how leaders negotiate specific human-AI decision boundaries. Future studies may also compare industries with different AI intensity, regulatory exposure, or task uncertainty. Several limitations should be recognized. First, the literature boundary at 2020 intentionally excludes the rapid post-2020 expansion of generative AI, large language models, and contemporary responsible-AI governance. The framework should therefore be regarded as a historically bounded conceptual base rather than a complete account of 2026 AI leadership. Second, the model emphasizes organizational mechanisms and may require adaptation for public-sector, educational, healthcare, or highly regulated contexts. Third, digital competence, adaptability, and transformation are broad constructs; careful scale development and discriminant-validity testing will be essential. In conclusion, leadership in the AI era can be reconceptualized as the capacity to translate

digital competence into responsible human-AI collaboration, employee adaptability, and strategic organizational renewal. AI changes the environment of leadership, but sustainable transformation remains a sociotechnical accomplishment. Organizations are therefore more likely to gain from AI when leaders combine technological understanding with human development, calibrated trust, decision governance, and dynamic reconfiguration of organizational capabilities. The model developed here provides a theoretically grounded and empirically testable methodology for examining that proposition using literature available up to 2020.

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