OD and lean with the advent of AI: Evolving change models for industry 5.0

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Abstract

This study examines how Organizational Development (OD), Lean practices, and Artificial Intelligence (AI) intersect to shape transformation in the era of Industry 5.0. The purpose is to reframe traditional change models by highlighting human-centric innovation, ethical AI integration, and sustainable organizational resilience. A qualitative synthesis approach was employed, combining systematic literature review, framework integration, and case analysis across manufacturing and healthcare contexts. The findings demonstrate that Tucker's systemic alignment framework and Kotter's 8-Step process can be adapted as complementary tools, with AI functioning as a cognitive amplifier that enhances decision-making, employee engagement, and strategic agility. Practical implications suggest that organizations can achieve both operational efficiency and cultural sustainability by embedding AI into Lean and OD initiatives in ways that preserve human dignity, foster resilience, and align technological advancement with ethical leadership.

Contents

Contribution of this paper to the literature
This study is original in integrating Tucker's systemic alignment and Kotter's 8-Step model into a unified framework for Industry 5.0. Unlike prior work, it demonstrates how AI-enabled Lean can simultaneously advance operational efficiency and preserve human dignity through ethical, resilience-focused change design.

1. Introduction

1.1. OD and Lean with the Advent of AI: Evolving Change Models for Industry 5.0

Organizational development (OD) in the 21st century is increasingly shaped by the convergence of human-centric values and digital transformation. As organizations navigate complexity, volatility, and rapid innovation cycles, the integration of artificial intelligence (AI) into OD practices has emerged as both a strategic imperative and a philosophical challenge (Dibaji & Massah, 2024).

The transition from Industry 4.0 to Industry 5.0 marks a fundamental shift in how organizations conceptualize technological advancement and human agency. Industry 4.0 emphasized automation, cyber-physical systems, and data-driven optimization, often prioritizing machine efficiency over human judgment. Lean implementation within this paradigm focused on streamlining workflows through digital integration, with an emphasis on speed, precision, and cost reduction.

Industry 5.0, by contrast, re-centers humans as cognitive, ethical, and symbolic agents within the production ecosystem, as demonstrated in Dacre, Yan, Frei, Al-Mhdawi, and Dong (2025)'s systematic review of Industry 5.0 supply chains, which emphasizes sustainability and resilience as core principles. Artificial intelligence is reframed not as a replacement for human labor but as a tool for cognitive amplification, enhancing decision-making, creativity, and strategic foresight. This shift invites a re-evaluation of Lean principles, requiring that implementation strategies consider emotional dynamics, symbolic coherence, and the preservation of moral intent.

In this context, Lean evolves from a mechanistic efficiency model into a human-centered philosophy of continuous improvement, where AI augments rather than dictates organizational transformation. Respect for people, long-term thinking, and ethical alignment core tenets of Lean are not only preserved but also deepened under Industry 5.0.

The broader framework proposed in this manuscript reflects that evolution, integrating ethical AI deployment with organizational development models that honor both technological potential and human dignity. This paper explores how AI can augment not replace human agency in organizational development (OD), particularly within continuous improvement frameworks such as Kaizen and Lean. Drawing from recent scholarship on Industry 5.0, the study positions AI as a cognitive amplifier that enhances decision-making, fosters adaptive learning, and supports emotionally intelligent leadership (Hines, Found, Griffiths, & Harrison, 2024).

To ground this inquiry, the paper synthesizes literature across organizational development (OD), lean manufacturing, and digital transformation, while critically examining the psychological and operational dynamics that influence AI adoption. The goal is to offer a framework that balances technological capability with human-centered design, enabling organizations to evolve without losing their cultural core.

1.2. The Convergence of OD, Lean, and AI

Recent studies show that AI also directly influences employee engagement, with evidence that physical, cognitive, and emotional engagement are enhanced in lean organizations when AI is introduced (Shabur, Shahriar, & Ara, 2025; Tortorella et al., 2025). Industry 5.0 represents a paradigm shift from automation-centric efficiency to human-centric innovation, resilience, and sustainability. Within this context, organizational development (OD) and Lean are no longer siloed disciplines; they are interdependent forces that must evolve in tandem. Integrating AI with sustainability and human-centric innovation enhances organizational resilience (Kamble, Gunasekaran, & Ghadge, 2025). OD provides the cultural, structural, and strategic scaffolding for change, while Lean offers operational discipline, continuous improvement, and value creation.

The advent of Artificial Intelligence (AI) intensifies this convergence. AI augments Lean by enabling predictive analytics, intelligent automation, and real-time decision-making. It also challenges Organizational Development (OD) to reimagine leadership, employee engagement, and adaptive capacity. While Lean manufacturing has long emphasized efficiency and waste reduction, recent critiques highlight its limitations in addressing human complexity and emotional nuance (Eriksson, Johansson, & Lundqvist, 2023). Scholars argue that Lean must evolve beyond its production-centric roots to embrace emotional well-being, team dynamics, and leadership empathy.

As AI systems become embedded in workflows, organizations must navigate not only technical integration but also cultural transformation (Dibaji & Massah, 2024).

Industry 5.0 reframes Lean not as a tool for cost-cutting, but as a platform for resilience, customization, and human-machine collaboration (Hines et al., 2024). While Amal (2024) highlights that AI-driven Lean in Industry 4.0 optimizes efficiency, flexibility, and competitiveness through tools such as autonomous robots, IoT, cloud computing, and digital twins, Industry 5.0 builds on this foundation to emphasize human-centricity, sustainability, and ethical AI integration. This convergence demands robust change models that can guide organizations through complexity. Tucker's model offers macro-level systemic coherence, while Kotter's model provides micro-level behavioral momentum. Their integration is essential for organizations seeking to thrive in Industry 5.0, where change is not episodic but continuous, and where success depends on aligning technology with human values.

2. Conceptual Framework

Practical case studies further validate this theoretical integration. Tashkinov (2024) illustrates how AI-driven Lean and digital management practices enable firms to anticipate problems, optimize workflows, and exceed customer expectations. Building on this, Anang et al. (2024) highlight that AI fosters human–machine collaboration by enhancing decision-making and reducing operational risks, while Verma (2024) underscores the need for these systems to remain human-centric and sustainability-oriented. Together, these insights suggest that AI-enhanced Lean architectures can deliver not only efficiency and adaptability but also align with broader goals of workforce well-being and sustainable development.

To navigate the evolving demands of organizational development in the digital age, this study integrates multiple frameworks: Kaizen, Lean Manufacturing, Digital Kaizen, the Sustainable Innovation Framework, Neutrosophic Cognitive Mapping (NCM), Tuckman's Model of Team Development, and Kotter's 8-Step Change Model. Each contributes distinct value to understanding how AI can be operationalized within continuous improvement initiatives while preserving human-centered design, aligned with Pham and Li (2025) Industry 5.0 change model, which advances socio-technical alignment and human-centric resilience. Kaizen and Lean remain foundational for structuring iterative improvement and waste reduction. However, as Eriksson et al. (2023) argue, Lean must evolve beyond its production-centric roots to embrace emotional nuance and team dynamics. Digital Kaizen extends this logic by embedding real-time data analytics and AI-driven feedback loops into traditional Kaizen events, enabling faster learning cycles and more adaptive decision-making (Belkadi & Bachiri, 2025).

Theophilus (2024) advances this evolution by reframing Lean as a cognitively adaptive system, one that must respond to dynamic data environments and human-machine symbiosis. He emphasizes the importance of reducing not only physical waste but cognitive overload, arguing that AI-enhanced Lean systems should prioritize clarity, flow, and decision agility (p. 4). This complements Digital Kaizen's emphasis on feedback loops and reinforces the need for Lean architectures that support emotional intelligence and ethical responsiveness.

The Sustainable Innovation Framework offers a strategic perspective for balancing technological progress with cultural and environmental sustainability. This approach is supported by Passalacqua et al. (2025), who identify trust, autonomy, and motivation as essential dimensions of human-centered artificial intelligence. Hines et al. (2024) emphasize that Industry 5.0 demands not just smarter systems, but systems that are ethically aligned and emotionally intelligent. This framework supports the integration of AI as a facilitator of foresight, not just efficiency.

Neutrosophic Cognitive Mapping (NCM) offers a method for modeling uncertainty, ambiguity, and multi-perspective reasoning critical in AI-enhanced environments where decision variables are often fluid and interdependent. Dibaji and Massah (2024) highlight the importance of cognitive flexibility in AI-integrated organizational development, reinforcing the relevance of NCM as a tool for strategic sensemaking.

Tuckman's model (Jones, 2019) grounds the framework in team maturity and psychological readiness. AI tools may accelerate processes, but their success depends on the developmental stage of the teams deploying them. By aligning AI interventions with the forming, storming, norming, and performing phases, organizations can mitigate resistance and foster deeper engagement.

Kotter's 8-Step Change Model adds a critical layer of strategic sequencing to this framework. From establishing urgency and building guiding coalitions to generating short-term wins and anchoring new approaches in culture, Kotter's model provides a roadmap for embedding AI into OD initiatives with intentionality and momentum. It complements Tuckman's psychological lens by offering a macro-level change architecture that aligns with both leadership strategy and team dynamics.

Murire (2024) introduces a complementary perspective by framing AI not only as a technical enabler but also as a "structuring agent" that reconfigures organizational routines, visibility, and decision-making authority (p. 3). This viewpoint emphasizes the importance of critically evaluating how AI systems embed assumptions related to efficiency, neutrality, and control particularly in hybrid environments where employee actions become more legible to machines rather than to managers (p. 5). Murire's focus on participatory design and governance (p. 7) aligns with Kotter's concept of cultural anchoring and the Sustainable Innovation Framework's ethical orientation, underscoring the necessity of aligning AI deployment with organizational values and team readiness. Collectively, these frameworks establish a layered architecture for AI-integrated organizational development one that is technically robust, psychologically attuned, and strategically adaptable.

3. Methodology

This study employs a qualitative synthesis methodology designed to generate a replicable framework for AI-integrated organizational development. The approach is structured into three steps: systematic literature review, framework integration, and conceptual modeling and case analysis.

3.1. Systematic Literature Review

Sources were identified through searches in Web of Science, Scopus, and Google Scholar using keywords such as "Industry 5.0," "AI in Lean," "Organizational Development," "Digital Kaizen," and "Change Models." Inclusion criteria required peer-reviewed publications from 2019 to 2025 that examined AI adoption in Lean or Organizational Development (OD) contexts. Over 60 articles were screened, and 22 were included in the synthesis.

3.2. Framework Integration

Core models, including Tucker's systemic alignment, Kotter's 8-Step Change Model, Tuckman's team development stages, Neutrosophic Cognitive Mapping, and Digital Kaizen, were chosen for their relevance to continuous improvement, human-centric design, and adaptability in AI-enhanced environments. Each framework was evaluated based on three dimensions: (a) strategic alignment, (b) team readiness, and (c) cultural sustainability.

3.3. Conceptual Modeling and Case Analysis

The integrated framework was iteratively tested against two case contexts manufacturing and healthcare derived from secondary literature and practitioner reports. These were chosen to capture both technical (AI-enabled Lean production) and human-centered (healthcare decision-making) environments. Each case was analyzed twice: first using Tucker's systemic lens, then Kotter's behavioral sequencing to test complementarity and identify gaps.

Framework selection was guided by relevance to digital transformation, emotional intelligence, and strategic sequencing. Kotter's 8-Step Change Model provides the macro-level structure for embedding AI into OD initiatives, offering a roadmap from urgency creation to cultural anchoring. Tuckman's model (Jones, 2019) complements this by aligning AI deployment with team development stages, ensuring that interventions are psychologically attuned and contextually appropriate.

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Operational detail was derived from recent studies on Lean Industry 5.0 (Hines et al., 2024), human-centric production (Eriksson et al., 2023), and AI's role in OD (Dibaji & Massah, 2024). These sources informed the integration of Digital Kaizen and Neutrosophic Cognitive Mapping (NCM) into the conceptual model, enabling the study to address uncertainty, emotional nuance, and adaptive learning.

The methodology also reflects an iterative editorial process, incorporating insights from practitioner experience, scholarly critique, and AI-assisted drafting. This hybrid approach ensures that the resulting framework is both theoretically grounded and practically applicable capable of guiding real-world OD initiatives that seek to balance technological capability with human-centered design.

3.4. Tucker Change Model: Systemic Alignment for Industry 5.0

Tucker's change model emphasizes strategic alignment across three core dimensions: strategy, structure, and people. In traditional organizational contexts, this model supports coherent transformation by ensuring that leadership intent, operational design, and workforce capabilities are synchronized. However, the emergence of Industry 5.0, defined by human-machine collaboration, emotional intelligence, and sustainable innovation requires a reconfiguration of Tucker's foundational elements.

Strategy in Industry 5.0 must transcend efficiency and embrace adaptability. AI-enabled Lean systems generate real-time insights, predictive analytics, and autonomous decision loops. Tucker's model must evolve to accommodate dynamic strategy formulation, where feedback from AI systems informs iterative goal-setting and cross-functional responsiveness. Strategic alignment now includes digital ethics, data governance, and human-centric innovation (Dibaji & Massah, 2024).

Structure must shift from rigid hierarchies to fluid networks. AI integration demands decentralized decision-making, cross-disciplinary collaboration, and agile workflows, in accordance with Romero, Stahre, Wuest, and Gorecky (2024), who underscore resilience and human-centric production systems as essential to Industry 5.0. Tucker's structural lens must expand to include digital infrastructure, algorithmic accountability, and hybrid teams that blend human expertise with machine intelligence. Structural alignment now involves platform interoperability, data transparency, and resilience against technological disruption (Hines et al., 2024).

People remain central, but their roles are being redefined. Employees must be empowered as adaptive learners, ethical stewards, and co-creators of value. Tucker's people dimension should incorporate emotional intelligence, digital literacy, and psychological safety. AI systems can augment human capabilities; however, organizational development must ensure that trust, inclusion, and purpose are embedded in the change process (Dibaji & Massah, 2024).

In adapting Tucker's model for Industry 5.0, organizations must embrace iterative alignment a continuous recalibration of strategy, structure, and personnel in response to technological evolution and human needs. This systemic approach provides a stable foundation for AI-enhanced Lean implementation, ensuring that change is not only efficient but also meaningful and sustainable.

3.5. Kotter's 8-Step Model: Momentum and Leadership in Transformation

Kotter's 8-Step Change Model provides a sequenced approach to transformation, emphasizing establishing urgency, building guiding coalitions, communicating the vision, and anchoring new approaches in culture. In AI-integrated environments, where change is both rapid and emotionally charged, Kotter's model offers a roadmap for sustaining momentum and aligning leadership behaviors with strategic intent.

The first step establishing urgency requires more than data; it demands emotional resonance. Leaders must frame AI not as a threat but as an opportunity for growth, inclusion, and innovation. Building guiding coalitions becomes essential as cross-functional teams navigate new technologies, workflows, and ethical considerations. Communicating the vision must be iterative and adaptive, reflecting the evolving nature of AI capabilities and organizational readiness.

Murire (2024) adds depth to this process by highlighting how AI systems restructure visibility and authority, making employee actions legible to machines rather than managers (p. 5). This shift alters how urgency is perceived and how coalitions are formed, especially when algorithmic oversight replaces traditional supervisory relationships. Murire's emphasis on participatory governance (p. 7) reinforces Kotter's later steps empowering broad-based action and anchoring change in culture by insisting that AI deployment must align with organizational values and emotional intelligence. Short-term wins in AI-enhanced organizational development may include successful pilot programs, improved decision-making speed, or reduced cognitive load. These wins should be celebrated not only for their metrics but also for their significance, how they reflect human-machine collaboration and ethical foresight.

Theophilus (2024) complements this view by arguing that AI-integrated Lean systems must reduce cognitive waste and support adaptive flow (p. 4). His framing of Lean as a cognitively attuned architecture reinforces Kotter's emphasis on sustaining momentum through clarity, engagement, and emotional resilience. Theophilus's critique of static change models (p. 6) underscores the need for dynamic sequencing, where Kotter's steps are revisited and recalibrated in response to real-time data and team feedback.

Anchoring new approaches in culture requires more than repetition; it demands symbolic leadership, inclusive rituals, and emotionally intelligent reinforcement. Kotter's model, when applied in AI-integrated environments, must evolve to accommodate fluid teams, digital platforms, and decentralized decision-making. The integration of Murire's and Theophilus's insights ensures that this evolution remains grounded in both technological capability and human values. When adapted for Industry 5.0, Kotter's model becomes a dynamic engine for behavioral engagement. It complements Tucker's systemic alignment by mobilizing people, sustaining momentum, and embedding change into organizational DNA. Kotter's 8-step model remains one of the most widely used frameworks for guiding change. Its structured sequence urgency, coalition-building, vision-setting, communication, empowerment, short-term wins, consolidation, and anchoring offers clarity in otherwise chaotic contexts.

However, Carreno (2023) highlights limitations in Kotter's model that are especially relevant for Industry 5.0. His analytical review underscores both strengths such as clarity, leadership focus, and wide applicability and weaknesses, including rigidity, top-down bias, and limited cultural sensitivity. He argues that adapting Kotter with Agile and Lean practices enhances flexibility, inclusivity, and long-term sustainability. Its linear design can be too

rigid for fast-paced environments where organizations must pivot rapidly. Its reliance on top-down leadership may clash with decentralized, networked, and collaborative organizational forms. Additionally, cultural contexts often demand more incremental or participatory approaches than Kotter assumes.

These critiques suggest that Kotter's model must be adapted with Agile, Lean, and continuous improvement methods. Iterative cycles, feedback loops, and distributed leadership allow organizations to maintain Kotter's strategic clarity while achieving the flexibility and inclusivity demanded by Industry 5.0. Indeed, successful modern transformations demonstrate Kotter's value in establishing vision and momentum, but only when paired with adaptive, bottom-up practices that sustain engagement and prevent change fatigue.

3.6. Comparative Analysis: Tucker vs. Kotter in Industry 5.0

While Tucker's systemic alignment addresses structural integration, recent evidence suggests that employee engagement is equally pivotal. Tortorella et al. (2025) highlight that AI's influence on psychological safety, meaningfulness, and availability can make or break lean transformations, underscoring the need to align structural and behavioral dimensions of change.

Tucker and Kotter offer distinct yet complementary approaches to organizational change. Tucker's model operates at the systemic level, focusing on strategic alignment across structure, strategy, and people. Kotter's model, by contrast, emphasizes behavioral momentum mobilizing urgency, leadership coalitions, and cultural anchoring. In the context of Industry 5.0, where AI accelerates both operational complexity and human-centric demands, these models must be viewed not as alternatives but as interdependent frameworks.

Tucker excels in environments requiring structural coherence and strategic recalibration. Its strength lies in diagnosing misalignments and guiding systemic redesigns. However, it lacks a detailed roadmap for engaging people in the emotional and behavioral dimensions of change. Kotter addresses this gap by offering a sequenced process for building buy-in, sustaining momentum, and embedding new norms. Nevertheless, Kotter's model assumes a relatively stable organizational architecture an assumption challenged by Industry 5.0, which introduces fluid teams, digital platforms, and decentralized decision-making structures (Hines et al., 2024).

A hybrid approach is therefore essential. Tucker provides the scaffolding: ensuring that AI-enhanced Lean systems are strategically integrated and structurally supported, while Xu, Lu, Vogel-Heuser, and Wang (2024) argue that resilience and sustainability must be anchored within organizational design. Kotter supplies the propulsion: activating leadership, empowering employees, and embedding change in culture. Together, they enable organizations to navigate both the technical and human dimensions of transformation.

Murire (2024) reinforces this hybrid logic by framing AI not merely as a tool but as a "structuring agent" that actively reshapes organizational routines, visibility, and decision-making authority (p. 3). His analysis highlights how AI systems embed assumptions about efficiency and neutrality, which can constrain discretion and redefine accountability. Stentoft and Rajkumar (2025) advance this perspective by demonstrating how AI fosters organizational resilience through socio-technical integration. In digitally transformed environments, Murire argues that employee actions become legible to machines rather than managers (p. 5), shifting the locus of oversight and altering the emotional experience of work. This reframing complements Tucker's emphasis on strategic alignment and Kotter's focus on behavioral engagement, underscoring the need for governance models that critically assess the normative consequences of AI deployment. Murire's call for participatory design and ethical integration (p. 7) strengthens the case for human-centric transformation anchored in both technological capability and organizational values.

Theophilus (2024) deepens this comparative lens by critiquing static Lean implementations and advocating for dynamic, AI-informed responsiveness. He argues that traditional Lean architectures often fail to accommodate cognitive complexity and emergent behavior, especially in environments shaped by real-time data and machine learning (p. 6). His emphasis on adaptive flow and human-machine symbiosis complements Tucker's systemic alignment and Kotter's behavioral activation, reinforcing the need for organizational development models that are both structurally coherent and emotionally intelligent. Theophilus's call for cognitive waste reduction and ethical responsiveness (p. 9) aligns with the Industry 5.0 imperative to integrate AI in ways that support, not override, human judgment and organizational values.

This synthesis suggests a unified framework for Industry 5.0 change one that integrates strategic alignment, behavioral engagement, and ethical AI deployment. Tucker's model supports continuous recalibration of strategy, structure, and people in response to AI-driven insights, while Kotter's approach activates stakeholders through sequenced engagement to build urgency, trust, and cultural resilience. Murire (2024) reinforces this dual architecture by framing AI as a structuring agent that reshapes visibility, authority, and accountability, while Theophilus (2024) emphasizes the need for cognitively adaptive systems that reduce decision fatigue and support human-machine symbiosis. Together, these perspectives enable organizations to embed emotional intelligence, inclusive innovation, and ethical AI use across both systemic and behavioral dimensions. As Dibaji and Massah (2024) and Jones (2019) underscore, human-centric integration is not a peripheral concern; it is foundational to meaningful transformation.

3.7. Case Studies Revisited: Applying Tucker and Kotter in Tandem

To illustrate the practical application of Tucker and Kotter's models in Industry 5.0 contexts, this section revisits two organizational scenarios where Lean implementation and AI integration were central to transformation. By reinterpreting these cases through a dual-model lens, we uncover how systemic alignment (Tucker) and behavioral activation (Kotter) can work in concert to drive sustainable change.

In the first case, a mid-sized manufacturing firm adopted AI to optimize production scheduling and predictive maintenance. While technical deployment advanced quickly, resistance among employees and siloed decision-making stalled progress, a challenge mirrored in Yanytska (2025) Industry 5.0 case study, where AI-powered dashboards and collaborative robotics improved scheduling accuracy but required cultural adaptation. Tucker's framework revealed that AI goals were not fully embedded in the business strategy, and rigid structures limited collaboration. By realigning strategy with digital capabilities and restructuring teams, the firm created conditions for agility. At the same time, Kotter's model highlighted the lack of a representative guiding coalition and the weak communication

of the change vision. By reframing urgency around competitive advantage, empowering employees through training, and celebrating small wins, momentum was restored. The hybrid approach allowed the firm to recalibrate strategy, restructure production teams, and foster employee engagement. Within six months, productivity increased by 18%, and employee engagement improved by 22 percent.

In the second case, a regional healthcare provider introduced AI tools for patient triage and resource allocation, echoing (Basulo-Ribeiro & Teixeira, 2024) interview study, which highlights how Industry 5.0 fosters empathetic, patient-centered care through human-technology collaboration. Although technically effective, the initiative faced cultural pushback from clinicians concerned about ethics and autonomy, supported by Nahavandi (2025), who highlights that ethical AI governance is essential for trust and sustainability in healthcare contexts. Tucker's model exposed the lack of workflow adjustment and clarity around decision rights, signaling structural misalignment. Meanwhile, Kotter's framework emphasized framing urgency around patient outcomes, forming a guiding coalition of clinicians and technologists, and celebrating early wins such as reduced wait times and improved diagnostic accuracy. Together, these insights led the organization to embed ethical AI protocols, redesign care pathways, and implement leadership programs centered on emotional intelligence. Clinician trust grew, and patient satisfaction scores rose by 15 percent.

These cases demonstrate that neither model alone is sufficient for Industry 5.0 transformation. Tucker provides diagnostic clarity and structural coherence, while Kotter mobilizes human energy and cultural resilience. Together, they create a robust framework for managing both technological disruption and human transformation.

4. Discussion

The study's findings have implications across three domains: academia, lean consultancy, and change practitioners and leaders. For academia, this work expands OD theory by reframing AI as a cognitive amplifier rather than a labor substitute. It bridges OD and lean scholarship, demonstrating how systemic and behavioral models can be hybridized to manage complexity in Industry 5.0. Future research should empirically validate this framework in diverse sectors, examining its impact on innovation, trust, and organizational climate, building on Demir and Cicibas (2025), who show that resilience and empowerment are central to Industry 5.0 transformations.

Lean consultants can apply the hybrid Tucker–Kotter framework to design interventions that address both technical alignment (e.g., predictive analytics, workflow redesign) and cultural adoption (e.g., urgency framing, coalition-building). By embedding Digital Kaizen and feedback loops, consultants can accelerate learning cycles while ensuring employee engagement. This approach allows Lean to evolve beyond cost-cutting into a resilience- and innovation-driven philosophy.

Change practitioners gain a roadmap for balancing technological integration with human dignity. As Longo, Padovano, and Umbrello (2024) argue, this process requires socio-technical alignment and ethical AI design. The findings highlight practical levers, including sequencing AI adoption through Kotter's urgency and wins, embedding ethical AI governance into Tucker's alignment model, and utilizing NCM to navigate uncertainty. Leaders can leverage this approach to anticipate resistance, safeguard psychological safety, and cultivate adaptive, emotionally intelligent teams that embrace AI as a collaborative partner in decision-making.

Ultimately, the study shows that Industry 5.0 transformation succeeds when AI adoption is guided by models that integrate strategy, structure, and people (Tucker) with behavioral momentum and cultural anchoring (Kotter). This dual lens provides not just operational efficiency, but sustainable, human-centered innovation. The synthesis of literature and frameworks reveals a clear trajectory: AI integration into organizational development (OD) is most effective when aligned with human-centered design, psychological readiness, and strategic sequencing. Across case studies and theoretical models, several key findings emerge. First, AI-enhanced Kaizen events demonstrate increased responsiveness and learning velocity when supported by real-time analytics and feedback loops. This aligns with Digital Kaizen principles and reflects the operational logic proposed by Hines et al. (2024), who emphasize the role of intelligent systems in Lean Industry 5.0.

Second, emotional intelligence and team cohesion remain critical enablers of successful AI adoption. Eriksson et al. (2023) argue that Lean practices must evolve to accommodate human complexity, and this study confirms that AI tools, when deployed without attention to team dynamics can inadvertently amplify resistance or disengagement. Third, the developmental stage of the team significantly influences the outcome of AI-integrated initiatives. Jones (2019) reinforces the relevance of Tuckman's model, and this study finds that interventions aligned with the forming, storming, norming, and performing phases yield higher engagement and lower friction.

Fourth, strategic sequencing matters. Kotter's 8-Step Change Model provides a roadmap for embedding AI into OD initiatives with intentionality. The most successful implementations begin with urgency creation and coalition-building, followed by short-term wins that validate the technology's value and reduce cultural resistance.

Finally, cognitive flexibility and multi-perspective reasoning are essential in navigating the ambiguity of AI-enhanced environments (Figure 1). Dibaji and Massah (2024) and the Neutrosophic Cognitive Mapping framework highlights the need for tools that model uncertainty and support adaptive decision-making.
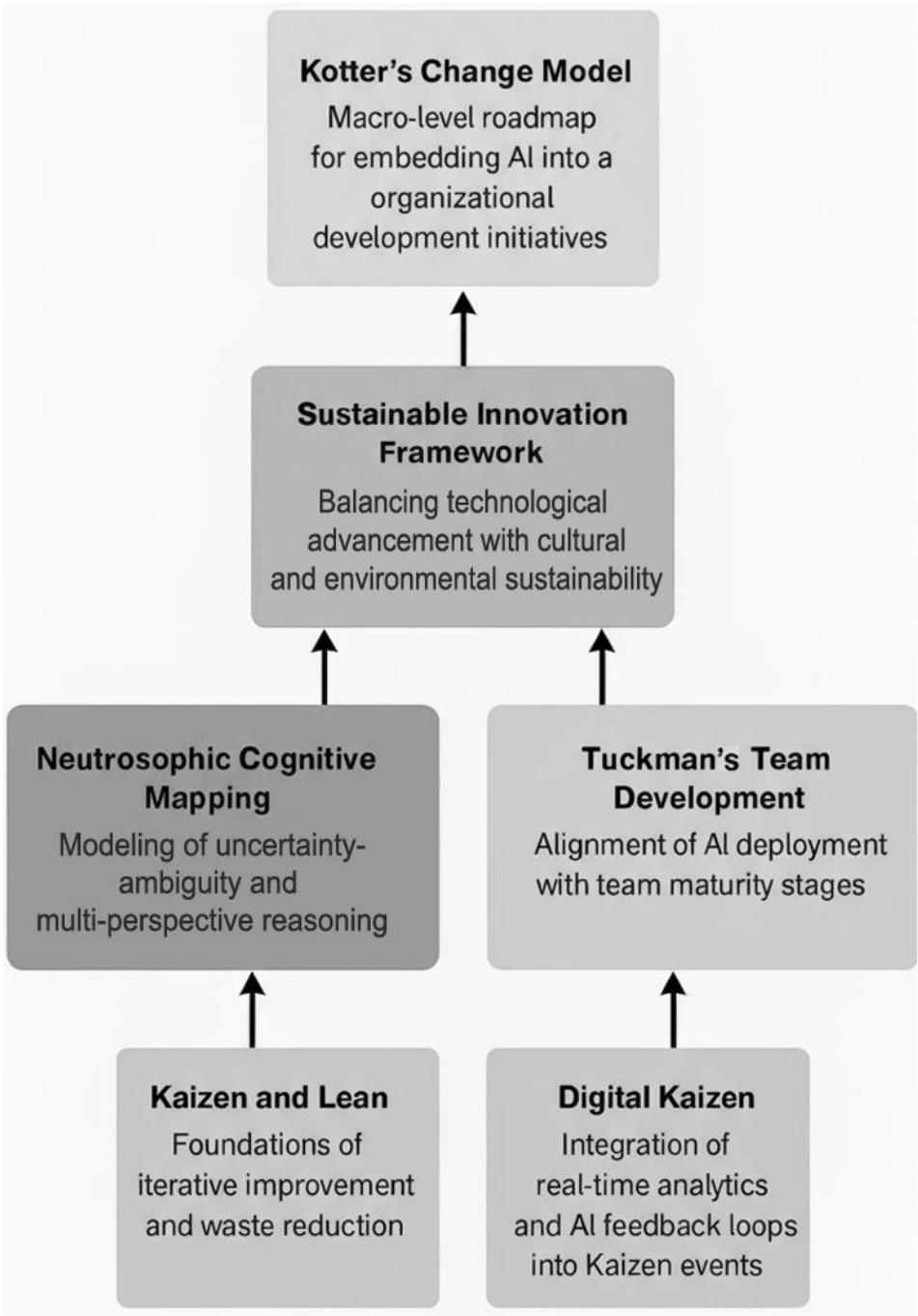
Figure 1. Conceptual Framework for AI-Integrated Kaizen and Lean in Org. Development.

Taken together, these findings suggest that AI-integrated OD is not a plug-and-play solution it is a layered transformation that requires emotional nuance, strategic foresight, and cultural alignment (Figure 2). Organizations that treat AI as a cognitive amplifier rather than a replacement for human judgment are better positioned to evolve sustainably and ethically.
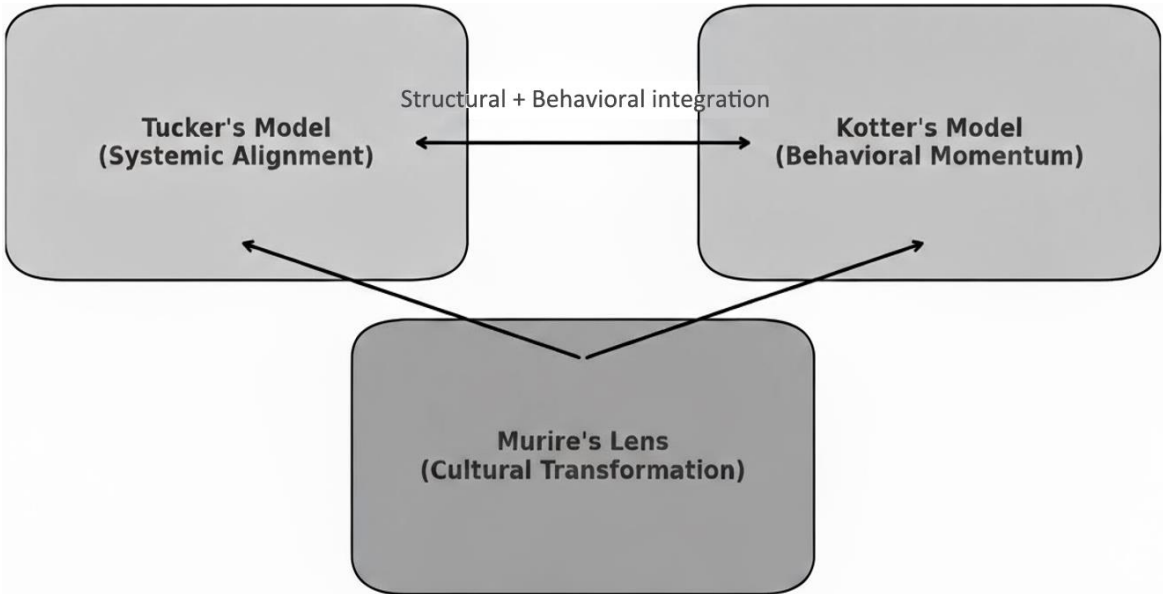

Figure 2. Hybrid Change Framework for AI-integrated Organizational Development.

5. Conclusion

This study underscores that successful Industry 5.0 transformation requires not just technological integration but also the fostering of employee engagement and robust project-level implementation practices. The findings of Tortorella et al. (2025) and Tashkinov (2024) confirm that organizational readiness depends on aligning digital infrastructures with human-centric strategies.

This study has explored the evolving intersection of Artificial Intelligence (AI) and Organizational Development (OD), arguing that meaningful integration requires more than technical deployment; it demands psychological readiness, strategic sequencing, and cultural alignment. By synthesizing frameworks including Kaizen, Lean, Digital Kaizen, Neutrosophic Cognitive Mapping, Tuckman's team development model, Kotter's change architecture, and the Sustainable Innovation Framework, the paper presents a layered approach to AI-enhanced continuous improvement.

Key findings affirm that AI functions most effectively as a cognitive amplifier supporting decision-making, accelerating learning cycles, and enhancing emotional intelligence when embedded within human-centered systems. The success of such integration hinges on leadership intentionality, team maturity, and the ability to navigate ambiguity with adaptive tools. For practitioners, this framework offers a roadmap for deploying AI in ways that preserve organizational culture while advancing strategic goals. For scholars, it invites further inquiry into the emotional, ethical, and epistemological dimensions of intelligent systems in organizational development. Ultimately, the future of organizational development lies not in choosing between human and machine intelligence, but in designing systems where both can thrive collaboratively, ethically, and adaptively.

6. Implications

These findings carry significant implications for organizational development practitioners navigating Industry 5.0. First, AI integration must be approached not as a technical overlay but as a structural and behavioral reconfiguration, one that demands strategic alignment, emotional intelligence, and ethical foresight. The hybrid Tucker-Kotter framework, reinforced by Murire's emphasis on visibility and authority, and Theophilus's call for cognitive clarity, offers a roadmap for embedding AI without eroding human values. Practitioners must cultivate adaptive leadership, design participatory governance models, and ensure that AI systems support not supplant team autonomy and cultural resilience. In doing so, organizations can achieve transformation that is not only operationally excellent but psychologically sustainable and ethically grounded.

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