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The Emergence of Autonomous Business Processes: Organizational Design Implications of Increasing Automation in Digital Firms

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Abstract

The rapid maturation of artificial intelligence and automation technologies is driving a fundamental shift in digital firms, where business processes evolve from human-managed or rule-based automated operations to fully autonomous systems capable of self-execution, adaptation, and decision-making. This theory-development article conceptualizes the emergence of autonomous business processes and delineates their transformative implications for organizational design. Integrating streams of research on robotic process automation, algorithmic management, digital transformation, and human–AI collaboration, we advance a novel theoretical framework that explains the mechanisms of transition and the resulting reconfiguration of structures, authority distribution, and governance. We argue that increasing automation sophistication diminishes traditional hierarchical controls, fosters hybrid human-machine ecosystems, and demands new accountability frameworks to sustain strategic oversight. Six propositions articulate the causal pathways linking AI-enabled execution, process autonomy, decision authority redistribution, and organizational redesign. A conceptual model visually maps the progression from human-controlled to autonomous layers, incorporating feedback loops for continuous learning. Contributions to digital business and management studies include a foundational theory for navigating automation-induced transformations, with implications for leaders seeking to balance machine autonomy with human strategic input while mitigating risks of opacity and power imbalances. This framework provides a platform for future inquiry into the performance and ethical outcomes of autonomous processes in digital organizations.

Keywords Algorithmic governance, Organizational design, Digital firms, Artificial intelligence, Autonomous business processes, Robotic process automation

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Introduction

Digital firms increasingly rely on advanced automation not merely as a tool for efficiency, but as a foundational mechanism for achieving operational scalability and sustained competitive agility [1]. Over the past decade, technologies such as robotic process automation (RPA), machine learning, and intelligent decision systems have evolved from supporting routine, rule-based activities to

enabling complex processes that can operate with minimal human intervention. These systems are no longer confined to task execution [2–4]; rather, they can sense environmental changes, interpret data in real time, and adapt their behavior accordingly. This technological progression signals a critical inflection point: the emergence of autonomous business processes, wherein artificial intelligence (AI) assumes not only executorial roles

but also governance functions through self-learning algorithms and embedded decision rules [4].

This shift from automation to autonomy fundamentally challenges established assumptions about organizational design. Classical theories of organizational structure and control—rooted in human cognition, bounded rationality, and hierarchical supervision—become increasingly strained as decision-making authority migrates toward algorithmic systems [5, 6]. In this new paradigm, algorithms act as quasi-organizational actors, exercising operational discretion and reshaping how coordination and control are achieved. Decision rights, traditionally held by managers, are increasingly delegated to autonomous systems [5], redistributing authority and altering accountability structures, power dynamics, and information flows within firms [6]. For instance, in platform-based digital organizations, algorithmic management systems now govern work allocation, performance monitoring, and incentive structures [5]. While these systems enhance efficiency and scalability [6], they also generate contested terrains of control characterized by opacity, rigidity, and tensions between human agency and machine-driven optimization.

Beyond internal governance, the rise of autonomous processes has far-reaching implications for firms' strategic architecture. Digital transformation research has extensively documented how automation reshapes business processes, capabilities, and value creation mechanisms [7–11]. However, the transition from automation to full process autonomy—and its direct implications for organizational redesign—remains insufficiently theorized [1]. Existing literature provides valuable insights into RPA implementation frameworks [2, 8, 12–15] and the early dynamics of algorithmic control [4]. Yet, it rarely integrates these perspectives into a unified account of how autonomous processes emerge and transform organizational systems [3]. This omission is particularly consequential given the governance challenges associated with autonomy. Unchecked autonomous systems may lead to reduced transparency, ethical concerns, and diminished human engagement [16–20], whereas well-designed governance structures can leverage autonomy to enhance adaptability, resilience, and innovation capacity [19, 21, 22].

The urgency of this issue is especially pronounced in digital firms, which are characterized by abundant data resources, modular architectures, and scalable AI infrastructures [4].

These firms are uniquely positioned to accelerate the transition toward autonomy [10], but they also face heightened risks associated with misaligned control systems and inadequate oversight mechanisms [11]. Leaders must therefore rethink organizational design to accommodate hybrid human–machine configurations [4], in which authority is dynamically distributed, and coordination is achieved through both algorithmic and human inputs [10, 11]. This requires not only technological integration but also a redefinition of roles, responsibilities, and governance principles [6]. Failure to adapt may undermine strategic coherence [17], erode competitive advantage [6], and exacerbate internal tensions between efficiency and legitimacy.

In response to these challenges, this article develops an original conceptual theory of autonomous business process emergence and its implications for organizational design [1]. We synthesize insights from automation, algorithmic management, and digital transformation literatures to construct a comprehensive framework that captures the transition from automation to autonomy [2]. Central to our contribution is a dynamic model that delineates the stages of process evolution, the layers of AI-enabled execution, the mechanisms of human oversight, and the feedback loops that enable continuous learning and adaptation [3]. The remainder of the paper is structured as follows: the next section reviews and integrates relevant theoretical foundations [4]; the subsequent section develops the core theory, propositions, and conceptual model [5]. Through this effort, we aim to equip scholars and practitioners with a robust lens for understanding and managing the profound organizational metamorphosis unfolding in digital firms [6].

Theoretical Foundations and Literature Synthesis

Research on automation in digital organizations provides the essential foundation for understanding the emergence of autonomous business processes. Early studies on robotic process automation emphasize its capacity to standardize repetitive, rule-based tasks [1] and generate value through efficiency gains, cost reduction, and error minimization [12, 13]. These contributions conceptualize automation primarily as a tool for operational improvement [1], focusing on substituting human labor in structured processes [8]. Complementary frameworks for RPA implementation highlight the importance of governance mechanisms, process selection criteria, and integration with

legacy systems to ensure successful deployment [15, 23]. While these studies establish the technical and managerial prerequisites for automation [2], they largely assume stable environments and predefined rules [3], thereby limiting their explanatory power in contexts characterized by uncertainty and rapid change [4].

The evolution toward intelligent automation extends these capabilities by incorporating cognitive elements such as machine learning, natural language processing, and predictive analytics [2, 3, 24, 25]. Intelligent systems can process unstructured data [2], learn from historical patterns [3], and support decision-making in semi-structured environments [24]. This progression marks a shift from deterministic execution to probabilistic reasoning [25], enabling systems to handle greater complexity and variability [2]. However, even within this stream, automation is often conceptualized as augmenting rather than replacing human decision-making [3], leaving the notion of full process autonomy underdeveloped [4].

A parallel body of literature examines the growing role of algorithms in executing and managing business processes. Algorithmic systems increasingly shape organizational control by influencing work allocation, performance evaluation, and decision-making structures [4-6, 20, 26]. In digital labor platforms and data-intensive operations, algorithmic management integrates coordination and control functions [4], often operating with limited transparency [5]. While such systems can enhance efficiency and scalability [6], they also introduce new challenges related to worker autonomy, fairness, and accountability [20]. Empirical studies highlight how opacity in algorithmic decision-making can undermine employee creativity [16], reduce trust [17], and negatively affect well-being [6], particularly when individuals lack visibility into how decisions are made. This literature underscores the transition toward data-driven, self-regulating processes [4] and reveals the foundational mechanisms that enable autonomy [5].

The digital transformation and organizational redesign literature situates these developments within broader firm-level changes. Research in this domain demonstrates how automation technologies reconfigure business processes [7], reshape capabilities [9], and enable new strategic archetypes [11]. Platform-based organizing logics further illustrate how firms undergo phase transitions toward fully digitized operations [10], characterized by modularity, scalability, and ecosystem integration [11]. As automation

intensifies, organizational structures tend to flatten [9], and decision-making becomes more decentralized [10], reflecting a shift away from hierarchical coordination toward more distributed and flexible forms [21, 22]. These changes necessitate new organizational capabilities, including data governance, algorithmic literacy, and dynamic coordination mechanisms [7].

Despite these advances, existing literature remains fragmented in its treatment of automation, algorithmic control, and organizational redesign [1]. Few studies explicitly connect the technical evolution of automation technologies with the organizational consequences of full process autonomy [2]. In particular, the mechanisms through which autonomous processes emerge [3], the conditions under which they are effective [4], and the governance structures required to manage them [5] remain insufficiently theorized [6]. Addressing this gap requires an integrative perspective that bridges micro-level process automation with macro-level organizational transformation [7].

Finally, human–AI collaboration and governance research addresses the hybrid nature of autonomous systems. Principles for intelligent organizations emphasize symbiotic human–machine roles [3, 19], while collaboration frameworks highlight shifts from direct control to oversight and exception handling [21, 22, 26, 27]. Governance of autonomous processes requires transparency, accountability frameworks, and ethical stewardship [4] to prevent self-fulfilling algorithmic biases [18, 20, 23-25, 28, 29].

Together, these streams reveal a progression: automation initiates efficiency [1], algorithmic execution introduces control [4], digital redesign reshapes structure [9], and human–AI governance ensures sustainability [3]. Yet no integrated theory explains how autonomy emerges or fully reconfigures design [2]. The following section addresses this by developing such a theory [5].

From Automation to Autonomy: Theorizing Organizational Design Evolution Through AI-Enabled Process Execution

Automation in digital firms: The foundation for process autonomy

Digital firms increasingly rely on robotic process automation (RPA) and intelligent automation tools to initiate the transition from manual process execution toward digitally mediated operations [1, 2, 8, 12]. In this initial stage, automation primarily targets repetitive, rule-based tasks such as data entry, transaction processing, and information routing [1]. By codifying procedural logic into software routines [2], organizations achieve consistent execution and scalability without proportional increases in human labor [8].

Beyond operational efficiency, this phase establishes the technological and architectural foundations necessary for higher levels of process intelligence [4]. Standardization of workflows, digitization of inputs, and integration of enterprise systems create structured environments in which automated agents can operate reliably [5]. As a result, automation functions not merely as a productivity tool [1] but as an infrastructural layer that prepares organizations for more advanced forms of algorithmic decision-making and process autonomy [2].

Autonomous process execution: AI as the core driver

As artificial intelligence capabilities mature, business processes increasingly incorporate adaptive and data-driven mechanisms that move beyond scripted automation [4, 13, 19, 20]. Machine learning models, predictive analytics, and cognitive automation enable processes to interpret data [4], evaluate alternatives [13], and modify operational decisions in response to changing conditions [19].

In contrast to deterministic rule-based systems, AI-enabled processes embed learning capabilities within the execution layer itself [20]. Decision rules can be refined continuously through feedback loops derived from operational outcomes [4], allowing systems to improve accuracy, efficiency, and responsiveness over time [5]. This evolution marks a conceptual shift from automation—where processes follow predefined logic [1]—to autonomy, where processes can dynamically adapt their behavior while still operating within organizational constraints [2].

Human–machine interaction in operational systems

The rise of AI-enabled execution fundamentally alters the nature of human–machine interaction within operational systems. Traditional automation environments are characterized by command-and-control relationships in which humans design, monitor, and intervene in processes that remain largely deterministic [3]. However, as autonomy increases, the interaction paradigm evolves toward symbiotic oversight [22, 27].

In this emerging configuration, machines assume responsibility for routine execution and real-time optimization [3], while human actors shift toward supervisory, interpretive, and exception-handling roles [19]. Humans provide contextual judgment, ethical evaluation, and strategic direction [22], particularly in situations involving ambiguity or high-stakes decision-making [27]. This division of labor creates a hybrid operational model in which algorithmic efficiency and human judgment complement one another rather than compete [3].

Organizational redesign under automation

The progression from automation to autonomy has significant implications for organizational design. As process execution becomes increasingly embedded in digital systems [9], traditional hierarchical structures—historically designed to coordinate human labor—become less central to operational control [11]. Instead, organizations experience structural flattening [9], redistribution of decision authority [10], and the emergence of hybrid coordination mechanisms [21].

Decision-making authority often migrates toward digitally mediated process layers where algorithms coordinate workflows across functional boundaries [11]. Managers transition from direct supervisors of routine work to architects of systems, policies, and oversight frameworks that guide autonomous operations [7]. Consequently, organizations evolve toward networked or platform-like structures characterized by decentralized coordination and digitally enabled collaboration [10].

Governance and accountability of autonomous processes

The increasing autonomy of operational systems introduces new governance and accountability challenges. Autonomous processes must operate within clearly defined ethical, legal, and organizational boundaries [4] while maintaining transparency and auditability [18]. To address these concerns, emerging governance frameworks integrate algorithmic monitoring, explainability mechanisms, and human oversight structures [20, 28].

Such frameworks typically combine automated monitoring systems with human review processes to ensure that algorithmic decisions remain aligned with organizational objectives and regulatory requirements [4]. Transparency tools—such as explainable AI models and process audit trails—enable stakeholders to understand how decisions are generated [18]. At the same time, escalation protocols allow human actors to intervene when anomalies or ethical concerns arise [20].

Taken together, these governance mechanisms create a hybrid accountability architecture in which algorithmic autonomy operates alongside human judgment [4]. This architecture not only safeguards operational integrity [5] but also enables organizations to harness the benefits of autonomous process execution while maintaining trust, legitimacy, and control [6].

Figure 1 illustrates the autonomous business process emergence framework, showing how business processes evolve from human-controlled execution to rule-based automation and ultimately to AI-enabled autonomous operation [1], while hybrid governance mechanisms ensure oversight, accountability, and adaptive organizational redesign through continuous feedback and learning [2].

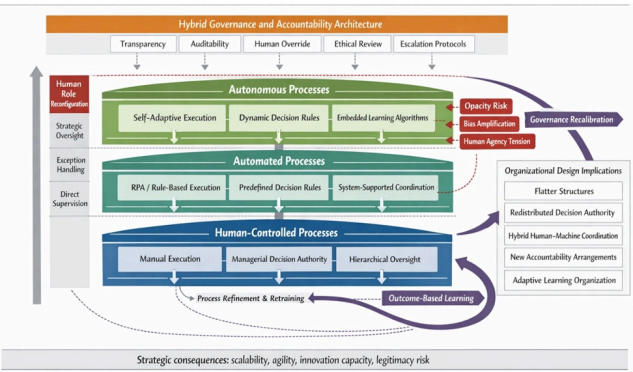


Figure 1. Conceptual model of the emergence of autonomous business processes and organizational design implications

Core Theoretical Propositions

Building on the integrated literature, we advance a set of propositions that collectively explain how increasing AI sophistication drives the emergence of autonomous business processes and, in turn, reshapes organizational design. These propositions articulate the causal mechanisms linking technological evolution to structural, governance, and behavioral transformations within digital firms.

Proposition 1: Increasing AI sophistication in digital firms enables the shift from rule-based automation to self-adaptive autonomous business processes, thereby reducing hierarchical control requirements

As AI systems evolve from deterministic, rule-based scripts to probabilistic, learning-based architectures, they progressively internalize decision-making logic that was historically embedded in managerial cognition. Machine learning models, reinforcement learning systems, and real-time analytics engines enable processes to dynamically adjust to environmental inputs without predefined instructions. This capability transforms automation into autonomy: processes no longer merely execute tasks but also interpret context, select actions, and refine their behavior over time. Consequently, the need for hierarchical oversight diminishes, as control is increasingly embedded within the process itself rather than imposed externally by managers. Hierarchies become less central to coordination, giving way to self-regulating execution systems [1, 8, 13, 19].

Proposition 2: The emergence of autonomous processes leads to flatter organizational structures by redistributing decision authority from human hierarchies to AI execution layers

As autonomous systems assume decision-making responsibilities, authority shifts away from formally designated managerial roles toward embedded algorithmic agents. This redistribution reduces the reliance on vertical

reporting structures and compresses layers of supervision. Organizational structures become flatter not simply due to efficiency pressures, but because decision rights are reallocated to technological systems that operate across traditional boundaries. Coordination, therefore, becomes algorithmically mediated—achieved through data flows, system interoperability, and real-time optimization—rather than positionally enforced through hierarchical command. This transition redefines the locus of control within organizations, moving it from roles and titles to processes and systems [9, 11, 21, 22].

Proposition 3: Human oversight in autonomous systems transitions from direct intervention to strategic governance and exception handling, fostering hybrid human–machine collaboration

With the rise of autonomous processes, human involvement does not disappear; rather, it is reconfigured. Instead of continuously directing operations, humans assume higher-order roles focused on system design, governance, and intervention in exceptional or ambiguous cases. Oversight becomes more selective and strategic, emphasizing boundary-setting, performance monitoring, and ethical evaluation. This shift enables a complementary relationship between humans and machines: AI systems provide speed, scale, and precision, while humans contribute judgment, contextual awareness, and moral reasoning. The resulting hybrid model preserves accountability and adaptability while leveraging the strengths of both actors [3, 19, 22, 27].

Proposition 4: Autonomous process governance necessitates new accountability frameworks that combine algorithmic transparency with human ethical judgment to mitigate opacity risks

As decision-making becomes embedded in opaque algorithmic systems, traditional accountability mechanisms—based on traceable human actions—become insufficient. Autonomous processes can generate outcomes that are

difficult to interpret, explain, or contest, particularly when driven by complex learning models. This creates risks of bias, unintended consequences, and erosion of trust. To address these challenges, organizations must develop hybrid accountability frameworks that integrate technical transparency (e.g., explainable AI, audit trails) with human oversight grounded in ethical reasoning and organizational values. Without such mechanisms, algorithmic outputs may become self-reinforcing and self-legitimizing, undermining both internal legitimacy and external stakeholder trust [4, 6, 18, 20].

Proposition 5: Feedback loops between autonomous process outcomes and AI learning systems accelerate organizational adaptation and continuous improvement in digital firms

A defining feature of autonomous processes is their capacity for continuous learning through feedback loops. Outcomes generated by process execution are captured, analyzed, and reintegrated into the system to refine future decision-making. This creates a self-reinforcing cycle in which performance improvements are dynamically embedded within operational routines. At the organizational level, these feedback mechanisms enable rapid adaptation to changing environments, as learning is distributed across processes rather than centralized in managerial decision-making. Over time, this accelerates capability development and enhances the firm's ability to innovate and respond to external pressures [11, 19, 22].

Proposition 6: The redistribution of decision authority toward autonomous systems generates power tensions that require hybrid control mechanisms blending technological and human elements

The delegation of authority to autonomous systems does not occur without resistance or consequence. As algorithms assume roles traditionally held by managers and employees, new power dynamics emerge, often characterized by tensions between technological control and human agency. These tensions may manifest as reduced employee autonomy, diminished managerial

discretion, or conflicts over accountability. To maintain organizational coherence and legitimacy, firms must implement hybrid control mechanisms that balance algorithmic efficiency with human oversight. Such mechanisms may include governance committees, escalation protocols, and participatory design processes that ensure alignment between technological systems and organizational values. By restoring equilibrium between human and machine authority, these hybrid arrangements enable firms to sustain agility while mitigating the risks of over-automation [5, 14, 20, 26].

Integrative Theoretical Logic

Taken together, these propositions articulate a coherent theoretical framework linking technological advancement to organizational transformation. Increasing AI sophistication (Proposition 1) initiates a shift toward autonomous processes, which in turn redistribute decision authority and flatten organizational structures (Proposition 2). This transformation redefines the role of human actors (Proposition 3) and necessitates new governance and accountability mechanisms (Proposition 4). Simultaneously, feedback-driven learning accelerates organizational adaptation (Proposition 5), while emerging power tensions require hybrid control solutions to sustain balance and legitimacy (Proposition 6).

Table 1 compares how execution logic, decision authority, coordination, accountability, and structural design shift as firms move from human-controlled to automated, and then to autonomous, processes.

Table 1. Organizational design shifts across the transition from human-controlled to automated and autonomous business processes

Organizational dimension	Human-controlled processes	Automated processes	Autonomous processes
Primary execution logic	Human judgment and manual coordination	Rule-based execution through codified scripts and RPA	Self-adaptive execution through driven sensing and inference adjustment

Location of decision authority	Managers and formal supervisors	Humans define rules; systems execute within fixed boundaries	Decision authority partially embedded in AI execution layers
Coordination mechanism	Hierarchical supervision and reporting lines	Standardized workflows and system-mediated task handoffs	Real-time flow coordination and algorithmic coordination
Role of human actors	Direct operators and decision-makers	Process designers, supervisors, and exception resolvers	Strategic governance, escalation, and boundary setting
Learning capacity	Human experiential learning is external to the process	Limited process improvement through reprogramming	Continuous embedded learning through outcome feedback loops
Structural implications	Vertical hierarchy and managerial layering	Efficiency-driven process streamlining	Flat structure and distributed control
Accountability basis	Traceable human responsibility	Shared responsibility between operators and system owners	Hybrid accountability combining audit trails with explained and human judgment
Main performance advantage	Contextual judgment and discretion	Efficiency, consistency, and scale	Adaptive speed, resilience, and continuous optimization
Main organizational risk	Slowness, inconsistency, and	Rigidity under changing conditions	Opacity, reinforcement, and potential displacement

	coordination bottlenecks		
Governance requirement	Supervisory control and role clarity	Process governance and implementation oversight	Hybrid control architecture with transparent oversight and escalation and effective review

Collectively, these causal pathways explain how the maturation of automation technologies culminates in a redesigned organizational form—one characterized by embedded intelligence, distributed authority, and dynamic human–machine collaboration.

Hybrid Control Architectures: Resolving Tensions in Human-AI Process Governance

The transition to autonomous business processes does not eliminate human involvement; instead, it demands entirely new control architectures that blend algorithmic precision with strategic human judgment [3,19, 22, 27]. In digital firms, where data flows continuously, and AI systems learn in real time, these hybrid architectures emerge as the only viable mechanism for sustaining both efficiency and accountability. Traditional command-and-control hierarchies collapse under the weight of machine execution speed, yet complete delegation to autonomous systems risks unmonitored drift and ethical blind spots [4, 6, 18, 20]. The core challenge lies in redesigning governance layers so that machines handle routine autonomy while humans retain veto power over high-stakes outcomes. Table 2 specifies the layered hybrid control architecture required to govern autonomous business processes without sacrificing strategic alignment, accountability, or human agency.

Table 2. Hybrid control architecture for autonomous business processes: governance layers, control objectives, and organizational tensions

Governance layer	Primary control objective	Core mechanism	Human role

Strategic boundary setting	Define permissible autonomy domain	Policy thresholds, decision rights, and escalation limits	Senior leaders define objectives, risk appetite, and non-negotiable constraints
Process monitoring	Maintain visibility into ongoing autonomous operations	Dashboards, anomaly detection, performance traceability	Managers review exceptions and monitor deviations
Explainability and audit layer	Make autonomous decisions interpretable and reviewable	Audit trails, model documentation, decision logs, and natural-language explanations	Compliance risk, or governance actors interpret and challenge outputs
Ethical review and override	Prevent harmful or misaligned autonomous outcomes	Human override triggers, fairness review, red-team checks	Humans intervene in high-stakes or ethically ambiguous cases
Learning recalibration	Ensure feedback-driven improvement remains aligned	Retraining protocols, parameter adjustment, periodic boundary redefinition	Humans evaluate whether learning trajectories remain desirable
Participatory control integration	Reduce resistance and rebalance authority	Cross-functional review, participatory design, and worker	Employees and managers contribute experiential knowledge

		feedback channels	and contest process effects
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The Redistribution of Decision Authority and Resulting Power Shifts

As Proposition 2 and Proposition 6 articulate, decision authority migrates downward and outward—from centralized managerial nodes to distributed AI execution layers [5, 9, 11, 14, 20-22, 26]. In practice, this redistribution manifests in three observable patterns. First, operational decisions (inventory replenishment, customer routing, compliance checks) become fully algorithmic [5], freeing middle management for exception handling only [9]. Second, tactical oversight shifts to algorithm-tuning teams, which calibrate learning parameters rather than issuing daily directives [11]. Third, strategic authority remains with humans but is now exercised through meta-rules that define the boundaries within which autonomous processes may evolve [4, 18, 28]. These shifts generate power tensions: employees may perceive algorithms as opaque supervisors [6, 16, 17], while executives fear loss of visibility into core operations [14]. Hybrid control architectures resolve these tensions by embedding transparent audit trails and human-in-the-loop escalation protocols directly into the AI execution stack [4], ensuring that redistributed authority does not equate to abdication of responsibility [5].

Mitigating Risks of Algorithmic Opacity and Bias in Autonomous Execution

Autonomous processes introduce a unique governance paradox: the very learning mechanisms that enable adaptation also create black-box opacity [4, 6, 18, 20]. Once an AI system internalizes thousands of iterations of a process, its decision rules become inscrutable even to its designers [4]. Proposition 4, therefore, becomes critical—new accountability frameworks must combine algorithmic transparency with human ethical judgment [6]. Digital firms are already experimenting with “explainability layers” that generate real-time natural-language summaries of autonomous decisions [18], allowing compliance officers to

intervene before biases compound [28]. For instance, when an autonomous pricing process begins to favor certain customer segments through self-reinforcing feedback [5], governance overlays can automatically flag deviations and route them to human review [6]. Without such mechanisms, firms risk regulatory sanctions, reputational damage, and internal resistance [16]. The literature on algorithmic management consistently warns that unchecked autonomy erodes trust [5, 6, 16, 26]; hybrid architectures counteract this by institutionalizing periodic “human override audits” that recalibrate systems without disrupting ongoing execution [4].

Strategic Human Oversight: Redefining Managerial Roles in Digital Firms

Managers in the autonomous era cease to be process owners and become ecosystem orchestrators [3, 19, 22, 26, 29]. Their new responsibilities include (1) setting ethical guardrails that AI cannot self-define [3], (2) designing feedback loops that channel process outcomes back into strategic learning [11, 19, 22], and (3) cultivating hybrid teams capable of interpreting machine-generated insights [19]. Proposition 3 explicitly frames this transition as moving from direct intervention to strategic governance [3]. In concrete terms, a marketing manager no longer approves every campaign variant [10]; instead, the manager defines success thresholds and risk tolerances [11], then lets autonomous systems generate, test, and scale variants within those bounds [17]. This role elevation elevates managerial work from tactical to meta-strategic [19], yet it also requires new competencies in AI literacy and ethical reasoning [10]—competencies that many legacy organizations currently lack [17].

Feedback Loops and Organizational Learning in Autonomous Systems

Proposition 5 highlights the self-reinforcing nature of autonomy: process outcomes continuously refine AI decision rules [11], creating an organizational learning engine far more rapid than traditional human-mediated cycles [19, 22]. These loops operate at three levels—operational (real-time parameter adjustment) [11], tactical (monthly model retraining) [19], and strategic (quarterly

boundary redefinition) [22]. The result is a digital firm that learns faster than its competitors [5], but only if governance ensures that learning remains aligned with broader goals [6]. Misaligned loops can lock organizations into suboptimal paths (for example, an autonomous supply chain system that optimizes for cost at the expense of sustainability) [4]. Hybrid control architectures, therefore, embed “alignment checkpoints” that allow human strategists to periodically stress-test autonomous models against long-term objectives [5, 6].

Envisioning the Autonomous Organization: Theoretical Contributions and Pathways for Future Inquiry

This theory of autonomous business process emergence advances digital business and management studies in three distinct ways. First, it moves beyond fragmented treatments of RPA or algorithmic management by providing an integrated stage model—from human-controlled to automated to fully autonomous—anchored in organizational design rather than technology alone. Second, the six propositions offer testable causal pathways that future empirical work can validate across industries, extending current frameworks in *MIS Quarterly*, *Organization Science*, and *Information & Management*. Third, by centering hybrid governance and feedback loops, the model addresses the ethical and power implications that prior digital transformation literature has largely left implicit.

In practice, executives can use the conceptual model as a diagnostic tool: map their current processes across the three layers, identify governance gaps, and plan a phased redistribution of authority. The framework also carries a cautionary note—autonomy without deliberate hybrid controls risks creating organizations that are efficient yet brittle, innovative yet ethically fragile. Future research should therefore examine boundary conditions: under what

firm size, data maturity, or regulatory environments do autonomous processes deliver net positive redesign outcomes? Longitudinal studies tracking authority redistribution over 3–5 years would illuminate whether hybrid architectures stabilize or merely delay deeper structural upheaval. Scholars might also explore cross-cultural variations—do high-power-distance cultures resist the flattening predicted in Proposition 2 more vigorously than low-power-distance ones?

Ultimately, the emergence of autonomous business processes signals not the end of organization design but its profound reinvention. Digital firms that master the hybrid control architectures outlined here will not merely automate operations; they will evolve into adaptive, learning entities where human creativity and machine precision coexist in dynamic equilibrium. The theory presented provides the conceptual scaffolding necessary to navigate this transformation responsibly and strategically.

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