E-ISSN: 3108-4192

APSSHS

Academic Publications of Social Sciences and Humanities Studies

2026, Volume 6, Issue 1, Page No: 29-37

Available online at: https://apsshs.com/

Journal of Applied Organizational Systems and Behavior

Nonhuman Actors, Authority, and Behavioral Influence in Organizational Life

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Abstract

Organizations increasingly allocate informational, evaluative, coordinative, and sometimes executive functions to algorithms, artificial intelligence systems, data objects, and robots. Yet organizational theory still often treats such technologies either as passive tools or as quasi-autonomous agents, obscuring how their influence is produced through relationships with human actors, organizational rules, and work arrangements. This original relational theory article develops a proposed Relational Theory of Nonhuman Agency that explains how nonhuman participation may become behaviorally consequential without assuming machine intentionality, personhood, or legitimate authority. The theory distinguishes functional participation from attributed authority, enacted dependence, trust calibration, and responsibility. It proposes that nonhuman actoric capacity becomes consequential only when organizational delegation and situated use convert technical capabilities into roles that shape attention, choice, evaluation, coordination, or action. The framework further proposes that attributed authority and enacted dependence are separable relational mechanisms: actors may defer to a system without depending on it, or depend on it without considering its outputs legitimate. These mechanisms are expected to interact with trust calibration, human discretion, task characteristics, opacity, expertise, and override conditions. The article identifies several forms of nonhuman organizational participation and develops testable relationships while preserving rival explanations grounded in conventional managerial authority, work design, incentives, and institutional context. The contribution is therefore conceptual rather than causal or validated: it specifies a relational architecture, explicit interpretation boundaries, and an agenda for future multilevel and longitudinal testing.

Keywords: Nonhuman actors, Extending organizational agency beyond humans, Theoretical foundations, Forms of nonhuman organizational participation, Relational theory of nonhuman agency, Boundary conditions and research implications

How to cite this article: Hao C, Fang L, Lin Z, Zhang W. Nonhuman Actors, Authority, and Behavioral Influence in Organizational Life. J Appl Organ Syst Behav. 2026;6(1):29-37. https://doi.org/10.51847/Fw0Mj79O6f

Received: 23 February 2026; **Revised:** 13 May 2026; **Accepted:** 14 May 2026

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Introduction

Organizational life is increasingly shaped by entities that classify, recommend, rank, schedule, monitor, predict, and sometimes execute action. A conventional tool-based framing is increasingly inadequate because emerging technologies do not enter organizations as fixed objects with stable effects; their meaning and consequences develop through evolving relations with users, routines, occupations, and institutional arrangements [1]. The theoretical problem is therefore not simply whether technologies affect work. It is how a nonhuman participant becomes organizationally consequential when its influence depends simultaneously on technical capability and on the social arrangements through which that capability is interpreted, authorized, resisted, or embedded.

Learning algorithms sharpen this problem because they can redistribute expertise, alter occupational boundaries, and reshape coordination and control as they are incorporated into organizing processes [2]. These developments make "agency" analytically useful but also risky. If agency is attributed too readily to technology, organizational delegation can be mistaken for machine authority and responsibility can appear to migrate from organizations to systems. If agency is denied categorically, however, theory misses how technological outputs can redirect attention, constrain options, stabilize evaluations, or reorganize interaction without issuing commands in a recognizably human form.

Recent organization theory offers a more productive starting point. Human and technological action can become conjoined in configurations where outcomes cannot be understood by examining either component in isolation [3]. Likewise, agentic information-system artifacts can enter delegation relationships in which tasks are allocated to, coordinated with, or returned from technological systems [4]. These perspectives suggest that the relevant theoretical object is not an independently acting machine but a relation in which organizational actors assign functions, interpret outputs, and structure consequences around nonhuman participation.

A relational account must also move beyond design and use as isolated explanatory categories. Intelligent technologies are embedded in power relations, professional arrangements, organizational ideologies, and institutional settings that condition what their capabilities mean in practice [5]. Accordingly, this article develops an original, non-empirical Relational Theory of Nonhuman Agency. Its central proposal is that nonhuman influence emerges through a sequence linking actoric capacity, organizational delegation, participation, attributed authority, enacted dependence, trust calibration, and behavioral influence. Each new construct and relationship is proposed rather than validated. The theory is intended to explain variation and identify testable boundaries, not to establish machine personhood, universal technological effects, or an organizational prescription.

Theoretical foundations

The first foundation is a systems view of human–machine organization. Learning machines can become components of hybrid systems that require organizational functions such as delegation, monitoring, cultivation, and reflection rather than merely one-time adoption decisions [6]. This supports a move from asking what a technology "does" in isolation to asking how an organization configures relations among technological outputs, human judgment, monitoring structures, and feedback. The proposed theory therefore treats nonhuman agency as relationally constituted within a work system, not as an intrinsic property carried intact across settings.

A second foundation concerns the relationship between automation and augmentation. These are often framed as opposite choices, but they can be interdependent because organizational systems may automate some activities while increasing the importance of human judgment, exception handling, interpretation, or complementary expertise elsewhere [7]. This matters theoretically because increasing technological participation need not imply declining human agency. A system may remove discretion at one point in a workflow while creating new interpretive or supervisory demands at another. Levels of analysis must therefore remain distinct: a technology can reduce an individual's local discretion while simultaneously increasing team-level coordination or organizational dependence on human oversight.

A third foundation concerns technological properties. Autonomy, learning, and inscrutability create distinctive management challenges because system behavior may change, operate without continuous intervention, or resist straightforward explanation [8]. These characteristics justify treating some technologies as more than inert instruments. They do not, however, establish legitimate authority. Technical autonomy concerns how a system performs; authority concerns whether organizational actors are expected to treat its outputs as decision-worthy, binding, or difficult to contest.

Finally, algorithmic control research demonstrates that technologies participate in control through mechanisms such as recommending or restricting, recording or rating, and replacing or rewarding [9]. Yet these mechanisms do not imply total technological domination. They remain embedded in managerial objectives, organizational incentives, worker responses, and institutional conditions. The theoretical foundation is consequently relational and multilevel: nonhuman participation can shape behavior, but its significance depends on how human actors and organizational structures convert technical outputs into consequential constraints, expectations, and opportunities.

Forms of nonhuman organizational participation

Nonhuman organizational participation can first be distinguished by function. Algorithmic systems may contribute to goal setting, monitoring, scheduling, performance management, compensation, and other activities traditionally associated with work design and management [10]. These functions matter because they locate technology inside recurring organizational processes rather than at the edge of them. The proposed theory uses "participation" in this functional sense: a nonhuman actor participates when its outputs enter a consequential organizational process, regardless of whether the system possesses intentionality or receives formal decision rights.

Participation is not limited to managerial control. Artificial intelligence can also be configured in teammate-like roles that contribute information, recommendations, or task inputs within collaborative processes [11]. This possibility expands the analytical range from vertical authority to horizontal coordination. It also requires caution: "teammate" is a functional description, not evidence that a machine holds the social standing, accountability, or interpretive capacities of a human team

member. A collaborative system may influence discussion while remaining dependent on human framing, data quality, and decisions about when its output should matter.
Material embodiment adds another form. Robots enter work through physical interaction, task interdependence, and employee–robot arrangements that differ from purely informational systems [12]. Embodiment may change visibility, immediacy, safety considerations, and the distribution of physical action, but it does not by itself confer authority. Across digital and material systems, the proposed taxonomy distinguishes representational, advisory, coordinative, evaluative, directive, executive, adaptive, and embodied participation. These categories describe organizational functions and may overlap within one system.
Table 1 organizes the evidence, constructs, relationships, uncertainties, and boundary conditions required for definitions, constructs, and conceptual boundaries for nonhuman actors, authority, and behavioral influence in organizational life.

Table 1. Modes of Nonhuman Participation and Their Organizational Meaning

Mode	Nonhuman contribution	Human counterpart	Relational question	Possible influence	Boundary
Representational	Converts activity into data representations	Interpretation	What becomes visible?	Redirects attention	Visibility is not accuracy
Advisory	Produces forecasts or recommendations	Judgment	How much decision weight is assigned?	Shapes option evaluation	Advice is not authority
Coordinative	Schedules, matches, or sequences work	Coordination	Who can alter the logic?	Structures timing and interaction	Coordination is not consent
Evaluative	Scores, ranks, or categorizes	Appraisal	What consequences attach to the score?	Alters anticipation and adjustment	Measurement is not objective performance
Directive	Specifies preferred actions or priorities	Supervision	Are outputs optional or binding?	Narrows perceived alternatives	Direction is not legitimate authority
Executive	Initiates or completes tasks	Execution	Where is override located?	Redistributes discretion	Autonomy is not independence
Embodied	Acts through physical interaction	Physical task performance	How does material interdependence change work?	Reconfigures task dependencies	Presence is not moral agency
Relational participation — proposed	Becomes consequential through rules, routines, and consequences	Organizational enactment	How is capacity converted into influence?	Links participation to authority and dependence	Participation alone is not human-like agency

Note. This original synthesis separates participation from authority, legitimacy, responsibility, and behavioral consequence.

The table separates what a system contributes from the authority or legitimacy later attributed to that contribution. This distinction prevents high functional participation from being interpreted automatically as high organizational agency or responsibility.

Authority and dependence

Authority becomes theoretically relevant when technological outputs acquire organizational weight. Decision structures involving artificial intelligence can distribute decision roles differently across humans and systems, including arrangements with greater or lesser delegation [13]. This establishes a basis for analyzing authority without presuming that the system possesses it intrinsically. The proposed construct of attributed authority refers to the extent to which organizational actors treat a nonhuman output as sufficiently decision-worthy, authoritative, or compliance-worthy to shape subsequent action. Attribution may arise from formal policy, perceived expertise, habitual use, organizational endorsement, or constrained alternatives, and these sources should not be collapsed.
Dependence is related but distinct. Field evidence from online work shows that algorithm-mediated evaluations can generate power asymmetries while workers simultaneously attempt to recover agency within the system [14]. Dependence therefore concerns the structure of consequential reliance rather than a favorable attitude toward technology. The proposed construct of enacted dependence captures the extent to which access to tasks, resources, visibility, continuation, or valued outcomes becomes contingent on nonhuman classifications or outputs. An actor may depend heavily on a system while distrusting it, or may trust a recommendation while remaining free to ignore it.
The relationship between autonomy and control further cautions against binary reasoning. Evidence from global gig work shows that algorithmic control can coexist with forms of flexibility and autonomy rather than eliminating autonomy uniformly [15]. Authority must therefore be analyzed at the level and decision point at which it is enacted. A worker may retain scheduling discretion while having little influence over rating systems, matching, or access to opportunities. Conversely, organizational dependence on technological infrastructure may coexist with substantial local human override.

The proposed theory consequently treats attributed authority and enacted dependence as analytically separable relational mechanisms. Algorithm-mediated authority should therefore not be inferred from technological capability alone, because its organizational force is conditioned by control arrangements, asymmetric dependencies, and the coexistence of constrained and retained human autonomy [9, 14, 15]. This claim remains relational rather than causal: conventional managerial authority, incentive design, employment arrangements, and institutional rules may explain part or all of an observed behavioral response. The theory therefore predicts neither inevitable compliance nor responsibility transfer. Organizations remain responsible for the delegation structures, override conditions, and consequences through which nonhuman participation acquires practical force.

Trust calibration

Trust becomes consequential when nonhuman participation begins to influence judgment, yet trust should not be equated with reliance. Evidence synthesized across human–AI studies shows that trust varies with features such as system performance, representation, transparency, and anthropomorphic cues, while the underlying measures and task settings remain heterogeneous [16]. In the proposed theory, trust is therefore an attitude toward the system or its outputs, whereas reliance is an observable allocation of decision weight. Calibration refers to the correspondence between that reliance and the capability warranted by a particular system, task, and context.

Experimental evidence further complicates the assumption that people inherently resist algorithmic judgment. Across several judgment tasks, participants sometimes preferred algorithmic advice to human advice, although appreciation weakened when the comparison involved their own judgment or expertise [17]. This implies that attributed authority can develop even without formal delegation. However, such deference should not be interpreted as generalized technological legitimacy: source comparison, expertise, and perceived competence remain relevant.

Reliance is also sensitive to task characteristics. Evidence on task-dependent algorithm aversion indicates that people respond differently when tasks are perceived as relatively objective or subjective [18]. The proposed theory consequently treats trust calibration as conditional rather than as a linear progression from distrust to trust. Reliance on nonhuman judgment is not uniformly increasing or decreasing; it varies with characteristics of the system, the decision maker, and the task against which algorithmic judgment is evaluated [16-18]. Miscalibration can therefore involve both excessive deference and unwarranted rejection.

Calibration also has an organizational dimension. A person may accurately judge a system's limitations yet still rely on it because procedures, resource constraints, or escalation costs make alternatives impractical. Conversely, a formally mandated system may receive little substantive decision weight when experienced users routinely override it. The proposed theory therefore separates confidence, behavioral reliance, attributed authority, and enacted dependence instead of treating them as interchangeable indicators. This distinction matters for measurement: self-reported trust should not be used as a proxy for actual delegation, compliance, or constraint.

Table 2 organizes the evidence, constructs, relationships, uncertainties, and boundary conditions required for proposed mechanisms, relationships, and organizational consequences in nonhuman actors, authority, and behavioral influence in organizational life.

Table 2. Relational Configurations of Authority, Dependence, Trust, and Behavioral Response

Configuration	Authority	Dependence	Trust	Behavioral orientation	Interpretive risk	Boundary
Consultative	Low	Low	Variable	Selective consideration	Frequent use mistaken for authority	Alternatives remain available
Expert-like	High	Low	Moderate/high	Voluntary deference	Expertise mistaken for formal power	Human expertise matters
Infrastructural	Low	High	Variable/low	Accommodation despite skepticism	Compliance read as endorsement	Exit and override options
Directive	High	Moderate	Variable	Routine compliance or escalation	Delegation treated as legitimacy	Organizational enforcement
Contested	Moderate	High	Low	Resistance and workarounds	Resistance read as nonuse	Consequence visibility
Calibrated	Capability-proportionate	Contestable	Task-matched	Conditional reliance	Calibration treated as permanent	Capability may drift
Miscalibrated	Excessive or insufficient	Any	Poorly matched	Overreliance or unnecessary rejection	Confidence equated with correctness	Review and feedback matter
Relational configuration — proposed	Enacted decision weight	Constrained alternatives	Analytically separate	Response varies by configuration	All dimensions collapsed into "AI acceptance"	Context and design remain decisive

Note. These are proposed analytical configurations, not validated categories or readiness levels.

The configurations in **Table 2** are deliberately relational rather than developmental stages. Organizations may move among them as task conditions, system capability, decision rights, and practical alternatives change.

Behavioral influence through material and digital actors

Behavioral influence occurs when nonhuman outputs alter what organizational actors notice, anticipate, choose, contest, or perform. Such influence need not resemble a human command. Longitudinal field evidence shows that opaque algorithmic evaluations can generate worker reactivity as people try to infer what the system values and adapt their conduct accordingly [19]. The relevant mechanism is therefore not simply information provision. An evaluative system can become a behavioral reference point because consequences are attached to classifications whose production may be difficult to observe or challenge.

Influence can also operate through procedural interpretation. Experimental and organizational evidence indicates that algorithmic reductionism in human-resource decisions can produce procedural-justice concerns even when the stated purpose involves reducing bias [20]. This distinguishes technical consistency from experienced fairness. A system can be designed to standardize a decision while simultaneously narrowing which qualities are recognized as relevant. Behavioral responses may thus reflect perceived process legitimacy rather than accuracy alone, and fairness perceptions should not be treated as proof of objective fairness or unfairness.

Professional expertise provides another pathway. Field research on clinicians using opaque AI shows that experts develop situated practices for deciding when and how to engage algorithmic outputs rather than responding with simple acceptance or rejection [21]. The proposed theory generalizes cautiously from these findings: nonhuman influence may operate through validation, selective reliance, resistance, and reinterpretation. Material actors add embodied interdependence, whereas digital actors can exert influence through visibility, ranking, recommendation, gating, temporal coordination, and data representation. These pathways are proposed categories, not demonstrated universal mechanisms.

Accordingly, behavioral influence is analytically downstream from participation but not reducible to compliance. A worker may change behavior to satisfy an opaque evaluation, resist a recommendation, seek corroboration, or redirect attention without regarding the system as legitimate. Conventional explanations—including incentives, managerial enforcement, professional norms, and work design—remain viable rivals. The theory therefore predicts variation in response according to dependence, attributed authority, trust calibration, expertise, and available override rather than deterministic technological control.

Temporal ordering also matters. Immediate compliance may reflect convenience, uncertainty, or temporary experimentation rather than durable authority, while repeated exposure can permit learning, strategic adaptation, or routinization. At the team level, one member's reliance may influence coordination without becoming a shared norm; at the organizational level, repeated routing of decisions through the same system may gradually institutionalize its role. Future tests should therefore distinguish momentary behavioral response from stabilized practice and avoid inferring organizational authority from isolated individual decisions.

Proposed relational theory of nonhuman agency

The proposed Relational Theory of Nonhuman Agency integrates the preceding domains into a process architecture. Its starting proposition is that technical capability becomes organizationally consequential only through relational conversion. Human–AI collaboration research shows that assistance can produce benefits while also encouraging convergence that reduces distinctive human contributions under some configurations [22]. This illustrates why participation cannot be evaluated solely by asking whether a system improves an isolated decision. The relationship between system contribution and human action is itself part of the organizational phenomenon.

Relational conversion is maintained through practice. Longitudinal ethnographic work shows that professionals may construct validation practices around analytical technologies and that repeated validation can contribute to black boxing [23]. Likewise, algorithm introduction can alter organizational regimes of knowing, including which forms of knowledge receive recognition and how actors accommodate emerging epistemic arrangements [24]. Data objects further demonstrate that nonhuman participation need not take the form of a visible autonomous system: data-based representations can become technical and cognitive means through which organizational knowing and action develop [25].

The proposed theory therefore links nonhuman actoric capacity to organizational inscription and delegation, a form of participation, attributed authority and enacted dependence, trust calibration, and behavioral influence. Feedback then runs from observed performance and human responses back to trust, delegation, work design, and knowledge practices. These links form an original proposed synthesis rather than a validated causal sequence. Field evidence is consistent with the view that technological authority is enacted through situated practices of engagement, validation, and knowledge ordering rather than simply inherited from an algorithm's technical capability [21, 23, 24].

The theory further proposes three relational asymmetries. First, participation may be high while attributed authority remains low when outputs are routinely scrutinized or overridden. Second, attributed authority may be high while enacted dependence remains low when meaningful alternatives remain available. Third, enacted dependence may be high while trust remains low when organizational access is tied to a system that users question. These asymmetries make the framework testable because different configurations should produce different patterns of reliance, resistance, escalation, and adaptation rather than a single continuum from "low" to "high" technological agency. Responsibility remains with the organizational arrangements that establish decision rights, constraints, and recourse.

Figure 1 presents the original conceptual synthesis for relational theory of nonhuman agency, showing how the article's principal constructs, mechanisms, uncertainties, and decision boundaries are connected.

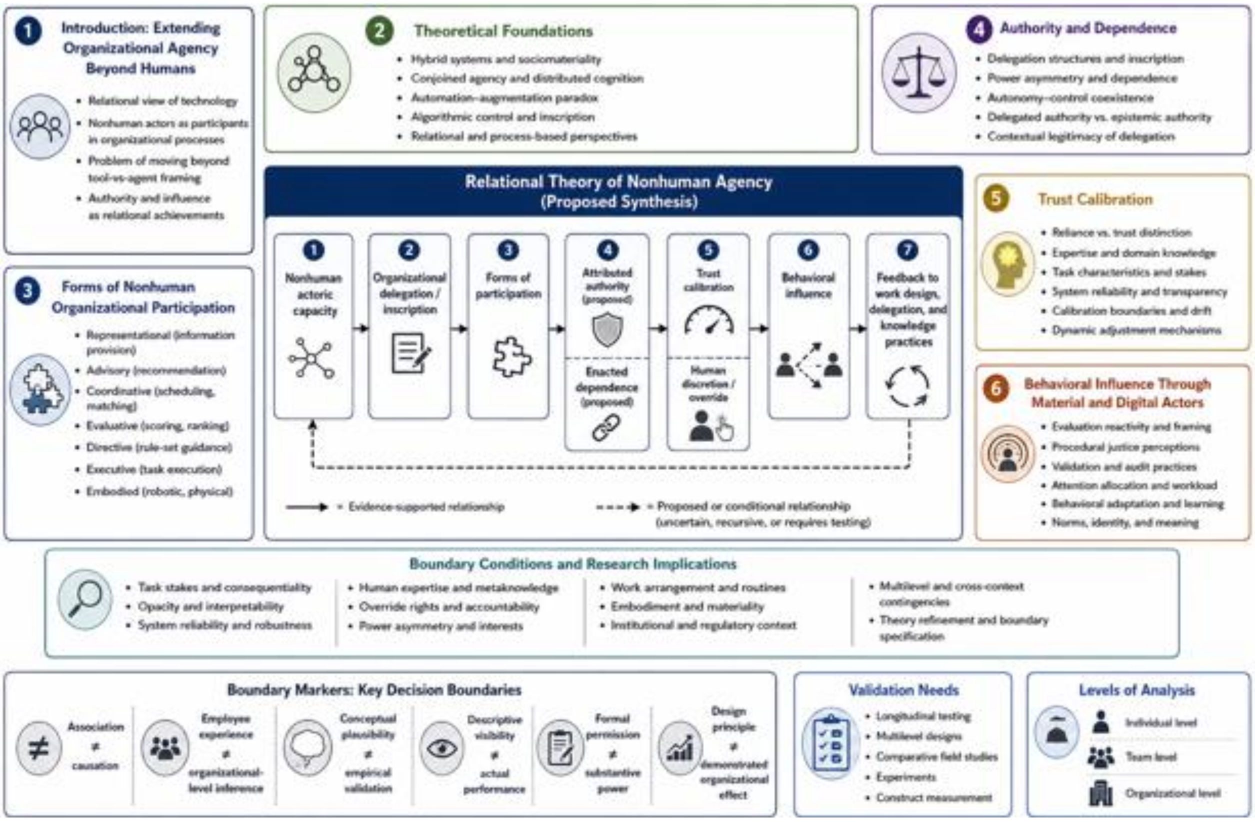

Figure 1. Relational Theory of Nonhuman Agency.

The figure is an original conceptual synthesis developed for "Nonhuman Actors, Authority, and Behavioral Influence in Organizational Life." Arrows and grouping indicate evidence-supported or proposed relationships rather than measured effect sizes. The figure does not represent a validated causal model, universal organizational prescription, regulatory determination, or deployment-ready system.

Table 3 organizes the evidence, constructs, relationships, uncertainties, and boundary conditions required for testable propositions, evaluation criteria, and practical responsibilities.

Table 3. Propositions and Falsification Logic for the Relational Theory of Nonhuman Agency

Proposition or criterion	Mechanism	Observable implication	Challenge or falsification	Level	Responsibility	Boundary
P1 — proposed: participation does not automatically become authority	Decision weight is organizationally assigned	Similar technologies receive different authority across arrangements	Technical capability alone explains decision weight	Decision/role	Make delegation explicit	Capability is not legitimacy
P2 — proposed: attributed authority and enacted dependence are distinct	Deference and constraint follow different pathways	Actors can defer without dependence or depend without trust	Constructs are empirically indistinguishable	Individual/work relation	Preserve alternatives	Compliance is not endorsement
P3 — proposed: narrow alternatives amplify dependence	Outcomes become contingent on system outputs	Stronger accommodation where recourse is weaker	Recourse does not alter response	Worker/work system	Maintain appeal and override	Dependence is not trust

P4 — proposed: trust influences behavior conditionally	Confidence interacts with expertise and task characteristics	Reliance changes with capability information	Reliance remains unchanged across meaningful capability differences	Individu al	Support informed scrutiny	More trust is not always better
P5 — proposed: opacity permits multiple responses	Actors infer and test system logic	Compliance, checking, or resistance vary across settings	Opacity produces one invariant response	Individu al/group	Support contestability	Opacity is not deterministic control
P6 — proposed: repeated use can institutionalize influence	Outputs become embedded in routines	Scrutiny or decision routines change over time	Repetition produces no process change	Team/org anization	Periodically reassess routines	Repetition is not correctness
Evaluation criterion	Compare proposed constructs with established explanations	Added process distinction beyond authority, incentives, or work design	Existing constructs fully explain findings	Multilev el	Avoid theory-driven overinterpretati on	Novel terminology is insufficient
Readiness criterion	Require measurement, replication, and contextual testing	Relationships recur across appropriate settings	Findings remain fragile or context-specific	Cross-context	Do not operationalize prematurely	Plausibility is not implementati on readiness

Note. All propositions and criteria are original proposed elements intended for testing, revision, or rejection.

The proposition set makes the theory deliberately vulnerable to disconfirmation. A relational explanation earns theoretical value only if authority, dependence, calibration, and influence can be distinguished empirically and if those distinctions explain processes that simpler accounts do not.

Boundary conditions and research implications

The theory is deliberately bounded because responses to algorithmic judgment are heterogeneous. A systematic review of algorithm aversion shows that acceptance and rejection vary across conditions rather than reflecting a single stable response tendency [26]. Task stakes, perceived subjectivity, system reliability, explanation, human expertise, and available alternatives should therefore be treated as candidate moderators rather than background details. The theory would be weakened if attributed authority and enacted dependence failed to explain behavior beyond these established task-, person-, and system-level conditions.

Context is equally important. Research integrating algorithmic management in gig work identifies fragmented definitions, mechanisms, measures, and boundary conditions across the literature [27]. Platform arrangements can make dependence unusually visible because allocation, evaluation, and access may be tightly integrated. Evidence from those settings should not be generalized automatically to conventional employment, professional work, or team collaboration. Future studies should compare organizational forms and separate formal policy from enacted practice, individual perceptions from team processes, and local discretion from organization-level dependence.

Delegation also depends on what human actors know about comparative capabilities. Evidence on productive human–AI delegation indicates that deficient metaknowledge can impede effective allocation of tasks even when willingness to use AI is not the central problem [28]. Future tests should therefore measure expertise about both human and technological strengths rather than inferring calibration from usage alone. Experiments could manipulate decision weight and override rights; longitudinal studies could examine whether attributed authority accumulates or decays; and multilevel designs could assess whether individual reliance aggregates into routines or organizational dependence.

The strongest test is comparative rather than confirmatory. The proposed theory should explain processes beyond conventional managerial authority, incentives, work design, professional norms, and technology acceptance. If its proposed constructs are empirically indistinguishable from those alternatives, or if participation has no incremental relation to authority, dependence, trust calibration, or behavioral adaptation, the theory should be revised or rejected. No element should be treated as an organizational decision rule before its measures, mechanisms, boundaries, and unintended consequences are tested across contexts.

Measurement development is therefore a priority. Attributed authority should be assessed through perceived decision weight and observed treatment of outputs, whereas enacted dependence requires indicators of alternative availability, access contingency, and override cost. Trust calibration requires both confidence judgments and independent evidence about system capability in the focal task. Testing these constructs separately would allow researchers to determine whether the proposed relational distinctions add explanatory value or merely rename existing concepts. Cross-context replication is especially important before any claim of general organizational applicability.

Conclusion

Nonhuman systems increasingly participate in organizational processes, but participation alone does not establish authority, agency in a human sense, or responsibility. This article has proposed a relational theory in which technological capacities become consequential through organizational delegation, forms of participation, attributed authority, enacted dependence, trust calibration, and behavioral response. The central theoretical move is to locate agency in relations rather than to treat it as an intrinsic property of either humans or technologies.

The proposed distinction between attributed authority and enacted dependence explains why actors may voluntarily defer to a system without being structurally dependent on it, or remain highly dependent while distrusting and resisting it. Behavioral influence can likewise occur through evaluation, recommendation, data representation, temporal coordination, validation, or embodied interaction without amounting to deterministic control.

These constructs and relationships remain propositions requiring empirical scrutiny. Their usefulness depends on discriminating them from conventional authority, work design, incentives, professional norms, and technology-acceptance explanations across levels and contexts. Relational Theory of Nonhuman Agency should therefore be understood as a falsifiable conceptual architecture: a way to ask how nonhuman participation becomes organizationally consequential while retaining clear boundaries between capability and legitimacy, reliance and trust, influence and causation, and delegation and responsibility.

Acknowledgments: None

Conflict of interest: None

Financial support: None

Ethics statement: None

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