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Algorithmic Management as Organizational Innovation: Pathways and Limits

Kazuki Kozuka

Yoshida-honmachi, Sakyo-ku, Kyoto-shi, 606-8501, Kyoto, Japan.
E-mail: kozuka.kazuki.47k@st.kyoto-u.ac.jp

Tomoki Sekiguchi*

Yoshida-honmachi, Sakyo-ku, Kyoto-shi, 606-8501, Kyoto, Japan.
E-mail: tomoki@econ.kyoto-u.ac.jp
* Corresponding author

Abstract: Algorithmic management (AM), the delegation of managerial functions to algorithms, is rapidly diffusing across industries beyond digital platforms. However, its institutionalization as a stable governance mechanism remains uneven. This study conceptualizes AM as an organizational innovation and examines the conditions under which it emerges and stabilizes. Using fuzzy-set qualitative comparative analysis (fsQCA) on survey data from approximately 500 employees across four Japanese industries—manufacturing, transportation, services, and hospitality—we identify key configurational patterns. The results show that task specialization and low labor mobility function as quasi-necessary conditions for AM. However, no sufficient configurations consistently lead to high levels of AM, and dominant causal pathways are absent. Instead, weak configurational attractors suggest that organizations gravitate toward algorithmic governance without achieving full institutionalization. We interpret this as an algorithmic governance paradox, where institutional frictions and socio-technical misalignment constrain consolidation. This study contributes to innovation management by distinguishing adoption from institutionalization and positioning AM as a metastable governance innovation.

Keywords: Algorithmic Management, Organizational Innovation, AI-driven Transformation, Institutionalization, Configurational Analysis, Organizational Design

1. Introduction: Algorithmic Management as Organizational Innovation

Algorithmic management (AM), defined as the delegation of managerial functions such as task allocation, monitoring, evaluation, and reward distribution to algorithmic systems, has become a central feature of contemporary organizational transformation. While AM was initially developed and widely studied in platform-based labor markets such as ride-hailing and gig economy services, its diffusion has rapidly extended into traditional industries including manufacturing, logistics, services, and hospitality. In these contexts, algorithmic systems are increasingly embedded in core business processes, shaping not only operational efficiency but also employee evaluation, coordination, and control.

Despite its rapid diffusion, the outcomes of AM implementation vary significantly across organizations. Some firms report improved efficiency, transparency, and scalability, while others exhibit only partial adoption, symbolic implementation, or resistance from employees and managers. This divergence raises a central question in innovation management: under what conditions does algorithmic management become embedded as a stable governance structure rather than remaining peripheral or contested?

Existing research on algorithmic management has primarily focused on its technological capabilities and implications for labor control, particularly in platform settings (Kellogg et al., 2020; Möhlmann and Zalmanson, 2017). However, this literature often assumes that once algorithmic systems are introduced, they become institutionalized within organizations. Such an assumption overlooks the complexity of traditional organizational contexts, where established employment practices, professional norms, and internal labor markets may constrain or resist algorithmic governance. More broadly, research on digital technologies suggests that technological adoption does not automatically lead to organizational transformation (Orlikowski, 1992).

To address this gap, this study reconceptualizes algorithmic management as an organizational innovation rather than merely a technological tool. From this perspective, AM entails a reconfiguration of organizational governance, including shifts in decision rights, monitoring practices, and authority structures. Prior work on AI and organizational design suggests that the integration of intelligent systems requires changes in coordination and decision-making structures (Shrestha et al., 2019; Rai et al., 2019). However, the adoption of such innovations does not guarantee their institutionalization, and algorithmic systems may remain decoupled from everyday organizational practices.

Building on organizational innovation theory, this study emphasizes the distinction between adoption and institutionalization. While adoption refers to the introduction of new technologies or practices, institutionalization involves their embedding into routines, structures, and norms. Many digital innovations fail to achieve this transition due to misalignment with existing organizational arrangements. Understanding the conditions under which algorithmic management moves from adoption to institutionalization is therefore critical.

To capture this complexity, we adopt a configurational perspective. Configurational theory posits that organizational outcomes arise from combinations of conditions rather than single factors, emphasizing causal complexity and equifinality (Fiss, 2011; Greckhamer et al., 2008). In the context of AM, key organizational conditions include task specialization, labor mobility, organizational size, and centralization of authority.

Empirically, this study employs fuzzy-set qualitative comparative analysis (fsQCA) to examine the configurational pathways associated with algorithmic management across four industries in Japan. Japan provides a theoretically relevant setting due to its strong internal labor markets and increasing adoption of AI-enabled management practices.

The findings reveal that while certain organizational conditions create a favorable environment for AM, no configuration consistently produces high levels of algorithmic management. Instead, organizations appear to gravitate toward algorithmic governance without fully achieving it. This pattern suggests that AM is not a stable governance regime but a metastable organizational innovation, shaped by the tension between technological possibilities and institutional constraints.

2. Theoretical Framework

2.1 Algorithmic Management and Organizational Governance

Algorithmic management (AM) refers to the delegation of managerial functions—such as task allocation, monitoring, evaluation, and reward distribution—to algorithmic systems. While prior research has focused primarily on platform-based labor markets, the diffusion of AM into traditional organizations raises new theoretical questions. In platform settings, algorithmic systems function as core governance mechanisms, coordinating large workforces through real-time data, automated matching, and performance-based discipline. These environments are characterized by high labor mobility, modular tasks, and digitally mediated interactions, conditions well suited to algorithmic control.

However, extending AM into traditional organizations introduces a fundamental tension. Such organizations are embedded in institutional arrangements including internal labor markets, stable employment relationships, and hierarchical authority structures. These features shape coordination and evaluation in ways that are not easily compatible with algorithmic governance.

AM should therefore be understood not merely as a technological tool but as a transformation of organizational governance. Delegating managerial authority to algorithms implies changes in decision rights, accountability, and coordination mechanisms. These transformations require alignment with existing organizational practices and institutional logics, making the effects of AM contingent on organizational context.

2.2 Computational Governability and the Limits of Algorithmic Control

For AM to operate effectively, work must be computationally governable. Tasks must be decomposable into discrete units, performance measurable, and outcomes comparable across individuals. In platform environments, these conditions are typically met: tasks are modular, metrics standardized, and performance continuously monitored.

In contrast, many forms of work in traditional industries are not fully compatible with these requirements. Tasks often involve tacit knowledge, experiential judgment, and interpersonal coordination, which resist formalization. Even when organizations attempt to codify such work, these representations remain partial. As a result, algorithmic systems are often loosely coupled with actual work practices.

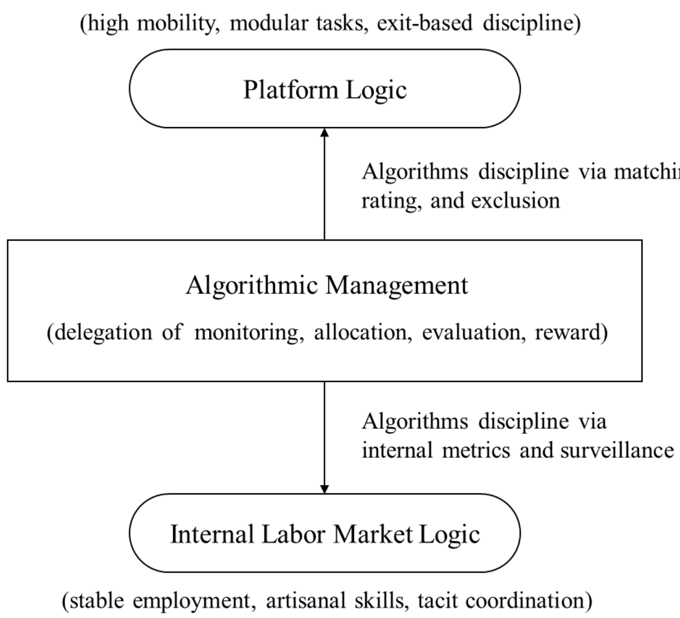
This creates a structural paradox. While algorithmic management promises efficiency, scalability, and control, the types of work that most require coordination—particularly skilled or interactive work—are least amenable to algorithmic formalization. The feasibility of AM thus depends not only on technological capabilities but also on the nature of work itself.

2.3 Institutional Logics: Platform versus Internal Labor Market

To capture this tension, it is useful to distinguish between platform logic and internal labor market logic, as shown in Figure 1. Platform logic is characterized by high labor mobility, flexible arrangements, and market-based discipline. Workers can enter and exit easily, and coordination is achieved through algorithmic matching and performance-based incentives. AM aligns naturally with this logic as a scalable mechanism for coordinating interchangeable labor.

Internal labor market logic, by contrast, emphasizes stable employment, long-term relationships, and firm-specific skills. Coordination relies on hierarchical authority, social norms, and tacit knowledge rather than formal metrics. Workers are less substitutable, and performance is often evaluated qualitatively. These features make algorithmic control more difficult to implement.

Traditional industries such as manufacturing, transportation, services, and hospitality typically lie between these two logics. While some tasks are standardized, others remain relational and context-dependent. Organizations therefore exhibit hybrid forms in which both logics coexist. AM is introduced into this hybrid environment, and its effectiveness depends on how these competing logics are managed.



Note: This diagram illustrates how algorithmic management (AM) in each industry fluctuates between platform-based market control and internal labor market governance. While algorithms are designed to control fluid and modular labor, AM is structurally powerful but institutionally constrained in sectors such as manufacturing, which rely on stable employment, artisanal skills, and tacit collaboration.

Figure 1 Algorithmic Management between Platform logic and Internal Labor Market Logic.

2.4 Algorithmic Management as Organizational Innovation

Drawing on organizational innovation theory, this study conceptualizes AM as a governance innovation rather than a simple technological adoption. Organizational innovations involve changes to structures, processes, and practices that redefine how organizations operate, requiring not only new tools but also reconfiguration of existing arrangements.

A key distinction is between adoption and institutionalization. Adoption refers to the introduction of new practices, while institutionalization involves their integration into routines and structures. Many innovations fail to reach this latter stage, remaining peripheral or symbolic.

AM is particularly prone to this gap. Organizations may adopt algorithmic tools for specific functions, such as scheduling or monitoring, without embedding them into broader governance systems. In such cases, algorithmic systems coexist with traditional managerial practices rather than replacing them, resulting in partial implementation.

Understanding AM as an organizational innovation highlights the importance of alignment between technological capabilities and organizational conditions. Without such alignment, algorithmic systems remain decoupled from everyday practices, limiting their impact.

2.5 Configurational Perspective and Causal Complexity

To analyze these dynamics, this study adopts a configurational perspective. Configurational theory posits that outcomes arise from combinations of conditions rather than independent effects, making it suitable for analyzing AM, where technological, organizational, and institutional factors interact.

Three principles are central. First, equifinality suggests that multiple pathways may lead to similar outcomes. Second, causal asymmetry implies that the conditions leading to the presence of an outcome differ from those leading to its absence. Third, conjunctural causation emphasizes that conditions operate in combination, meaning their effects depend on interactions.

This study examines four organizational conditions: labor mobility (PM), business specialization (BS), centralization (OI), and organizational size (SCA) SCA), as suggested by MacDuffie (1995) and Ichniowski et al. (1997). These capture key dimensions of organizational architecture shaping algorithmic governance. Labor mobility reflects market discipline, specialization captures task decomposability, centralization indicates enforceability of algorithmic rules, and size reflects structural context.

To operationalize this approach, the study employs fuzzy-set qualitative comparative analysis (fsQCA), which identifies necessary conditions and configurational patterns while accommodating causal complexity. Importantly, fsQCA also enables analysis of situations where no sufficient configurations exist.

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2.6 Toward a Configurational Understanding of the Limits of AM

Integrating these perspectives, this study develops a framework for understanding both the emergence and limits of AM. Rather than assuming that algorithmic governance will become dominant, the framework emphasizes its contingent nature.

AM is most effective when organizational conditions align with computational governability and platform-like coordination. However, in many contexts, these conditions are only partially satisfied. Competing institutional logics, the nature of work, and existing structures shape how algorithmic systems are implemented.

As a result, AM emerges unevenly and remains incomplete. Organizations may move toward algorithmic governance, but this movement does not necessarily lead to stable institutionalization. Understanding this requires a configurational perspective that accounts for both enabling conditions and structural constraints.

This study therefore seeks to explain not only when algorithmic management emerges, but also why it often fails to consolidate as a stable governance regime.

3. Methodology

This study adopts a configurational approach to examine the conditions under which algorithmic management (AM) emerges and becomes stabilized as an organizational innovation.

3.1 Data and Sample

The empirical analysis draws on survey data collected from approximately 500 employees across four industries in Japan: manufacturing, transportation, services, and hospitality. Each industry sample consists of roughly 125 respondents, enabling cross-industry comparison while preserving within-industry configurational patterns. Japan provides a theoretically relevant context due to its strong internal labor market structures, relatively stable employment systems, and increasing investment in AI-enabled management practices. This setting allows us to examine not only the adoption of AM but also its institutional limits within established organizational architectures.

3.2 Measures

Algorithmic management (AM) was measured using the Algorithmic Management Index by Parent-Rocheleau (2024). The outcome variable is the degree of algorithmic management (AM), defined as the extent to which managerial functions—such as task allocation, monitoring, evaluation, scheduling, and reward distribution—are delegated to algorithmic systems. The measure is based on a validated scale capturing the delegation of managerial authority rather than mere technological use.

Four organizational conditions are included: labor mobility (PM), business specialization (BS), centralization (OI), and organizational size (SCA). These variables capture key dimensions of organizational architecture that shape the feasibility of algorithmic governance. Labor mobility reflects the extent to which workers can be disciplined through market mechanisms; business specialization captures the decomposability and measurability of tasks; centralization indicates whether algorithmic rules can be enforced; and organizational size differentiates between internal labor market structures and more fluid organizational forms.

3.3 Calibration and Analytical Procedure

All variables are calibrated into fuzzy sets using theoretically informed anchor points. The analysis proceeds in two stages. First, necessary condition analysis identifies whether certain organizational features are consistently associated with high levels of AM. Second, truth table analysis is used to examine configurational sufficiency.

Importantly, the objective is not solely to identify sufficient conditions, but to assess whether empirically meaningful configurations produce stable high-AM outcomes. If no such configurations are observed—i.e., if the "1-matrix" is empty—this is interpreted not as a methodological limitation but as evidence that AM does not consolidate into a stable governance regime.

To ensure robustness, alternative calibration thresholds and consistency cutoffs are tested. Analyses are conducted separately by industry to capture context-specific configurations while enabling comparison across sectors.

4 Results

4.1 Necessary Conditions Across Industries

The analysis begins with an examination of necessary conditions for high levels of algorithmic management (AM) (Table 1~4). Across all four industries—manufacturing, transportation, services, and hospitality—task specialization (BS) and low labor mobility (~PM) consistently approach the threshold for quasi-necessity. These results indicate that algorithmic management is more likely to emerge in contexts where tasks are decomposable and measurable, and where labor cannot easily exit, making internal forms of discipline more salient. Centralization (OI) also shows relatively high consistency, suggesting that algorithmic rules are more easily enforced under concentrated authority structures.

However, these conditions do not guarantee high levels of AM. Their limited coverage indicates that even when organizations possess favorable structural characteristics, algorithmic management does not necessarily consolidate. This gap between enabling conditions and realized outcomes points to the importance of configurational complexity.

4.2 Absence of Sufficient Configurations and Weak Attractors

The truth table analysis in Table 5~8 reveals a defining feature of the results: across all industries, no configuration satisfies the criteria for a strong sufficient condition for high AM in Table 9~12. In fsQCA terms, the "1-matrix" is empty. Observed configurations cluster in an intermediate range of consistency (approximately 0.55–0.65), indicating that algorithmic management remains at a moderate level across cases.

This pattern suggests that organizations do not reach a stable regime of algorithmic governance. Instead, they occupy an intermediate zone in which algorithmic systems are present but do not fully dominate organizational control. This finding should be interpreted substantively: algorithmic management exists as a partial and unstable form rather than a consolidated governance structure.

Table 1 Analysis of Necessary Conditions for Algorithmic Management (AM) (Manufacturing)

Condition	Consistency	Coverage
SCA	0.772	0.312
~SCA	0.455	0.301
PM	0.597	0.526
~PM	0.871	0.306
OI	0.832	0.493
~OI	0.793	0.345
BS	0.888	0.432
~BS	0.774	0.401

Table 2 Analysis of Necessary Conditions for Algorithmic Management (AM) (Transportation)

Condition	Consistency	Coverage
SCA	0.796	0.351
~SCA	0.476	0.276
PM	0.663	0.458
~PM	0.796	0.313
OI	0.828	0.542
~OI	0.789	0.320
BS	0.900	0.459
~BS	0.737	0.363

Table 3 Analysis of Necessary Conditions for Algorithmic Management (AM) (Services)

Condition	Consistency	Coverage
SCA	0.774	0.341
~SCA	0.460	0.189
PM	0.654	0.522
~PM	0.811	0.235
OI	0.837	0.423
~OI	0.827	0.303
BS	0.931	0.439
~BS	0.737	0.285

Table 4 Analysis of Necessary Conditions for Algorithmic Management (AM) (Hospitality)

Condition	Consistency	Coverage
SCA	0.649	0.362
~SCA	0.636	0.312
PM	0.590	0.538
~PM	0.869	0.318
OI	0.833	0.530
~OI	0.833	0.530
BS	0.903	0.476
~BS	0.715	0.370

Table 5 Truth Table for Algorithmic Management (AM) (Manufacturing)

SCA	PM	OI	BS	Freq.	AM	Consistency	PRI
1	1	1	0	2	0	0.673	0.096
1	1	1	1	2	0	0.661	0.165
1	1	0	0	2	0	0.615	0.042
1	1	0	1	4	0	0.557	0.057
1	0	1	1	9	0	0.528	0.122
0	0	1	1	3	0	0.520	0.126
0	0	1	0	4	0	0.502	0.030
1	0	0	1	7	0	0.499	0.079
0	0	0	1	8	0	0.471	0.041
1	0	0	0	14	0	0.469	0.022
0	0	0	0	10	0	0.437	0.037

Table 6 Truth Table for Algorithmic Management (AM) (Transportation)

SCA	PM	OI	BS	Freq.	AM	Consistency	PRI
0	1	1	1	2	0	0.694	0.090
1	0	1	1	4	0	0.656	0.209
1	1	1	1	5	0	0.644	0.222
0	1	0	0	3	0	0.583	0.000
1	1	0	1	3	0	0.567	0.046
1	1	0	0	3	0	0.554	0.014
1	0	0	1	9	0	0.538	0.081
0	0	1	0	2	0	0.528	0.023
0	0	1	1	2	0	0.502	0.010
1	0	0	0	8	0	0.494	0.019
0	0	0	1	4	0	0.466	0.022
0	0	0	0	19	0	0.371	0.020

Table 7 Truth Table for Algorithmic Management (AM) (Transportation)

SCA	PM	OI	BS	Freq.	AM	Consistency	PRI
1	1	1	1	5	0	0.689	0.300
1	1	0	1	2	0	0.636	0.116
1	1	0	0	3	0	0.611	0.040
1	0	1	1	7	0	0.599	0.154
1	0	0	1	2	0	0.595	0.106
0	1	0	1	2	0	0.554	0.020
1	0	1	0	6	0	0.521	0.039
1	0	0	0	10	0	0.450	0.016
0	0	1	1	4	0	0.447	0.015
0	0	0	1	10	0	0.396	0.030
0	0	1	0	6	0	0.376	0.008
0	0	0	0	17	0	0.299	0.011

Table 8 Truth Table for Algorithmic Management (AM) (Transportation)

SCA	PM	OI	BS	Freq.	AM	Consistency	PRI
1	1	1	1	2	0	0.719	0.157
1	1	0	1	2	0	0.666	0.025
0	1	1	1	2	0	0.649	0.223
1	0	1	1	6	0	0.644	0.113
0	0	1	1	5	0	0.595	0.161
0	1	0	1	2	0	0.584	0.056
1	0	0	1	6	0	0.577	0.083
0	0	0	1	10	0	0.535	0.107
0	0	1	0	5	0	0.531	0.070
1	0	0	0	6	0	0.525	0.016
0	0	0	0	14	0	0.423	0.018

Table 9 Parsimonious Solution for Algorithmic Management (AM) (Manufacturing)

Configuration	Raw Coverage	Unique Coverage	Consistency
~SCA*PM	0.272	0.089	0.695
SCA*~PM*OI*~BS	0.490	0.306	0.603

Solution coverage = 0.579 Solution consistency = 0.608

Table 10 Parsimonious Solution for Algorithmic Management (AM) (Transportation)

Configuration	Raw Coverage	Unique Coverage	Consistency
SCA*OI*~BS	0.526	0.112	0.626
PM*OI*~BS	0.492	0.009	0.624
~SCA*PM*~OI*BS	0.293	0.025	0.632

Solution coverage = 0.629 Solution consistency = 0.593

Table 11 Parsimonious Solution for Algorithmic Management (AM) (Services)

Configuration	Raw Coverage	Unique Coverage	Consistency
~SCA*PM*~BS	0.276	0.009	0.554
PM*OI*~BS	0.511	0.244	0.645
~SCA*PM*OI	0.273	0.006	0.566

Solution coverage = 0.526 Solution consistency = 0.603

Table 12 Parsimonious Solution for Algorithmic Management (AM) (Hospitality)

Configuration	Raw Coverage	Unique Coverage	Consistency
PM*~BS	0.482	0.072	0.621
SCA*OI*~BS	0.476	0.067	0.645

Solution coverage = 0.549 Solution consistency = 0.583

4.3 Industry-Specific Configurational Pathways

To interpret these patterns, we map the results onto a two-dimensional space in Figure 2~5. The vertical axis represents the degree of algorithmic management (AM), while the horizontal axis captures the balance between platform logic (characterized by high labor mobility and standardized tasks) and internal labor market logic (characterized by stable employment and structured authority).

Across all industries, configurations are located in the lower-middle region of the vertical axis, indicating moderate but not high levels of AM. The upper region—representing stable, high algorithmic governance—remains unoccupied.

In manufacturing, configurations are polarized across the horizontal axis. One cluster reflects platform-oriented arrangements (small-scale, mobile labor), while another reflects internal labor market configurations (large-scale, centralized, structured production). However, neither cluster reaches high AM. This indicates a structural tension: manufacturing is pulled between platform logic and internal labor market logic, but neither provides a sufficient basis for full algorithmic control.

In transportation, configurations are concentrated closer to the platform logic side but remain dispersed around the center. Standardized tasks and measurable performance make the industry compatible with algorithmic control, yet variations in centralization and residual professional judgment prevent full consolidation. As a result, transportation approaches higher levels of AM but does not fully reach them.

In services, configurations are predominantly located on the platform side of the horizontal axis. High labor mobility and relatively standardized service tasks support the adoption of algorithmic tools. However, the variability of customer interactions and the importance of interpersonal judgment limit the depth of algorithmic governance. This results in a wide distribution within the intermediate AM range.

In hospitality, configurations appear on both sides of the horizontal axis but are anchored by low task specialization. On the one hand, platform-like arrangements emerge through flexible staffing and standardized operations. On the other hand, large-scale, centralized organizations attempt to impose internal algorithmic control. Yet the experiential and relational nature of hospitality work constrains the extension of algorithmic management, keeping outcomes within moderate levels.

4.4 Summary of Findings

Taken together, the results reveal a consistent pattern across industries. While organizations move toward algorithmic governance along different institutional trajectories—either toward platform logic or internal labor market logic—they do not reach a stable high-AM regime. Instead, they remain confined to an intermediate zone characterized by partial adoption and incomplete institutionalization.

These findings suggest that algorithmic management functions as a metastable organizational form: structurally attractive across diverse contexts but constrained by institutional logics and the nature of work. The absence of sufficient configurations, combined with the presence of industry-specific attractors, highlights the limits of algorithmic governance as a fully institutionalized system.

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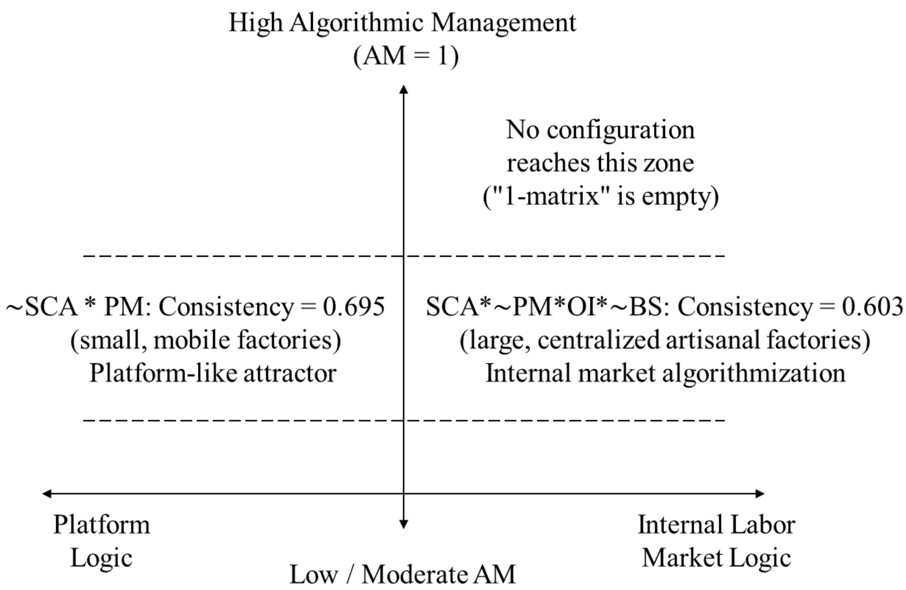

Figure 2 Industry-Specific Configurational Pathways (Manufacturing)

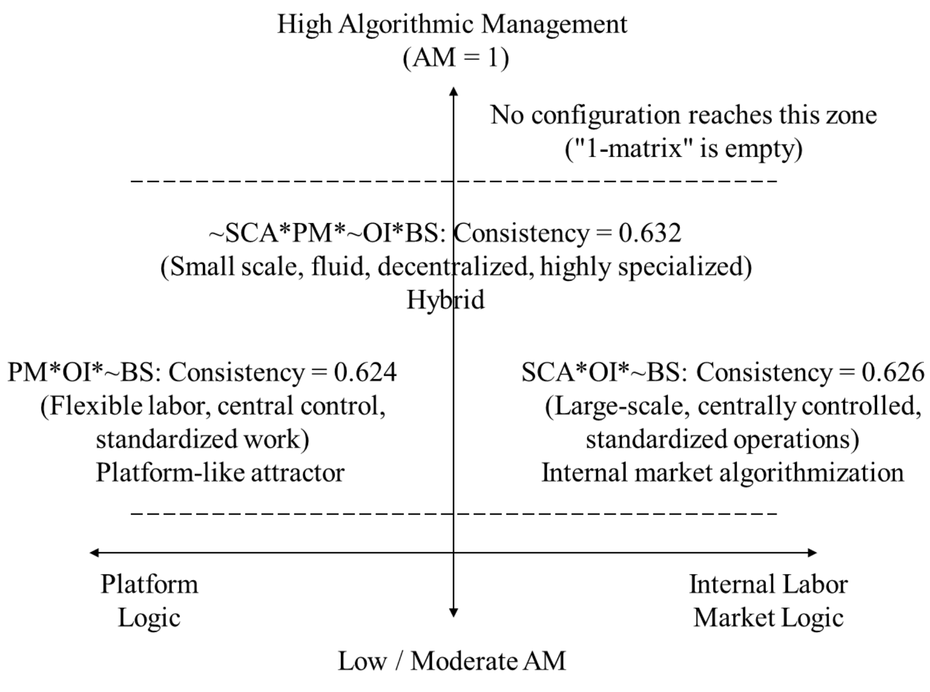

Figure 3 Industry-Specific Configurational Pathways (Transportation)

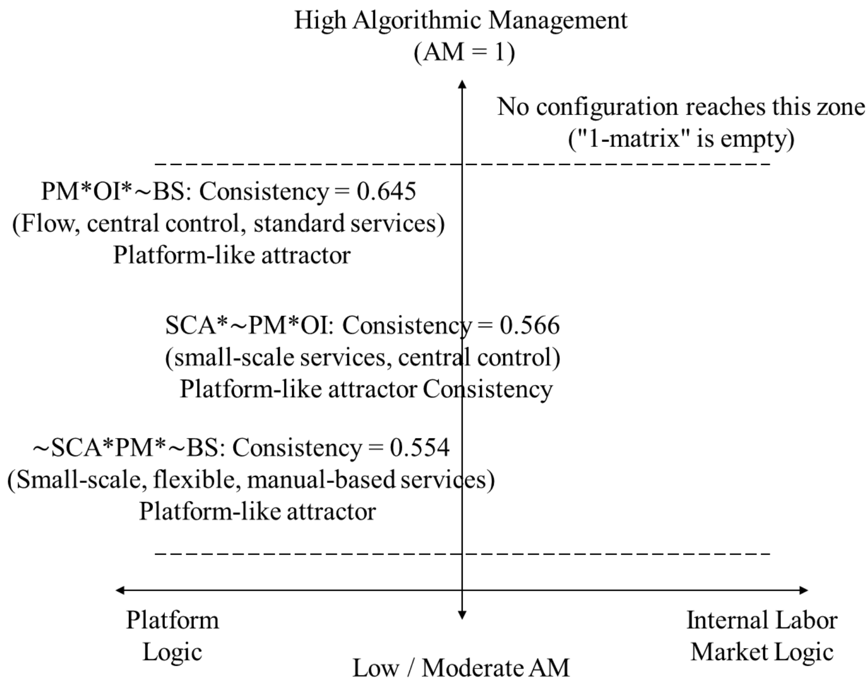

Figure 4 Industry-Specific Configurational Pathways (Services)

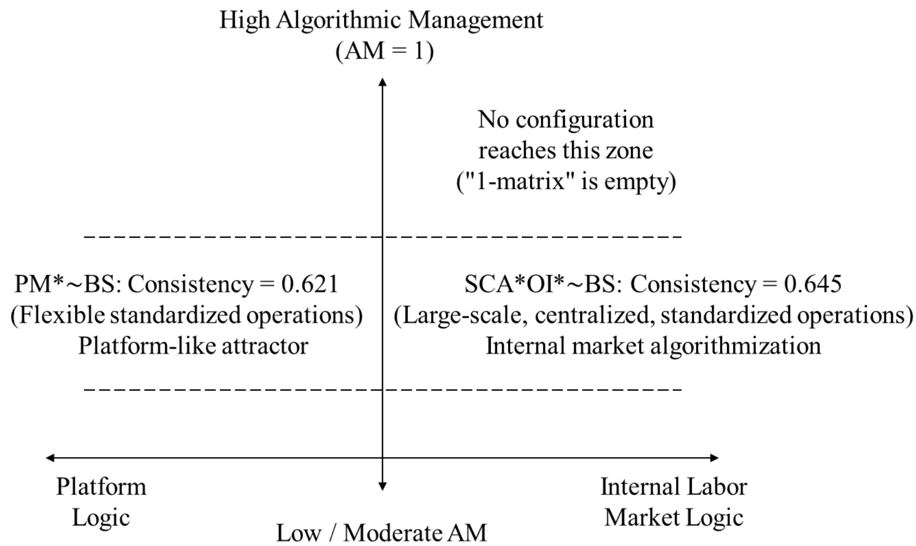

Figure 5 Industry-Specific Configurational Pathways (Hospitality)

5 Discussion: Institutional Limits of Algorithmic Management

5.1 The Absence of Consolidation: From Adoption to Non-Stable Regimes

The findings of this study highlight a fundamental distinction between the adoption and institutionalization of algorithmic management (AM). While organizations across all four industries increasingly introduce algorithmic tools into their operations, the results show that these tools do not consolidate into stable governance regimes. The absence of sufficient configurations and the empty "1-matrix" indicate that no combination of organizational conditions consistently produces high levels of AM.

Rather than representing a failure of implementation, this pattern should be understood as a substantive feature of algorithmic management as an organizational innovation. Organizations occupy an intermediate zone characterized by moderate levels of AM, where algorithmic systems coexist with traditional managerial practices. This suggests that AM is not a fully realized governance form, but a metastable configuration that remains incomplete and contingent.

5.2 Algorithmic Governance Between Competing Institutional Logics

A central explanation for this instability lies in the coexistence of competing institutional logics. Across industries, the results can be interpreted along a continuum between platform logic and internal labor market logic. Platform logic emphasizes high labor mobility, modular tasks, and market-based discipline, conditions under which algorithmic governance is most effective. Internal labor market logic, in contrast, is characterized by stable employment, tacit knowledge, and relational coordination, which resist full algorithmic formalization.

The configurational patterns identified in the analysis reflect this tension. Some organizations move toward platform-like arrangements, using algorithms to coordinate fluid labor and standardized tasks. Others attempt to integrate algorithmic systems into internal hierarchies, using them to discipline stable workforces through centralized control. However, neither trajectory results in a stable high-AM regime.

This duality creates a structural contradiction. Platform-oriented configurations rely on labor mobility that is often difficult to sustain in traditional industries, while internal labor market configurations encounter resistance from the tacit and relational dimensions of work. As a result, algorithmic management is simultaneously enabled and constrained by the very organizational structures in which it is embedded.

5.3 Industry-Specific Manifestations of Institutional Constraints

Although the absence of consolidation is consistent across industries, the sources of constraint vary by context. In manufacturing, the tension between platform logic and internal labor market logic is particularly pronounced. Small, flexible production settings approach platform-like coordination, while large, centralized factories attempt to algorithmize internal labor processes. Yet in both cases, algorithmic control remains partial due to the persistence of tacit skills and internal coordination.

In transportation, algorithmic management is more closely aligned with platform logic, given the measurability and standardization of tasks. However, variations in organizational structure and the continued need for situational judgment prevent full institutionalization. The industry approaches higher levels of AM but remains within the intermediate zone.

In services, high labor mobility and partial task standardization facilitate the adoption of algorithmic systems. Nevertheless, the variability of customer interactions and the importance of interpersonal work limit the extent to which algorithms can govern organizational processes. Similarly, in hospitality, algorithmic management is effective in standardized operational domains but fails to extend into the experiential and relational aspects of service delivery.

Across all industries, these patterns suggest that algorithmic management is constrained not only by organizational structures but also by the nature of work itself.

5.4 The Algorithmic Governance Paradox

Taken together, the findings point to what can be described as an algorithmic governance paradox. Algorithmic management is structurally attractive across diverse organizational contexts, as it promises efficiency, scalability, and enhanced control. At the same time, it is institutionally constrained by the very features that define these contexts, including labor arrangements, authority structures, and task characteristics.

This paradox explains why organizations gravitate toward algorithmic governance without fully achieving it. The configurational attractors identified in the analysis represent directional tendencies rather than stable endpoints. Organizations move toward algorithmic management along different pathways, but these movements do not converge into a unified or dominant model.

In this sense, algorithmic management should be understood not as a technological inevitability but as a contested organizational project. Its implementation depends on the alignment between algorithmic capabilities and institutional conditions, an alignment that remains incomplete in most organizational settings.

6 Theoretical Contributions

This study makes three main contributions to the literature on algorithmic management, organizational innovation, and configurational analysis.

First, it reconceptualizes algorithmic management (AM) as a metastable organizational innovation rather than a fully institutionalized governance form. Prior research has often treated the adoption of algorithmic systems as indicative of organizational transformation, particularly in platform contexts. By contrast, this study demonstrates that even when algorithmic tools are widely adopted, they do not necessarily consolidate into stable governance regimes. The absence of sufficient configurations and the presence of an empty “1-matrix” suggest that AM remains partial, unstable, and contested. This shifts the analytical focus from the existence of AM to its non-consolidation, highlighting the importance of distinguishing adoption from institutionalization.

Second, the study contributes to research on institutional logics and digital transformation by showing that algorithmic management operates between competing governance principles. By introducing a continuum between platform logic and internal labor market logic, the findings illustrate how organizations are pulled toward different institutional configurations without fully resolving their tensions. Algorithmic management emerges as a hybrid and context-dependent form, whose limits are shaped by the misalignment between computational requirements and organizational realities. This perspective extends existing work by framing AM as an outcome of institutional tension rather than technological determinism.

Third, the study advances configurational theory by demonstrating that the absence of strong sufficient conditions can itself be theoretically meaningful. Rather than identifying dominant causal pathways, the analysis reveals weak configurational attractors that indicate directional tendencies without stable outcomes. This highlights the value of fsQCA not only for identifying causal regularities but also for diagnosing incomplete or non-stable organizational phenomena.

Together, these contributions position algorithmic management as an innovation that is widely diffusing but structurally constrained, offering a more nuanced understanding of its role in contemporary organizational transformation.

7 Practical Implications for Innovation Management

The findings of this study offer important implications for innovation management, particularly for organizations seeking to implement algorithmic management (AM) as part of digital transformation.

First, managers should avoid treating AM as a purely technological upgrade. The results show that the introduction of algorithmic systems does not automatically lead to their consolidation as a stable governance mechanism. Even under favorable conditions, organizations tend to remain in an intermediate state where algorithmic tools coexist with traditional managerial practices. This suggests that successful implementation requires not only technological investment but also careful alignment with organizational structures, labor arrangements, and task characteristics.

Second, the study highlights the importance of organizational design as a mediating factor. Conditions such as task standardization, labor stability, and centralized authority can facilitate the use of algorithmic systems, but they do not guarantee consistent outcomes. Managers should therefore view AM implementation as an iterative organizational process rather than a one-time adoption. Adjustments to workflows, decision rights, and evaluation systems may be necessary to integrate algorithmic tools more effectively.

Third, the results suggest that a selective and context-sensitive approach to AM is more appropriate than uniform implementation. Algorithmic systems are most effective in domains where tasks are decomposable and performance is measurable. In contrast, areas involving tacit knowledge, interpersonal interaction, or situational judgment may require continued human oversight. Attempting to fully algorithmize such domains may lead to resistance or ineffective outcomes.

Finally, managers should recognize that organizations are likely to gravitate toward different configurational pathways or “attractors” without reaching a fully stable model of algorithmic governance. Rather than aiming for complete automation, firms should focus on managing the balance between algorithmic control and human judgment, acknowledging the institutional constraints that shape the limits of algorithmic management.

8 Conclusion and Future Research

This study examined algorithmic management (AM) as an organizational innovation and investigated the conditions under which it emerges and becomes institutionalized across four industries: manufacturing, transportation, services, and hospitality. Adopting a configurational perspective, the analysis focused not only on identifying enabling conditions but also on diagnosing whether a stable high-AM regime exists.

The findings reveal a consistent pattern across industries. While certain organizational conditions—such as task specialization and relatively stable labor structures—create a favorable context for algorithmic management, they do not lead to stable or repeatable outcomes. No sufficient configurations were identified, and the "1-matrix" remained empty. Instead, organizations cluster in an intermediate zone characterized by moderate levels of AM. This suggests that algorithmic management is widely adopted but rarely consolidated into a stable governance structure.

These results support the view that AM represents a metastable organizational form, shaped by the tension between platform logic and internal labor market logic. Organizations gravitate toward algorithmic governance along different pathways, yet these trajectories do not converge into a unified model. Rather than reflecting a linear process of digital transformation, the implementation of AM appears fragmented, context-dependent, and institutionally constrained.

This study has several limitations that point to directions for future research. First, the analysis is based on cross-sectional data, limiting insight into how algorithmic management evolves over time. Longitudinal studies could examine whether organizations move toward or away from algorithmic governance as institutional conditions change. Second, the study focuses on a single national context. Comparative research across different institutional environments would help clarify how national systems shape the feasibility of algorithmic management. Third, future research could explore micro-level dynamics, including employee responses, resistance, and adaptation, to better understand how algorithmic systems are enacted in practice.

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