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Relational Theory of Active Systems Development (RTDAS v1.1): Structural Retention vs. Saturation in the Global B2B SaaS Market (2020–2026)

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Abstract

Purpose:
To diagnose whether the volatility of the global horizontal B2B SaaS platform field (2020–2026) reflects saturation regimes or structural retention, using RTDAS v1.1 and the S-Screen operator.

Background:
The global market for horizontal B2B SaaS platforms (CRM, ERP, ITSM, HR, collaboration tools) experienced significant turbulence between 2020 and 2026, characterized by pandemic-driven growth, a sharp correction in 2022–2023, and the rapid integration of artificial intelligence. Academic and industry discourse often misinterprets this volatility as a sign of structural instability or market saturation, leading to ambiguous diagnoses. This article addresses this gap by applying the Relational Theory of the Development of Active Systems (RTDAS) v1.1, incorporating the S-Screen operator, to empirical data. Based on 31 open signals across two time slices (2020–2022 and 2023–2026), it demonstrates that the SaaS field is organized as an Unsustainable Problematic Configuration (UPC). This constitutes a self-reproducing structure where key actors (vendors, integrators, clients) derive distributed benefits from persistent complexity, high Total Cost of Ownership (TCO), and the mutation of innovations (AI, new pricing models) into additional lock-in mechanisms.

Materials and Methods:
Field-level case study using 31 open signals across two time slices (2020–2022; 2023–2026), processed through the RTDAS v1.1 diagnostic sequence with the S-Screen operator, R* formulation, and a stress test with falsification conditions.

Results:
The S-Screen operator systematically excludes the dominance of resource, procedural, and legitimation saturation, identifying the complexity dimension as an internal mechanism of the UPC rather than an external limit. The article formulates the configuration's minimal core (R*), conducts a stress test, and proposes early indicators and conditions for falsification. This work contributes to the Theory of Saturation (Manafi, 2025) and the Saturation–Collapse (SEA) model

by offering an operational diagnostic tool that positions saturation as one regime among others within the development of an active system. A reproducible protocol for regime diagnosis is presented, applicable to other complex systems.

Conclusion:
The diagnosis supports structural retention (UPC) rather than a dominant saturation regime, and provides a reproducible protocol for regime diagnosis applicable to other complex systems.

Keywords: *relational theory of the development of active systems, UPC, S-Screen operator, field saturation, B2B SaaS, structural retention, generative collapse.*

1. Introduction

The period from 2020 to 2026 was one of accelerated transformation for the global market of horizontal B2B SaaS platforms. At the level of observable metrics, this transformation appeared as an alternation of growth, correction, and a new wave of technological renewal. The pandemic-driven surge of 2020–2021 saw expanded cloud service adoption and a reevaluation of digitalization priorities in the corporate sector. By 2022–2023, the market entered a correction phase, marked by reduced venture activity, revised growth strategies, and widespread layoffs. From 2024 onward, dynamics shifted again toward the accelerated integration of generative AI and agentic workflows, accompanied by consolidation through M&A and increased scrutiny of bundling practices and their associated competition risks.

In public discourse and some semi-academic interpretations, this volatility is frequently characterized as a sign of "saturation" or impending collapse. However, such conclusions primarily rely on external indicators and fail to distinguish between two fundamentally different mechanisms: (a) field saturation regimes, where development is constrained by exceeding the carrying capacity of specific circuits, and (b) structural retention, where low-quality outcomes are reproduced as a consequence of a stable configuration of relations and the distributed benefits accruing to key positions. For the market under consideration, this distinction is particularly critical. Phenomena such as high aggregate TCO, integration complexity, and vendor lock-in can be misread as "symptoms of a limit," whereas they may, in fact, function as mechanisms for reproducing the configuration.

The Relational Theory of the Development of Active Systems (RTDAS) provides a framework for diagnosing precisely this level of causality. Version 1.1 of RTDAS incorporates the S-Screen operator, designed to distinguish between structural retention and saturation regimes. Consequently, the volatility of market metrics is treated not as self-evident proof of a limit state but as empirical material for reconstructing the topology of relations within which innovation, competition, and institutional constraints unfold. Integrating the S-Screen into the diagnostic protocol also refines the interpretation of saturation: it moves from being a "black box" to becoming a testable regime of an active system's development.

2. Theoretical Foundations

RTDAS is grounded in an ontological premise where a system is understood as an object-in-relations: primacy is given not to a collection of elements but to the reproducible configuration of ties that ensures the stability of a specific control and decision-making circuit. This ontological line draws upon early systemic models of development management (Mazurkevych, Malyi, & Antonenko, 2005). The unit of analysis is the topology of roles and positions within a field, encompassing the distribution of benefits, types of ties, and mechanisms that hold actors in their respective roles. A system is considered "active" to the extent that it can reproduce its own structure, adapt to external pressure, and maintain identity through changes in its elements.

Within this logic, the development of an active system is viewed as a sequence of regimes that can transition into one another: structural retention, limit states (saturation), and transition (including collapse or topology change). The central object of diagnosis is not "growth" per se, but the mechanism reproducing specific outcomes over time and the conditions under which the structure is preserved, mutates, or is disrupted.

An Unsustainable Problematic Configuration (UPC) is defined as a closed structure of relations between key positions that is self-sustaining through mutually reinforcing feedback loops and reproduces the same class of low-quality outcomes. A low-quality outcome (LQO) is understood not as a subjective assessment, but as the systematic underutilization of the system's potential or a persistent discrepancy between its stated function and its actual performance trajectory.

Critical features of a UPC include distributed benefits that lock actors into their roles, resilience to direct targeted interventions, and a tendency towards the mutation of reforms: attempts at improvement, including innovations and rule changes, are transformed into topologically equivalent forms of retention without disrupting the configuration. Importantly, a UPC is not reducible to a single institution or formal rule; it persists through institutional changes precisely because it exists as a network of relations.

In RTDAS v1.1, saturation is treated as a field regime where the persistence of current trajectories is determined by exceeding the carrying capacity of one or more circuits, rather than by the stability of distributed benefits. The S-Screen operator is designed to distinguish these cases and is formalized as a series of counterfactual tests: if the presumed constraint (resource, procedural, complexity-based, or legitimation-based) were removed, would the low-quality outcome disappear and the system's trajectory change?

The S-Screen identifies four ideal-typical regimes: resource-based (limits of material or infrastructural capacity), procedural (exceeding the throughput of administrative procedures), complexity-based (overload of manageability and rising transaction costs), and legitimation-based (reaching the limit of political/social tolerance). Critically, the complexity component can function either as an external constraint or as an internal mechanism for sustaining a UPC; distinguishing these situations is the precise purpose of the S-Screen.

Compared to the Theory of Saturation (Manafi, 2025) and subsequent publications on the limits of complex systems (Manafi, 2025, 2026), the proposed protocol refines the level of causality attributed to transitional states. The Theory of Saturation focuses on a system reaching limit regimes—resource, cognitive, or institutional—and the potential transition to collapse upon losing the capacity for learning or adaptation.

RTDAS v1.1 does not replace this perspective but complements it by introducing a tool for differentiation: before interpreting observed stagnation as a manifestation of saturation, one must establish whether it is a consequence of a stable configuration of distributed benefits. In this sense, the S-Screen operator forms a diagnostic bridge between structural analysis and saturation theory, enabling a determination of whether the system is in a retention regime or is genuinely approaching a capacity limit.

Thus, saturation and subsequent collapse, in Manafi's logic, cease to be exclusively macro-dynamic events and can be localized through the reconstruction of the relational field. This expands the analytical toolkit of saturation theory, making it applicable to cases where visible signs of overheating might be an effect of structural retention rather than an objective limit.

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3. Research Design and Data

This study employs a field-level case study design, focusing on the global market for horizontal B2B SaaS platforms (CRM, ERP, ITSM, HR, collaboration tools) from 2020 to 2026. This case was selected because the field simultaneously exhibits high dynamism in technological and organizational change and the persistence of recurring problematic effects for corporate clients. This makes it representative material for distinguishing between structural retention and saturation regimes. The analytical framework is oriented not towards evaluating the effectiveness of individual products or companies, but towards diagnosing the field's regime as a configuration of relations between key positions, and testing whether observed low-quality outcomes result from limit constraints or the reproduction of a UPC.

The study period is divided into three analytical phases, used solely to structure signals and test reproducibility: (i) expansion (2020–2021), (ii) correction (2022–2023), and (iii) AI and agentic workflow integration (2024–2026). However, the primary tool for comparison is not phase division but two time slices (2020–2022 and 2023–2026), allowing for the verification of result stability and the exclusion of transitory effects linked to short-term market fluctuations.

The analysis follows a reproducible diagnostic sequence prescribed by RTDAS v1.1, designed to prevent causal conflation: first, the presence of structural retention (UPC) is tested; second, saturation regimes are examined via the S-Screen operator; only then is the minimal core of the configuration (R*) formulated. This sequence is fundamental: it prevents prematurely explaining observed effects as "saturation" and avoids substituting structural diagnosis with a description of barriers or performance dynamics.

The initial stage involves collecting open signals and standardizing them into "signal cards." Each card records the source, date/period, content of the observed effect, the presumed node/position in the field, and the type of relation. Simultaneously, each signal is assigned a source reliability level on an A/B/C/D scale (from primary/official sources to secondary interpretations and expert commentary). This enables the application of a triangulation rule when formulating key theses.

Next, a preliminary "pre-flight check" of the signal corpus is performed, including minimum requirements for data volume and structure: a sufficient number of signals, coverage across two time slices, and support for key theses through a combination of independent sources (minimum A+B or A+C). Gaps that could limit the strength of conclusions or require explicit caveats in the limitations section are also noted at this stage.

After confirming the corpus's suitability, Step 1—UPC Diagnosis—is conducted. This involves formulating the low-quality outcome (LQO), mapping the roles and benefits of key positions, verifying the presence of distributed benefits (i.e., no single actor has a unilateral incentive to radically "simplify" the field), and testing for the mutation of reforms (the absorption of technological/market changes by the configuration without its disruption). Following Step 1, Step 2—S-Screen—is executed. For each saturation regime (resource, procedural, complexity, legitimation), a counterfactual test is performed: "If this constraint were removed, would the LQO disappear?". An affirmative answer is interpreted as evidence for the dominance of that saturation regime; a negative answer indicates that the constraint is an element of structural retention, not an external limit.

Only after this does Step 3—Formulation of R*—occur. The minimal set of relations and conditions necessary for the reproduction of the LQO is defined, and a minimality test is conducted through the mental removal of core elements. The final stage is a stress test, which outlines alternative trajectories for the field's regime development, early proxy indicators of regime shift, and conditions for falsifying the key conclusions. This transforms the diagnosis from a description into a testable hypothesis.

Note. The diagnostic protocol and the S-Screen operator within RTDAS v1.1 are the subject of a patent application filed by the author on February 23, 2026 (priority date).

The empirical basis of this study consists of 31 open signals (S01–S31) selected from publicly available sources, covering two time slices: 2020–2022 and 2023–2026. The signal corpus includes materials from market reports and reviews (e.g., Global Growth Insights, MarketResearch.com, Adroit, GII), industry news sources (e.g., TechCrunch, IT Brief, Moneycontrol, FinTech Futures), expert analytical publications and blogs (e.g., Monetizely, NASSCOM, Hakkoda), as well as communications and documents related to the regulatory context (e.g., CCI, BRICS Competition Centre) and vendor-commissioned research (e.g., materials based on Forrester). Each signal is documented with its date, source, reliability level (A/B/C/D), and coded by the presumed field node and type of relation. This allows the corpus to function not as a "collection of illustrations" but as a structured set of observations for reconstructing the configuration.

Importantly, the signal corpus is intended not for exhaustive market coverage but for diagnosing the field's regime within the RTDAS logic: signals are treated as empirical indicators of structural effects, not as a statistical sample for parametric estimation. A complete list of signals with coding cards and source attribution is provided in the Appendix, ensuring procedural verifiability and the possibility of replication by other researchers.

To ensure internal validity and mitigate the risk of arbitrary interpretation, four groups of methodological safeguards were applied. First, triangulation was used: each key statement about the field's structure and the reproduction of the LQO is formulated only upon independent confirmation from a combination of sources (minimum A+B or A+C),

reducing the likelihood that a conclusion rests on a single narrative or marketing interpretation. Second, observations were temporally spaced across two slices (2020–2022 and 2023–2026), allowing verification of effect reproducibility against the backdrop of changing market regimes (expansion → correction → AI integration) and separating stable configurational elements from phase-specific fluctuations.

Third, the S-Screen operator imposes explicit counterfactual tests ("if the constraint were removed, would the LQO disappear?"), which serve as a safeguard against circular reasoning and prevent automatically attributing any stagnation to a saturation regime. Fourth, the diagnosis is formulated in a falsifiable manner: conditions for falsification and early proxy indicators of a potential regime shift are specified in advance for the key conclusions. Thus, the work does not claim a definitive "explanation of the market" but offers a reproducible testing scheme, indicating which future observations should lead to a revision of the regime classification.

4. Empirical Results: Diagnosing the SaaS Field

4.1. Field Contour and Phase Dynamics (2020–2026)

The field under study—the global market for horizontal B2B SaaS platforms—exhibited pronounced phase dynamics from 2020 to 2026. However, these dynamics did not disrupt the reproducibility of key structural effects. In 2020–2021, the accelerated shift to the cloud and the reorientation of corporate IT budgets toward remote and distributed work scenarios created conditions for a sharp increase in demand for platform solutions and their ecosystems. Against this backdrop, monetization models focused on consumption and scalability (including elements of usage-based pricing) became entrenched, shifting client attention from capital expenditures to operational and integration costs over the lifecycle.

The 2022–2023 phase was characterized by market correction: a reassessment of growth strategies, a decline in investment activity, and widespread layoffs in the tech sector. Public narratives often interpret this phase as a "cooling down" and a transition from an expansion strategy to an efficiency strategy. For the purposes of this study, it is crucial that the correction affected the financial and organizational parameters of actors but did not eliminate the basic mechanisms of interaction in the field related to integration complexity and total cost of ownership.

Starting in 2024, the field transitioned to the accelerated integration of AI functionality and agentic workflows within platform solutions. This wave of innovation was accompanied by continued consolidation through M&A and the emergence of initial regulatory signals concerning bundling practices, particularly regarding AI components. In RTDAS terms, it is important that technological complexification and institutional control circuits developed simultaneously: innovations did not "replace" the problem of integration complexity but rather formed additional layers of interaction. These layers could either disrupt the configuration or—critically for diagnosis—be absorbed by it and integrated into the retention regime.

4.2. Step 1: Diagnosing the Unsustainable Problematic Configuration

Applying Step 1 of the RTDAS v1.1 protocol confirms the presence of an Unsustainable Problematic Configuration in the horizontal B2B SaaS field. Key positions reproduce a relational structure where integration complexity and high TCO are not incidental side effects but constitute a stable outcome of the interaction between actors' incentives and benefits.

The low-quality outcome (LQO) is identified as the persistently high Total Cost of Ownership (TCO) and operational complexity faced by corporate clients when implementing and integrating horizontal SaaS platforms. This refers not to isolated failed implementations or temporary "bottlenecks," but to a recurring effect. It manifests as a gap between the promise of platform standardization ("rapid implementation," "ready-made functionality") and the actual costs of integration, adaptation, maintaining compatibility, and managing a multi-platform architecture in a dynamic environment. This LQO remains reproducible across changing market phases: growth, correction, and the subsequent technological shift to AI do not lead to its disappearance, serving as a primary indicator of structural retention.

Reconstructing the configuration reveals that the persistence of this outcome rests on distributed benefits. Major vendors benefit from the platform logic through stable subscription revenue, upselling/cross-selling mechanisms, and control over the ecosystem, including standards, interfaces, and bundling practices. Niche vendors benefit from specialization and the ability to capture specific demand segments, partly through flexible pricing models and "best-in-class" positioning, which sustains multi-platform adoption on the client side. Integrators and consultancies derive benefit from sustained demand for connecting disparate platforms, migration, customization, and managing complex architectures, thus acting not as an external "compensator" but as a vital link in reproducing the configuration. Corporate clients, despite rising costs, gain access to functional innovations without capital expenditure and retain a sense of risk distribution among multiple suppliers, mitigating the fear of single-vendor monopoly and supporting a best-of-breed strategy. Investors benefit from market growth and consolidation through M&A. Regulators, in the early stages, are constrained to a mode of potential intervention rather than forming a stable circuit capable of structurally disrupting the field.

The distributed benefits test, as per the protocol, is passed: none of the key positions have a unilateral incentive to radically simplify the field, as simplification would destroy a significant portion of their realized benefits or redistribute control. This implies that the expectation of a "natural" movement towards reduced complexity through the rational behavior of individual actors is not supported; the configuration is sustained precisely by distributed rationality.

The mutation of reforms test is also passed. Changes that might superficially appear corrective—such as the shift to new pricing models, the market correction of 2022–2023, or the introduction of AI and agentic workflows—do not, in the observed dynamics, lead to a topological disruption of the field. Instead, these changes are absorbed by the configuration and transformed into additional retention mechanisms. This occurs through enhanced lock-in, increased layers of compatibility, and the emergence of new dependency points within the ecosystem. Thus, innovations and market shocks do not disrupt the reproduction of the LQO but alter its form of manifestation while preserving the overall topology (Mazurkevych & Zavgorodniy, 2015).

4.3. Step 2: Applying the S-Screen Operator and Testing for Saturation Regimes

Following the confirmation of an Unsustainable Problematic Configuration in Step 1, the S-Screen operator was applied. Its purpose is to distinguish between structural retention and field saturation regimes. In RTDAS v1.1 terms, saturation is understood as a regime where the reproduction of a low-quality outcome is determined primarily by exceeding the carrying capacity of one of the system's circuits. This represents an external or quasi-external constraint whose removal should, in principle, lead to the disappearance of the LQO. Methodologically, the S-Screen is implemented as a series of counterfactual tests based on four ideal types of saturation (resource, procedural, complexity, legitimation). Each test poses the question: "If this specific constraint were removed, would the LQO disappear and the field's trajectory change?" An affirmative answer is a necessary but not sufficient indicator of saturation. After identifying a causal relationship, an additional check determines whether the corresponding "constraint" is an exogenous limit of the field or an endogenous mechanism of the configuration, sustained by distributed benefits.

Resource Saturation. Testing for a resource-based regime did not reveal a dominant limiting constraint. The availability of computational resources during the period under review showed no signs of persistent deficit as a factor capable of explaining the reproduction of the LQO. The financial contraction of 2022–2023 was cyclical in nature, accompanied by a reallocation of strategies, but it did not eliminate demand for integration work or resolve integration complexity. The counterfactual test—"if capital availability were restored to expansion-period levels, would the LQO disappear?"—yields a negative result. Increased financing availability would potentially accelerate the pace of adoption and upgrades but would not systematically reduce TCO and operational complexity. Thus, a resource regime may influence the rate of growth but does not explain the reproduction of the low-quality outcome itself.

Procedural Saturation. A procedural regime presupposes that the field is blocked by rigid rules, standards, or bureaucratic barriers that limit adaptation and reproduce low quality. The available signal corpus lacks evidence that procedural constraints (e.g., institutionally defined procurement formats, certification prohibitions, or standards hindering adaptation) are the dominant cause of the LQO. The counterfactual test—"if procedural constraints were removed, would the LQO disappear?"—is also not supported. Even under the hypothetical simplification of implementation and procurement procedures, the technical and architectural complexity of inter-platform integration would persist as a structural source of TCO. Consequently, procedural saturation does not manifest as a leading regime in this field.

Complexity Regime: Causality Without an Exogenous Limit. The complexity dimension emerges as the strongest candidate for explaining the observed dynamics. The signal corpus consistently documents effects of "architectural entanglement," increasing layers of compatibility, operational losses from incomplete integration, and rising transaction costs of coordination in a multi-platform environment. At the first level of the S-Screen, the counterfactual test indicates that removing integration complexity (e.g., through a hypothetical universal compatibility layer) would lead to the disappearance of the LQO: reduced complexity should lower TCO, decrease operational risks, and weaken client dependence on specialized integration work. This result confirms the causal role of complexity in reproducing the low-quality outcome.

However, the second level of verification is critical. In a saturation regime, complexity functions as an external limit—a constraint that no actor has an interest in maintaining and which impedes development against the will of participants. In the field under study, a different causal structure is observed. Complexity is not perceived as an unintentionally accumulated "overload" that the system seeks to eliminate. Instead, it is sustained and reproduced through the distributed benefits of key positions. For major vendors, complexity and ecosystem multi-layeredness create additional dependency points and lock-in mechanisms, amplified by innovations (including AI layers and bundling). For integrators, complexity is a source of sustained demand and long-term contracts. For clients, multi-platform adoption and its resulting complexity are partially rationalized as a way to avoid single-supplier monopoly and gain access to innovations without capital expenditure. Thus, complexity functions not as an external boundary of the field but as an endogenous mechanism of structural retention—a component of the UPC.

In other words, the S-Screen here reveals not "saturation by complexity" but the "monetization of complexity." The complexity factor is embedded in the relational configuration and supported by the same mechanisms of distributed rationality reconstructed in Step 1. This allows the observed signs of increasing complexity to be interpreted not as a symptom of the field's capacity being exhausted, but as a means of preserving topology, where innovations predominantly mutate into additional layers of dependency and integration work.

Legitimation Saturation. Testing the legitimation regime reveals early signals of regulatory attention to bundling practices and potential anti-competitive effects. However, within the studied interval, these signals do not constitute a dominant saturation regime. They do not yet function as a systemic "external veto circuit" capable of structurally altering the rules of the game and disrupting the configuration. The counterfactual test—"in the absence of regulatory pressure, would the LQO disappear?"—yields a negative result, as the reproduction of complexity and TCO is embedded in the field's architecture and distributed benefits. Consequently, legitimation saturation may be considered a potential early indicator of a future regime shift, but it is not an active explanatory mechanism over the current horizon.

S-Screen Conclusion. The application of the S-Screen operator does not confirm the dominance of resource, procedural, or legitimation saturation regimes. The most significant factor—complexity—is causally linked to the LQO. However, the second-level verification interprets it as an endogenous mechanism of the UPC, not as an exogenous limit to development. Accordingly, the field during the period under review should be classified as being in a regime of structural retention (UPC), rather than a saturation regime. The signs of "overheating" and "limit" are a form of manifestation of the configuration, not an independent cause of its stability.

4.4. Step 3: Formulating the Minimal Core R* and the Minimality Test

In the third step of the RTDAS v1.1 protocol, the configuration identified as a UPC and processed through the S-Screen is reduced to its minimal core, R*. This core represents the set of conditions and relations without which the reproduction of the low-quality outcome (LQO) becomes impossible. Unlike a general description of the field, R* captures structural necessity: which elements are indispensable for the self-reproducing retention circuit, and which, conversely, can vary without disrupting the configuration's topology.

In the field under study, the minimal core R* comprises four interrelated components. First, the simultaneous stability of at least two comparably powerful vendors is necessary. These vendors must offer platforms that remain structurally incompatible (or incompatible at key layers: data, integration interfaces, ecosystem standards). This creates the basic condition for multi-platform adoption as a rational client strategy and generates systemic demand for connecting heterogeneous systems.

Second, the reproduction of the UPC requires the vendors' capacity to absorb technological and organizational innovations in a way that does not disrupt the configuration but transforms them into additional layers of dependency and integration work. In other words, innovations must be institutionally and architecturally "translatable" into field complexification, not simplification. This is a key mechanism of reform mutation, previously identified in Step 1.

Third, a persistent motive on the part of corporate clients is needed to prevent a shift to a single vendor. The fear of monopolization and the associated loss of control (over pricing, access to functionality, strategic dependence) sustains the multi-platform strategy and thereby reproduces the initial architectural fragmentation. This component is critical, as it makes multi-platform adoption rational even in the face of high costs.

Fourth, the core R* presupposes the necessity of labor (external or internal) to connect the unconnectable. This entails an unavoidable layer of integration work that is not automatically eliminated by technological development or "dissolved" through standardization. Importantly, this refers not to a specific group of actors (e.g., the integration industry as such), but to the structural necessity of labor costs to maintain compatibility. This element may change its institutional form (consulting, in-house IT teams, integration platforms) but remains functionally essential for preserving the circuit.

The minimality test is conducted by mentally removing each component and checking whether the reproduction of the LQO and the closed retention circuit would persist. Removing the first component (pluralistic strength of incompatible platforms) destroys the source of multi-platform adoption, making a transition to a single stack possible, which sharply reduces the structural need for integration and weakens TCO reproduction. Removing the second component (the capacity to mutate innovations into complexification) alters the fate of reforms: innovations begin to perform a disruptive function, and the configuration loses its ability to maintain topology amidst change. Removing the third component (client fear of monopoly) leads to demand consolidation and abandonment of multi-platform logic, thereby eliminating the basic source of inter-platform complexity. Removing the fourth component (the necessity of labor for connection) eliminates the very mechanism of LQO reproduction, as integration complexity ceases to be converted into sustainable ownership costs.

Consequently, these four components constitute the minimal core R*: each is structurally necessary, and the exclusion of any single element would disrupt the retention circuit, making the reproduction of the UPC impossible.

5. Stress Test and Conditions for Falsification

Given that the diagnosis of a UPC and the S-Screen results provide a structural explanation for the reproduction of the low-quality outcome, the next step in the protocol is not a "market forecast" but a stress test of the configuration. This involves constructing a limited set of alternative trajectories for the field's regime development, each corresponding to a different mechanism of topological change. This study identifies four trajectories that exhaust the main classes of transitions relevant for testing the falsifiability of the conclusion.

The first trajectory (A) describes the persistence of the structural retention regime: key positions continue to derive distributed benefits from maintaining complexity, and innovations (including AI layers and pricing changes) predominantly mutate into additional lock-in mechanisms and new integration layers. Under this trajectory, phases of market volatility do not lead to topological disruption but serve as a form of its adaptation.

The second trajectory (B) posits a transition to legitimation saturation as the dominant regime. External regulatory circuits become sufficiently powerful to restrict bundling practices, mandate interoperability, or otherwise make maintaining the existing configuration more costly than restructuring it. In this scenario, the field might retain high complexity as a technical characteristic but lose the ability to convert it into a stable mechanism of control and benefit extraction, creating conditions for the UPC's disruption or a transition to a hybrid regime.

The third trajectory (C) assumes a technological breakthrough, where a universal compatibility layer ("translator" between platforms) emerges—not as a local optimization, but as an infrastructural innovation that radically reduces the transaction costs of integration. This would undermine the functional necessity of the labor required to "connect the unconnectable." In RTDAS terms, this corresponds to the external disruption of one element of R*, which should lead to the disappearance or sharp reduction of the LQO.

Finally, the fourth trajectory (D) describes a collapse of demand for multi-platform logic as a sustainable client strategy. If a mass transition to single-vendor solutions occurs (regardless of the cause—economic, organizational, or institutional), the critical motive for multi-platform adoption disappears, and the configuration loses one element of the core R*. In this scenario, the field might transition to an oligopolistic regime with a different risk structure, but the basic circuit reproducing integration complexity would be significantly weakened.

For the stress test to serve a falsifiability function, each trajectory must have observable early indicators. Within RTDAS, these are understood as proxy metrics pointing not to "market sentiment" but to changes in the structure of relations and benefits—that is, to the weakening of elements of R* or the strengthening of external pressure circuits.

Trajectory A (UPC persistence) is characterized by continued consolidation through M&A, the stability or growth of ecosystem dependencies, and the absence of significant progress on interoperability standards that genuinely reduce integration labor. For the technological breakthrough scenario (C), a critical indicator would be the emergence of working solutions that not only automate individual integration tasks but eliminate the very need for complex "bridges" between platforms. In practical terms, this would manifest as a sustainable and reproducible decrease in TCO and a reduction in integration projects without shifting costs to other hidden layers.

For the multi-platform demand collapse scenario (D), significant indicators include rising churn and vendor portfolio consolidation on the client side, as well as public and documented integration failures leading to an organizational abandonment of the best-of-breed strategy. For the legitimation saturation scenario (B), key early signals are the transition from discussions and investigations to binding norms and sanctions, and the regulatory codification of interoperability requirements (including within regimes like the AI Act), which alter the relative cost of maintaining the previous configuration for major vendors.

The strongest counterargument to interpreting complexity as a UPC mechanism is as follows: the observed integration complexity might be explained not by structural retention but by resource saturation, specifically a shortage of qualified integrators. In this logic, high costs and lengthy integration projects result from a limited labor supply. Consequently, increasing the availability of specialists or replacing them with low-code/automation should cause the LQO to disappear without needing to invoke an explanation based on the configuration of benefits.

The strength of this counterargument lies in its testability. If valid, increasing the supply of integration labor or large-scale technological substitution should lead to a sustained reduction in integration costs and aggregate TCO, as well as a weakening of client dependence on multi-layered architecture. However, the available signals do not confirm these conditions. The market adjustments and layoffs of 2022–2023 were not accompanied by a disappearance of demand for integration work. Furthermore, the proliferation of AI components and "smart" layers in products appears to increase the number of interface points and add new levels of compatibility. Thus, over the current horizon, the observed dynamic is not one of "alleviating a deficit" but of reproducing complexity in new forms, consistent with the UPC diagnosis.

Nevertheless, within the RTDAS protocol, this counterargument is not "falsified forever" but is established as an explicit falsifying hypothesis. If, in subsequent periods, sustainable and reproducible effects of sharply reduced integration costs are observed alongside an expanded labor supply or large-scale replacement of integration by low-code/automation technologies, and if this is accompanied by the disappearance of the LQO at the field level, then the conclusion of structural retention should be revised in favor of a dominant resource regime. This is precisely why the stress test specifies not only the current regime classification but also the conditions under which it should be considered invalid.

6. Discussion

The key finding of this study is that the observed market volatility and signs of field complexification do not provide sufficient grounds for a conclusion of saturation. The application of RTDAS v1.1 demonstrates that phenomenology superficially resembling a limit regime (rising transaction costs, increasing implementation complexity, growing total cost of ownership) can be generated not by the exhaustion of field capacity but by a stable, problematic configuration of relations. In this sense, the central contribution of RTDAS v1.1 is not a new interpretation of "poor outcomes" but a procedure for distinction: before attributing a system to a saturated regime, one must establish whether the observed low-quality outcome results from an external limit or an internal retention mechanism sustained by distributed benefits.

The integration of the S-Screen operator resolves a key methodological ambiguity common in discussions of limit regimes: the link between symptom and mechanism is no longer assumed but is tested through counterfactual analysis and an examination of the constraint's endogeneity. The case of the complexity dimension is particularly significant here. The counterfactual test shows that reducing complexity should diminish the LQO. However, the subsequent reconstruction of the field demonstrates that complexity does not function as an "undesirable limit" but is maintained as a source of distributed benefits and, consequently, operates as an element of the UPC. This logic shifts the discussion from the plane of "stagnation" to the plane of field architecture: a market can undergo cycles of growth and correction without exiting a regime of structural retention.

The findings are directly relevant to the Theory of Saturation (Manafi, 2025) and subsequent works, where saturation is treated as a regime in which a system loses its capacity for productive development and approaches transitional states, including collapse (see also Manafi, 2026). RTDAS v1.1 does not compete with this perspective nor replace its dynamic focus. Instead, it introduces an additional diagnostic layer that allows for a more precise specification of what is being interpreted as saturation: an external limit of the field or an internal retention mechanism creating a "limit effect" at the level of symptoms.

Embedding the S-Screen within the diagnostic sequence extends the applicability of saturation theory to cases where observed stagnation or rising costs might be mistakenly attributed to capacity exhaustion, even though they are actually sustained by a stable configuration of benefits. Thus, saturation in the spirit of Manafi becomes not a universal explanation for "slowdown," but a specific regime that must be empirically distinguished from an alternative regime—structural retention. In applied terms, this means that correct regime identification determines not a "set of measures" but the type of causality and, consequently, the appropriate object of intervention (capacity limit vs. relational topology). In theoretical terms, this makes the transitions described in models like Saturation-Collapse more localizable: it becomes possible to specify the conditions under which a system genuinely enters a limit regime, rather than demonstrating stable reproduction of low quality under the guise of saturation. Previous research on formalized decision-making models (Mazurkevych et al., 2017) confirms the possibility of mathematically describing managerial uncertainty, opening the prospect for algorithmic operationalization of identity and sufficiency-of-compensation criteria within RTDAS.

The results also refine several related concepts often applied to platform markets. First, classical theories of lock-in and switching costs typically describe client-supplier dependency as a bilateral relationship. The issue of aligning projects with strategic contours has previously been analyzed at the portfolio level (Mazurkevych, 2008). However, this work shifts the level of analysis from the organization to the inter-organizational field. RTDAS diagnosis adds a structurally crucial third circuit to this—positions that derive benefit from integration complexity and support the field's reproduction as a multilateral configuration. Thus, the explanation shifts from "client choice inefficiency" to the architecture of distributed rationality: even with rational decisions by individual actors, the field reproduces a low-quality outcome.

Second, explanations in terms of "vicious circles" and self-reinforcing loops often remain at the level of dynamic description, failing to specify the minimal relational structure without which the loop cannot close. The introduction of the core R* allows for the imposition of rigor: the configuration becomes a falsifiable construct, as one can specify the elements whose removal should disrupt the reproduction of the LQO. Thus, RTDAS offers a language not only for interpretation but also for the testable reconstruction of mechanisms. Empirical studies of hybrid management regimes demonstrate that organizational complexity often persists as a stable effect of distributed roles and procedures (Aydin et al., 2025). In the SaaS field under consideration, a similar logic manifests at the level of inter-organizational ecosystems.

The practical implications of the results should be interpreted not as a set of universal recommendations but as a clarification of which types of changes are capable of affecting the configuration. If the field is indeed organized as a UPC, piecemeal reforms and innovations are highly likely to be absorbed and mutate into new layers of retention, as they do not alter the structure of distributed benefits or disrupt the elements of R*. Conversely, a regime shift is possible either through the strengthening of external legitimation constraint circuits, through technological changes that remove the functional necessity of integration labor as a structural link, or through a change in the rational logic of multi-platform adoption on the client side. These conclusions provide a framework for monitoring: the object of attention is not only growth metrics but also early signs of change in the field's architecture and the relative cost of maintaining the configuration.

It must be emphasized that the RTDAS v1.1 diagnosis relies on a corpus of open signals and, consequently, captures precisely those structural effects accessible to public observation. This defines the boundaries of interpretation: the conclusions do not claim to be an exhaustive description of all intra-field mechanisms but form a testable hypothesis about the field's regime and its minimal core. Herein lies the methodological value: the diagnostic result does not close the discussion but shifts it into a mode of falsifiable claims, compatible with further empirical testing.

This study demonstrates the applicability of RTDAS v1.1 and the S-Screen operator for diagnosing field regimes based on open signals. However, the results should be viewed as a formalization of a testable hypothesis about the structure reproducing a low-quality outcome, not as an exhaustive reconstruction of all market mechanisms. The limitations are not "defects" but methodologically anticipated, and they outline a program for further development of both the tool and the empirical base.

First, the signal corpus is constructed from public sources and aimed at identifying structural effects accessible to external observation. This enhances the reproducibility of the diagnosis but limits direct access to internal data (contractual structures, actual integration costs, real reasons for churn). Accordingly, the next level of validation should involve a transition from signal-based reconstruction to a mixed-methods design, where open signals are supplemented by selective primary data (surveys of IT directors, case interviews, analysis of typical contract terms, archival data on integration budgets). Such a step would not alter the RTDAS protocol but would strengthen the evidence base for formulating R* and for empirically testing falsification conditions.

Second, the current study includes limited regulatory signals from individual jurisdictions. This does not allow for a full assessment of the legitimation circuit's dynamics or the probability of a transition to legitimation saturation. A promising direction is to expand the comparative block across jurisdictions (EU/US/India/UK), including an analysis of how "intervention thresholds" differ and which types of regulatory actions are capable of moving from a mode of symbolic signaling to a mode of structural veto. For the Manafi platform and the context of the Theory of Saturation, this theme is particularly important, as it connects the macro-dynamics of saturation with specific mechanisms of institutional escalation (Manafi, 2025; Manafi, 2026).

Third, the current diagnosis conceptualizes the LQO through persistently high TCO and operational complexity. While this formulation is correct in RTDAS terms, future research would benefit from strengthening the operationalization of outcome quality through multi-level proxy indicators. These would allow for the empirical comparison of regimes, not just logical comparison. Examples include time to achieve integration "steady state," the proportion of the budget allocated to integration and maintenance, supplier switching frequency, the share of functions implemented "around" platforms, and indicators of human capital degradation in IT departments (burnout, turnover, growing reliance on contractors). Such a set would provide a more rigorous link between the relational reconstruction of the configuration and the measurable consequences of its reproduction.

Finally, a key line of development is the further formalization of the methodology itself. In version 1.1, R* is defined through a minimality test implemented as a logical check of structural necessity. The next step is the introduction of formalized criteria for "configuration identity" and "sufficiency of compensation." These are rules that would allow for a more unambiguous distinction between: (a) mutation as the preservation of topological equivalence, and (b) disruption as a transition to a different configuration. This direction is particularly relevant in the context of discussions on saturation and collapse, as it would enable a more precise identification of the moment of regime transition and differentiate "pseudo-transitions" (a change in form) from a genuine change in causality.

Beyond these lines, several promising avenues opened by the proposed protocol can be identified, potentially developing into independent studies. First, a comparative diagnosis of regimes in vertical SaaS markets (e.g., fintech, medtech, industrial platforms) could test whether the structure of R* holds under different types of dominant constraints. Second, an investigation of "AI add-ons" as a mechanism of reform mutation could explore the conditions under which AI implementation reduces integration complexity versus reproducing it by creating new layers of dependency. Here, the S-Screen could serve as a tool for distinguishing "disruptive innovation" from "retention innovation." Third, the development of a semi-automated signal monitoring pipeline and regime classification system based on RTDAS rules would allow the framework to function as an early warning system for regime shifts—from structural retention to saturation or to the transitional states discussed in the Theory of Saturation (Manafi, 2025, 2026).

Thus, this study should be regarded as the first empirical demonstration of the diagnostic layer of RTDAS v1.1 with the S-Screen operator. It also serves as an agenda for further work, in which the relational reconstruction of configurations, saturation theory, and regime transition models can be integrated through a common verification procedure. This makes possible not only the expansion of empirical applications but also the development of a shared language for discussing limit regimes of active systems within the field of saturation studies.

8. Conclusion

This paper applied the RTDAS v1.1 protocol, extended with the S-Screen operator, to diagnose the regime of the global horizontal B2B SaaS platform field from 2020 to 2026. The study's objective was to empirically distinguish between two mechanisms often conflated in discourse: saturation regimes, arising from the exceeded carrying capacity of field circuits, and structural retention, where a low-quality outcome is reproduced as a consequence of a stable relational configuration and distributed benefits.

The results demonstrate that the field under study reproduces an Unsustainable Problematic Configuration. High TCO and integration complexity persist not as a temporary malfunction or simple "market inertia," but as a stable effect of the relational topology among key positions and the mechanisms of reform mutation. The S-Screen operator allowed for the systematic exclusion of resource, procedural, and legitimation saturation dominance over the studied horizon. It also clarified the role of the complexity factor: it is causal for the LQO but functions as an endogenous mechanism sustaining the UPC, not as an exogenous limit to development. The formulation of the minimal core R* and the minimality test translate the diagnosis from a descriptive level into a testable construct, enabling the specification of falsification conditions and early indicators of a potential regime shift.

Thus, the article contributes to the research agenda on saturation established by the Theory of Saturation (Manafi, 2025) and subsequent works (Manafi, 2026). It offers a complementary diagnostic layer that allows for the localization and operationalization of the distinction between a "limit regime" and a "limit effect" arising as a product of structural retention. Prospectively, this opens the possibility for a more rigorous analysis of transitions and regime changes in active systems: saturation is considered not as a universal interpretation of stagnation, but as a specific regime that must be empirically differentiated and compared with alternative mechanisms of low-quality reproduction.

This distinction enables a shift from retrospective descriptions of turbulence to prospective regime diagnosis. In this mode, a researcher or practitioner can assess in advance whether the field's capacity limit is tightening or, conversely, whether the topology of retention is strengthening. In a broader context, this lays the groundwork for developing a commensurable language for analyzing complex systems—from digital markets to politico-economic regimes—where the key question becomes not "is the system slowing down or speeding up?" but "what type of causality holds it in its current state?". It is precisely this framework that makes it possible to connect structural diagnosis, saturation theory, and transition analysis into a unified research program oriented towards testability and regime differentiation, rather than descriptive generalization.

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