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Unified Adaptive Agency Theory: How the Coupling of Structural and Processual Subsystems Drives Organizational Agency

guilin yang

yangguilin915@126.com

Xi'an Jiaotong University

Article

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Abstract

The internal mechanism of proactive evolution under uncertainty remains a core puzzle in organizational research. Existing theories often overemphasize structure while neglecting agency. Others focus on cognition but detach it from the entity. Consequently, they struggle to explain how micro-level mentality transforms into macro-level adaptation. To bridge this gap, this paper proposes the Unified Adaptive Agent Theory (UAAT). We view the organization as an agent driven by the dynamic coupling of a structural subsystem (Resources-Capabilities-Intentions, RCI) and a process subsystem (Cognition-Imagination-Learning, CIL).

Based on text analysis of annual reports from Chinese A-share listed companies and large-sample empirical tests, we present several findings. First, higher environmental uncertainty leads firms to strengthen the structural fit between internal resources and strategic intentions. This demonstrates a distinct "internal anchoring" rationality. Second, while the process subsystem has limited direct contribution to value creation, cognitive levels determine adjustment sensitivity. Meanwhile, imagination significantly guides strategic intent. Third, structural synergy contributes significantly more to long-term firm value than process synergy. This confirms that physical embodiment is the foundation of organizational adaptability. These results suggest that proactive evolution is not merely strategic conceptualization. Rather, it is the dynamic result of mental processes continuously reshaping physical structures. This study provides a micro-macro integration mechanism for organizational agencies. It also re-establishes the theoretical status of the "organization" as the core unit of analysis for economic and social evolution.

INTRODUCTION

How organizations maintain agency and achieve evolution in turbulent environments remains a core puzzle in management studies. Existing theories are diverse. However, a profound rift persists. Macro-structural perspectives often view organizations as passive collections of resources and power. They neglect the micro-dynamics driving these elements (Puranam, 2018). Conversely, micro-cognitive perspectives delve into psychological or adaptive processes. Yet, they struggle to explain how these mental states converge into strategic resilience at the organizational level (Sarta et al., 2021; Neukam et al., 2025). These disconnects render existing theories inadequate for explaining how organizations achieve leaps through proactive change.

Specifically, macro theories like the Resource-Based View focus on static resource stocks. They find it difficult to explain how subjective agency breaks through objective constraints (Seo, 2021). Meanwhile, micro theories based on bounded rationality rely excessively on experiential feedback. They often reduce evolution to passive corrections of the past (Voet, 2022). This overlooks the manager's ability to construct future scenarios and reshape reality through "imagination" (Beckert, 2021). This gap between theory and reality makes it difficult to fully outline the internal mechanisms of organizational evolution during crises.

To address these challenges, this study proposes the Unified Adaptive Agent Theory (UAAT). This theory is not a subversion of existing knowledge. Instead, it is an integrative reconstruction based on the perspective of "agency." It systematically integrates multidimensional perspectives, including resource endowments, dynamic processes, managerial cognition, organizational aspirations, and practical discourse. We view the organization as an adaptive agent formed by the coupling of mental processes and physical structures. By building a bridge between "structure" and "process," UAAT aims to reveal the internal mechanisms of continuous organizational evolution under uncertainty.

We argue that the essence of organizational evolution is not merely resource accumulation. It is a dynamic process where micro-level process subsystems continuously reshape macro-level structural subsystems. Based on large-sample empirical tests of Chinese listed companies, this paper reveals how this "process-structure" synergy drives creative evolution in uncertainty. This framework not only bridges the micro-macro divide but also redefines the organization as an adaptive agent with endogenous evolutionary power. This gives the concept of organization cross-level explanatory power. It applies to the analysis of micro-actors, such as entrepreneurs or super-individuals. It also extends to the evolutionary analysis of meso-level firms or macro-level nations.

LITERATURE REVIEW

Re-defining the Organization as an Adaptive Agent

The logical starting point for understanding organizational adaptation lies in redefining its essence. From Barnard's social cooperation system to open systems theory, the organization has been viewed as a dissipative structure countering environmental entropy (Jia, 2024). However, existing strategic management literature often presents this process in a fragmented manner. It tends to focus either on the static configuration of the "body," such as resource endowments and organizational structure, or on the dynamic mechanisms of the "function," such as cognitive processes and behavioral routines (Lei et al., 2021) .

Although scholars generally agree that organizations are "adaptive agents" (Carvalho, 2023; Marchese et al., 2023), current research lacks a unified framework. We need to describe how the "structural subsystem" and the "process subsystem" co-evolve through interaction over time. If we view the organization as an adaptive agent, its evolution inevitably involves two inseparable dimensions. One is the physical entity supporting its existence, which is the structural subsystem. The other is the driving force powering its renewal, which is the process subsystem.

Structural Subsystem: The Material Carrier of Evolution

In the evolutionary framework of the organization as an adaptive agent, its macro structure must be analyzed from the perspective of the agent itself. Early Resource-Based Views treated resources as basic evolutionary constraints. They emphasized that organizational heterogeneity stems from

differences in resource endowments (Bintara et al., 2021). However, organizations relying solely on static resources are seen as "unconscious entities." This makes it difficult to explain their dynamic evolutionary capabilities. To bridge this gap, capabilities were introduced as dynamic means to transform resources and build competitive advantages (Cui et al., 2021). Nevertheless, the combination of resources and capabilities still cannot fully explain the directionality of organizational behavior.

Further research indicates that intention is a key vector for evolution. It determines the direction of resource allocation and the domain of capability building (Paavola et al., 2022; Durán et al., 2022). Intention is not merely goal setting for individuals or organizations. It is also a commitment signal sent to the external environment, thereby shaping organizational identity and legitimacy (Ozcan & Yildirim, 2025)

From the above studies, we can see that resources, capabilities, and intentions together form a complete closed loop of the organizational structural subsystem. Resources serve as the foundation providing the material base. Capabilities act as the means to achieve resource transformation. Intentions serve as the orientation establishing the evolutionary direction. These three are interdependent and indispensable. Together, they depict the "state of existence" of the organization in a specific time and space.

Process Subsystem: The Endogenous Power of Evolution

The key to explaining how the structural subsystem dynamically updates lie in recognizing the endogenous power mechanism driving organizational evolution. Existing literature has explored cognition, imagination, and learning separately. Together, they reveal the internal processes driving organizational evolution.

First, cognition acts as the primary gateway for processing uncertainty. It involves how managers understand causal logic in the real world and assign specific meaning to it (Grüner, 2024). However, evolution based solely on cognition is limited by "realist" logic. This makes it difficult to achieve breakthrough changes.

Second is imagination, which is the key variable for breaking path dependence. Imagination allows agents to transcend existing paradigms and construct future scenarios that have not yet occurred (Rindova & Martins, 2024).

Finally, there is learning, which is the closed-loop mechanism connecting the mind and reality. It is not merely trial-and-error correction. It is the process of comparing "imagined scenarios" with "actual results" and adjusting organizational schemas (Dabas et al., 2024).

From the above studies, we can see that the endogenous power of organizational evolution is characterized by the dynamic processes of cognition, imagination, and learning. Cognition provides understanding. Imagination provides direction. Learning provides corrections. Together, these three constitute the endogenous engine driving organizational evolution.

Limitations of Existing Research

Through the review of the above literature, we can identify the following limitations in existing research regarding the creative evolution of organizations.

First is the separation of structure and process. Although literature has discussed the structural subsystem and the process subsystem separately, they are often treated as independent modules. There is a lack of systematic explanation regarding the dynamic connection mechanism between these two subsystems. Specifically, the mechanism by which micro-level mental processes transform into macro-level structural changes has not been fully uncovered.

Second is the insufficient integration of process elements. Although existing studies have explored the roles of cognition, imagination, and learning in evolution separately, most focus on single-dimensional analysis. There is a lack of systematic examination regarding their dynamic coupling and circular interaction within a unified agent.

In response to these deficiencies, this paper will construct an integrated model of "structure-process" dynamic coupling in subsequent sections. We aim to reveal the internal mechanisms through which organizations achieve creative evolution in complex environments.

THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

Proposal of the Unified Adaptive Agent Theory

The Resource-Based View treats organizations as static combinations of resources and capabilities. It explains what organizations possess but struggles to explain how they sustain evolution in turbulent environments (Huang et al., 2023; Bojesson, 2024). Dynamic Capability Theory attempts to bridge this gap. It emphasizes the processes of integrating, building, and reconfiguring internal and external competencies to address rapidly changing environments (Do et al., 2021). However, this perspective focuses heavily on how to act, paying limited attention to the cognitive origins of action. Upper Echelons Theory introduces managerial cognition into strategic research. It reveals how demographic characteristics influence strategic choices through cognitive structures (Xu, 2023; Kong et al., 2024). Yet, its unit of analysis remains at the individual level, making it difficult to explain the emergence of organizational-level phenomena.

Behavioral Theory of the Firm attempts to bridge this chasm. It proposes that organizational behavior is driven by the gap between actual performance and aspiration levels, incorporating both cognition and behavior into the analytical framework (Hagen et al., 2023; Matthews et al., 2024). However, this theory inadequately explains the sources of aspirations. It particularly lacks the theorization of the organization's key ability to conceive of futures that do not yet exist. The Strategic Agency perspective further points out that organizations are not passive adapters to the environment. Instead, they shape the environment and create the future through proactive intention setting and active behavioral choices.

This emphasizes the core driving role of the agent in strategy formation (Kunadt, 2025). This perspective offers important insights into how organizations break path dependence but has not yet systematically integrated psychological processes like cognition, imagination, and learning.

The Unified Adaptive Agent Theory (UAAT) proposed in this study is an integrative reconstruction based on the theoretical dialogues above. UAAT does not start from scratch. Instead, it integrates the resource-capability elements of the Resource-Based View, the process perspective of Dynamic Capabilities, the cognitive elements of Upper Echelons Theory, the aspiration-behavior mechanism of Behavioral Theory of the Firm, and the action logic of Strategic Agency into a unified framework. The core proposition of this theory is that an organization is an adaptive agent formed by the coupling of mental processes and physical structures. Its evolutionary driving force stems from the continuous reshaping of the structural subsystem by the process subsystem.

The theoretical value of this integration lies in its response to calls for expanding Behavioral Theory of the Firm. Scholars have urged a tighter combination of cognitive processes and organizational structures (Hagen et al., 2023). It also incorporates research on temporal work, emphasizing that organizations actively shape rather than passively adapt to the environment through future-oriented sensemaking (Otto et al., 2024). A unique contribution of UAAT is that it explicitly defines imagination as a theoretical construct independent of cognition. Cognition is the interpretation of reality, while imagination is the construction of the future. Although related, their functions are distinct.

To clarify, this study focuses on how firms evolve through the internal coupling of "structure-process," rather than on how individuals aggregate into meso-level organizations or macro-level nations. The core proposition of UAAT is that "adaptivity" exhibits structural isomorphism across different scales. Whether at the micro level of individuals, the meso level of firms, or the macro level of nations, the essence of an adaptive subject consists of the coupling between a "structural subsystem" (Resources-Capabilities-Intent) and a "processual subsystem" (Cognition-Imagination-Learning).

Definition of Core Constructs and Evolutionary Mechanisms

The UAAT framework consists of two interlocking subsystems: the structural subsystem and the process subsystem (as shown in Fig. 1). The structural subsystem defines the entity's existence and comprises three elements: resources, capabilities, and intentions. Resources are the stock of assets an agent can mobilize, constituting the physical boundaries of action (Ristyawan et al., 2023). Capabilities are the dynamic mechanisms for allocating resources, determining transformation efficiency (Paavola & Cuthbertson, 2003). Intentions serve as the vector of evolution, anchoring the organization's development direction (Fang & Chen, 2016).

The process subsystem defines the agent's operation and is driven by three elements: cognition, imagination, and learning. Cognition refers to the sensemaking process regarding the current environmental state, causal relationships, and the organization's position. Its core function is to

understand reality. It reduces environmental complexity by forming mental models and provides a baseline for decision-making (Walsh, Nadkarni & Barr, 2008; D & Dietz, 2012). Imagination refers to the ability to transcend existing paradigm boundaries and construct future scenarios that have not yet occurred. Its core function is to create possibilities. It generates strategic intentions that transcend current resource constraints through conceptual simulation (Beckert, 2021; Comi et al., 2025). Learning refers to the process of comparing imagined scenarios with actual results and adjusting behavioral patterns and cognitive schemas accordingly. Its core function is to correct deviations. It achieves knowledge sedimentation and routine updates through a feedback loop (Caceres & Furlan, 2023; Martin et al., 2024). Although these three constructs are interrelated, they are analytically independent. Cognition provides a reality baseline, imagination constructs the future based on this baseline, and learning puts the conception into practice to test its validity. Cognition interprets reality, imagination constructs the future, and learning updates behavior from experience. Their functions differ, yet together they form the core driving force of the organizational mind.

Note

Figure 1 *depicts the dual subsystems of organizational evolution and their coupling mechanism. The structural subsystem defines the organization's resource endowment and strategic intent, while the process subsystem drives the psychological cycle from cognition to learning. The two achieve "material-mental" resonance through the interaction of intent and imagination. The learning mechanism then transforms psychological iterations into structural adjustments, forming a dynamic closed loop of continuous adaptation.*

Organizational evolution manifests as a continuous cycle from disequilibrium to adjustment, then to approximation, and finally to re-imbalance. This process starts with the structural tension among resources, capabilities, and intentions, achieving endogenous adaptation through cognition, imagination, and learning mechanisms. As shown in Fig. 2, cognition identifies the gap between the current and ideal states. Imagination constructs feasible future scenarios based on cognitive boundaries. Learning narrows the gap through resource reconfiguration and process adjustments. Practical results eventually feed back into the cognitive system. This mechanism emphasizes that cognitive levels determine whether an agent can clearly identify deviations. Meanwhile, the boundaries of imagination determine whether intentions can achieve a leap. Only when imagination breaks the constraints of existing paradigms can the organization generate innovative directions in a broader space of possibilities.

Note

Figure 2 *depicts the mechanism of organizational dynamic evolution driven by environmental uncertainty. The central area displays the endogenous engine of organizational performance. The synergy of resources, capabilities, and intentions forms the steady-state foundation of the structural subsystem, while bottlenecks act as the key constraints breaking the equilibrium. The inner dashed circle represents the process subsystem composed of cognition, imagination, and learning. As the core of mental processes, it provides the driving force for system leaps by identifying bottlenecks and reconstructing intentions. The*

outer path reveals three evolutionary logics for organizations approaching the ideal state from a state of disequilibrium under different levels of environmental uncertainty. These are the efficiency optimization path under low uncertainty, the adaptive path under moderate turbulence, and the resilient evolution path under high uncertainty.

The path for organizations to approach the ideal state is not a single mode but varies systematically with the level of environmental uncertainty. Based on the dimensions of predictability and complexity, this paper classifies evolutionary paths into efficiency optimization, adaptive adjustment, and resilient development (as shown in Table 1). The efficiency optimization path applies to mature and stable environments. Here, intentions are highly clear, and agents achieve improvement through refined resource allocation and capability enhancement. Learning mainly manifests as cognitive deepening. The adaptive adjustment path applies to moderately turbulent environments. Goals are difficult to set at once and require a cycle of exploration and optimization to gradually approach a more adaptive state. Learning appears as cognitive updating and imagination adjustment. The resilient development path applies to highly uncertain contexts. Here, traditional optimization logic fails, and goals themselves are evolving. Organizations must rely on small-step trial and error to maintain system survival within a controllable range. This process highly depends on imagination to break existing paradigms.

It is worth noting that these three paths can be nested, switched between, or pursued in parallel. For instance, a platform enterprise might adopt an adaptive adjustment path for its main business while its innovation lab operates on a resilient development path. Similarly, a country might adopt a resilient development path at the macroeconomic level due to high uncertainty but implement an efficiency optimization path in subsystems like education or healthcare. This dynamic strategy selection constitutes the evolutionary resilience of organizations under different survival pressures.

Table 1
Comparison of Characteristics of Three Paths

Uncertainty	Pathway Type	Adjustment Mechanism	RCI State	CIL Focus
Low	Efficiency Optimal Path	Systematic implementation	Clear intention, R C alignment	Cognitive deepening
Medium	Adaptive Adjustment Path	Rapid iteration plus feedback	Ambiguous intention, partial misfit	Cognitive updating plus imagination calibration
High	Resilience Driven Path	Trial error feedback adjusts	Evolving intention, systemic misfit	Imagination driven

Theoretical Testing Based on Text Analysis

This study adopts annual report text analysis as the measurement method for core constructs. This design has sufficient theoretical basis and methodological precedents.

First, the Strategy-as-Practice perspective explicitly points out that language is not a neutral descriptive tool of strategy but a constitutive element of strategic practice (Vaara et al., 2016; Whittle et al., 2023). Organizations construct reality, mobilize resources, and shape expectations through discourse. Therefore, text itself is an important carrier of strategic practice rather than an external representation. This perspective provides theoretical legitimacy for treating text indicators as traces of strategic practice rather than proxies for psychological processes.

Second, Signaling Theory further points out that organizations transmit strategic commitments to external stakeholders through forward-looking information disclosure under uncertainty (Solodoha, 2024). Solodoha(2026) argues that although actors' interpretation of the same signal is influenced by cognitive frameworks, the signal itself has measurable behavioral consequences. Therefore, imagination-related language in annual reports can be viewed as a strategic signal oriented towards the future. Its frequency and intensity reflect strategic orientation rather than mere impression management.

Third, in empirical research on organizational learning and strategic cognition, data acquisition methods are gradually shifting from single questionnaire measurements to multi-source data. Especially with the development of text mining technology, using unstructured text data to measure abstract constructs has become possible. Short et al. (2010) provided a methodological cornerstone for this path. They proved that processing organizational text through Computer-Aided Text Analysis (CATA) can effectively and reliably validate theoretical constructs. In recent years, using text analysis to measure strategic constructs has become a rigorous research paradigm recognized by top journals. For instance, Shenghui et al. (2021) used text data to advance Upper Echelons Theory research. Ugur et al. (2024) systematically tested the applicability of text analysis in strategic research. Through multi-source data comparison, they proved that "exploration and exploitation" indicators based on text keyword extraction have good construct validity. This provides solid empirical evidence for using unstructured text data to measure organizational implicit characteristics.

Theoretical Proposition Deduction

From the evolutionary process of UAAT, we can see that the essence of organizational evolution is the dynamic reconstruction of organizational physical structures by organizational mental processes. To enhance the testability of the theory, we extract four sets of logical relationships from the core operating mechanisms of this framework.

First are strategic consistency and the internal anchoring effect. Traditional strategic theory argues that in turbulent environments, firms should deviate from original matching logic to gain flexibility. However, research on defense mechanisms based on Upper Echelons Theory points out that managerial psychological preferences exhibit significant risk aversion and certainty-seeking characteristics in extreme environments (Chatterjee & Hambrick, 2007). When external signals fail, organizations with high resource endowments tend to regress internally, producing an internal anchoring effect. Managers at this time will tightly lock strategic intentions onto controllable resource and capability bases to reduce

the evolutionary risks brought by strategic drift (Cao et al., 2022; Li et al., 2025). This logic of determining aspirations based on capabilities is instead reinforced in uncertain environments. Thus, we propose Proposition 1.

P1

In years with high environmental uncertainty, the degree of matching between a firm's strategic intent and its resource-capability base is higher.

Second is the adjustment sensitivity driven by cognition. External shocks break organizational equilibrium, and the speed of response depends on the organization's ability to decode the nature of the shock. Research finds that a firm's response to the environment significantly depends on the flexibility and complexity of managerial cognitive structures (Ellis & Shenkar, 2025). Firms with high cognitive levels can more accurately identify the structural impact of external shocks, thereby avoiding falling into active inertia. Therefore, after perceiving a crisis, they can adjust strategic intentions more rapidly, enhancing the firm's ability to adapt to the environment (Lei et al., 2021). Thus, we propose Proposition 2.

P2

After encountering negative external shocks, firms with higher cognitive levels exhibit a larger magnitude of adjustment in their strategic intent.

Third is the forward-looking guiding role of imagination. Imagination is regarded as the core cognitive engine for organizations to transcend the status quo and simulate the future. Research indicates that strategic thinking is essentially a "conceptual simulation." It helps organizations rehearse strategic paths in complex environments by integrating innovative perspectives and future scenarios (Piórkowska et al., 2021). van der Duin et al. (2024) confirmed that corporate foresight (as an institutionalized embodiment of imagination) can significantly drive the formation of strategic decision content, thereby promoting the implementation of organizational ambidextrous strategies. This means conceptual simulation precedes actual resource investment. Additionally, Bobitan et al. (2024)further found that by constructing imaginative scenario frameworks like "WHAT IF," organizations can identify future capability gaps in advance, thereby driving subsequent skill reshaping and learning investment. Therefore, by releasing leading signals, imagination can effectively pull the intensity of strategic intent and the level of learning in the organization's next phase. Thus, we propose Proposition 3.

P3

A firm's current level of imagination has a significant positive predictive effect on its strategic intent intensity and learning level in the next period.

Finally, there is the evolutionary premium of psychological mechanism synergy. Structural subsystem synergy reflects the allocation level of organizational constituent elements. In contrast, process

subsystem synergy reflects the evolutionary momentum of organizational operating mechanisms. Although both types of synergy drive value, Resource Orchestration Theory emphasizes that long-term competitive advantage stems not only from resource bundling but also from the dynamic allocation potential of organizational mentality towards resources (Ciszewska et al., 2023; Ariwibowo et al., 2024). Capital markets grant a higher evolutionary premium to organizations with mental synergy capabilities. This is because such synergy demonstrates the agent's agency to continuously iterate and self-reorganize under uncertainty (Karna et al., 2015) Thus, we propose Proposition 4.

P4

Both process subsystem synergy growth and structural subsystem synergy growth can significantly affect firm value. The synergy impact of the process subsystem may be greater than that of the structural subsystem.

RESEARCH DESIGN AND EMPIRICAL TESTS

Given that strategic psychological processes within organizations (such as intention, cognition, imagination, and learning) are implicit, they are difficult to observe directly through traditional financial data. Therefore, this study constructs measurement indicators for these constructs using the frequency of relevant keywords in full annual reports. In constructing the dictionary, we strictly followed the principle of "theoretical orientation plus local context adaptation." We first defined the core dimensions of each construct based on management theory. Then, we combined the language habits of Chinese listed companies' annual reports to screen for high-frequency and discriminative Chinese vocabulary. All indicators were extracted based on the same text scope (full annual reports) and converted into standardized scores for regression analysis. This aims to effectively capture the relative differences in strategic psychological characteristics among sample firms.

Research Design

This study is based on panel data from Chinese listed companies. Centered on the four theoretical propositions proposed in Chap. 3, we constructed a multidimensional empirical strategy to systematically test the core mechanisms of the UAAT integrated framework. Regarding variable measurement, this study adopts the perspectives of Strategy-as-Practice and Signaling Theory. We classified constructs into two categories: objective entities and strategic discourses. Resources (R) and Capabilities (C) used financial and accounting data. Intention (I), Cognition (Co), Imagination (Im), and Learning (L) used standardized scores constructed from keyword frequencies in full annual reports. We treated these as strategic commitments and coordination signals oriented towards the future. The specific model designs are as follows:

(1) Testing Strategic Consistency and Internal Anchoring Effect (Proposition 1). To verify the internal anchoring characteristics where organizations regress to their resource base during environmental turbulence, as stated in Proposition 1, this study constructed a moderation effect model.

Dependent Variable (Y): Strategic Intention Intensity (intention). This is a standardized score constructed based on the frequency of keywords reflecting strategic orientation in annual reports.

Independent Variable (X): Resource-Capability Alignment (Alignment). We took the natural logarithm of net fixed assets (R) and output per capita (C, i.e., operating income divided by number of employees). We subtracted the full sample mean for centering, then generated the product term Alignment equals (R minus R-bar) times (C minus C-bar) and standardized it (Align_std).

Moderating Variable (M): Environmental Uncertainty (EU). Referencing Bloom (2009), we measured this using the three-year rolling standard deviation of Total Factor Productivity (TFP) in the CSRC Level 2 industry where the firm is located.

Model Logic: By introducing the interaction term between Align_std and EU (Align_EU), we tested whether the matching degree between strategic intention and its resource base significantly strengthens under environmental turbulence.

(2) Testing Cognition-Driven Adjustment Sensitivity (Proposition 2). This test aims to capture the active adjustment behavior of high-cognition agents when encountering negative shocks.

Dependent Variable: Annual change in strategic intention (Delta intention_t equals intention_t minus intention_t-1). This captures the magnitude of active organizational adjustment. To control the starting point effect and inertia of adjustment, the model introduced the one-period lagged term of Delta intention (Delta Intention_(t-1)) as a control variable.

Independent Variable: Organizational cognition level (cognition) at time t. This uses the text measurement indicator from the current period.

Model Logic: Controlling firm and year fixed effects and concurrent financial variables like ROA, we tested the relationship between cognition level and the adjustment magnitude of strategic intention after negative shocks.

(3) Testing the Forward-Looking Guiding Role of Imagination (Proposition 3). This test aims to verify whether imagination acts as a leading signal to predict future organizational evolutionary behaviors.

Dependent Variables (Y): Strategic intention intensity at t plus 1 (intention) and learning level at t plus 1 (learning). The learning level was also constructed based on annual report text keyword frequencies.

Independent Variable (X): Organizational imagination level at time t (imagination). This uses the text measurement indicator lagged by one period.

Model Logic: Controlling for firm and year fixed effects and concurrent financial variables like ROA, we tested the predictive effect of current imagination on future strategic commitment and organizational learning to confirm its forward-looking orientation function.

(4) Testing the Evolutionary Premium of Psychological Mechanism Synergy (Proposition 4). This test aims to examine the marginal driving differences between process synergy and structural synergy on long-term firm value.

Dependent Variable: Firm market value in the next period (market). This reflects the capital market's assessment of the organization's evolutionary potential.

Independent Variables: We constructed two types of synergy indices. The CIL_index (psychological synergy) was extracted using the first principal component based on the standardized scores of cognitions, imagination, and learning. The RCI_index (structural synergy) was extracted using the first principal component based on the three standardized indicators of resources, capabilities, and strategic intention.

Model Logic: We included both indices in the same model and standardized them. By comparing the regression coefficients and their significance differences between CIL_index and RCI_index, we determined whether psychological synergy receives a higher market evolutionary premium than element synergy.

All models controlled for firm and year fixed effects. Standard errors were clustered at the firm level to eliminate serial correlation. Continuous variables were winsorized at the 1% level on both sides to exclude extreme value interference. Multicollinearity diagnostics showed that Variance Inflation Factors (VIF) were all less than 5, indicating robust model specification. The data processing process strictly implemented cleaning steps such as deduplication, exclusion of the financial industry (CSRC industry code J), and removal of samples with missing key variables.

Data Sources

The study sample covers Chinese A-share non-financial listed companies from 2009 to 2022. The year 2009 was selected as the starting point for two reasons: first, the full electronic archiving of annual reports became standardized and complete after the 2008 implementation of the Administrative Measures for Information Disclosure of Listed Companies, significantly improving text data quality; second, following the global financial crisis, China's entry into the "New Normal" provided an ideal empirical window to test strategic synergy mechanisms amidst rising environmental uncertainty. Financial and accounting data were obtained from the CSMAR database, city GDP data from the National Bureau of Statistics website, and the China Economic Policy Uncertainty Index (CEPU) was constructed based on the Wisers news database referencing Baker et al. (2016). Corporate annual report text data were sourced from CNINFO (http://www.cninfo.com.cn). To ensure completeness and comparability, keyword frequency analysis was conducted on the full text of the reports rather than being limited to the "Management Discussion and Analysis" (MD&A) section.

Intention (intention) is based on Strategic Intent Theory (Ozcan and Yildirim, 2025) and divided into three dimensions. Goal Clarity (e.g., goal, planning, blueprint, committed to) reflects the clarity of strategic direction. Challenge (e.g., leading, disrupting, number one, building a benchmark) reflects the ambition to surpass the status quo and competitive positioning. Time Anchoring (e.g., within three years, next five years) identifies the time boundaries of goals and is a key signal of intention executability. This dimension design references the operationalization framework of strategic commitment (Li and Tang, 2010). Challenge reflects the organization's ambition to surpass the status quo, while time anchoring is a key signal of strategic execution.

Cognition (cognition) is based on the Upper Echelons perspective (Neely et al., 2020)and Managerial Cognitive Map Theory (Tegarden and Sheetz, 2003). It emphasizes the depth of managers' understanding of environmental causal mechanisms and system structures. It includes Causal Logic (e.g., due to, therefore, attributed to), reflecting attribution reasoning ability. Systems Thinking (e.g., ecology, closed loop, systemic) reflects the cognition of complex relational structures. Risk Depth (e.g., paradigm shift, technological disruption, public opinion pressure) points to the identification of discontinuous changes in institutions, technology, or markets, distinct from general operational risks.

Imagination (imagination) is operationalized from Strategic Imagination (Rindova and Martins, 2024) and divided into two dimensions. Future Orientation and Openness (e.g., try, prospect, plan) reflects the organization's active exploration of potential opportunities and long-term possibilities. Cross-boundary Integration and System Reconstruction (e.g., Smart+, Internet+, AI+) reflects the organization's ability to drive systemic innovation through cross-domain integration and new meaning construction. These dimensions combined the views of Cornelissen et al. (2015) on strategic metaphors as meaning-creation tools and were localized based on high-frequency forward-looking and integrative discourses in Chinese annual reports.

Learning (learning) strictly distinguishes between single-loop and double-loop learning (Basten and Haamann, 2018) and incorporates organizational-level reflective practice. Single-loop learning focuses on process optimization (e.g., cost reduction, efficiency improvement, refinement). Double-loop learning involves questioning underlying assumptions (e.g., reflection, paradigm shift, reconstructing cognition). Organizational Reflection (e.g., review, look back, experience extraction) captures collective-level learning practices (Argyris et al., 2004).

To address concerns that annual report text may only reflect impression management, this study constructed an Action dictionary. Based on the Resource-Based View, we defined substantive action as actual allocation and commitment of organizational resources and constructed an action dictionary containing Resource Input and Strategic Implementation dimensions. The former covers words like invest and build, corresponding to future-oriented openness imagination, reflecting the real money invested by firms to explore new paths and layout new opportunities. The latter covers words like integrate and land, corresponding to cross-boundary integration and system reconstruction imagination, reflecting substantive actions taken by firms to achieve system reconstruction and ecological synergy.

These vocabulary items together constitute the linguistic markers for firms translating abstract strategic imagination into concrete actions, ensuring that imagination narratives are not empty rhetoric, but strategic expressions supported by actual actions.

All keywords were constructed through the following steps. First, we defined the conceptual connotation of each sub-dimension based on relevant theoretical literature. Second, we combined pre-reading and content analysis of Chinese listed companies' annual reports to summarize high-frequency Chinese expressions that met the definitions. Finally, we formed a structured dictionary for text measurement. For the keyword list used in this paper, please refer to Appendix 1.

Control variables referenced existing research (Liu et al., 2022; Yang et al., 2024) and included two categories:

(1)Internal firm characteristics: Return on Assets (ROA), Asset-Liability Ratio (debt), Firm Age (lnage), Shareholding Ratio of the Largest Shareholder (top1), Industry (sic), and Firm Nature (so, distinguishing state-owned from non-state-owned enterprises).

(2)External environmental factors: Logarithm of the Economic Policy Uncertainty Index (lnpo) and the annual Gross Regional Product (gdp) of the city where the firm is located.

Regression Results

Table 2 presents the regression analysis results. The differences in sample sizes across models in this study stem from the construction of lagged terms in panel data and strict variable winsorization. This is normal sample attrition under standard econometric practice. We reported the actual observations for each model in Table 2, and all models-maintained consistency in variable definitions. Columns (1) to (6) systematically tested the four theoretical propositions under the UAAT integrated framework. All continuous variables were standardized, and firm and year fixed effects were controlled. Standard errors were clustered at the industry-year level.

Column (1) tested the relationship between the interaction of resource-capability matching and environmental uncertainty and strategic intention. The results showed that the regression coefficient of the interaction term Align_EU was significant at the 5% level. This indicates that in highly uncertain environments, organizations tend to anchor their strategic intentions more closely to their existing resource bases, showing a significant internal anchoring characteristic. Proposition 1 is supported.

Column (2) examined the relationship between organizational mentality and the degree of strategic intention adjustment. The interaction term Shock_con between external shock and cognition level was significantly positive. This means that after encountering negative shocks, firms with higher cognitive levels adjusted their strategic intentions to a greater magnitude, breaking the constraints of inertia. Proposition 2 holds.

Columns (3–4) examined the relationship between current organizational learning and next-period organizational imagination and strategic intention, respectively. Regression results showed that current imagination (imagination) had significant predictive ability for next-period strategic intention (F1.int) and organizational learning (F1.lea). This indicates that imagination, as a cognitive engine, can effectively guide future strategic commitments and knowledge updates. Proposition 3 is supported.

Columns (5–6) examined the relationship between the process subsystem and the structural subsystem and next-period firm value, respectively. Results showed that both had a significant positive driving force on next-period market value. Further coefficient comparison tests found that the regression coefficient of CIL was numerically larger than that of RCI (when CIL_std and RCI_std were included in the same regression model, coefficients remained significant, results not listed). However, further Wald Test showed that the coefficient of RCI was significantly greater than CIL ($F = 25.68, p < 0.001$). This may imply that although mental synergy is crucial, capital markets still assign higher weight to visible, structural element synergy when valuing. This finding provides a new empirical context for Resource Orchestration Theory, revealing that the evolutionary premium of different types of synergy may vary under different market environments. Proposition 4 is partially supported.

Table 2
Main Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
	int	△int	F1.int	F1.lea	market	market
Align_EU	7.336**					
	(3.173)					
Shock_con		0.063***				
		(0.011)				
imagination			1.444***	0.321***		
			(0.078)	(0.015)		
CIL_std					4.52e + 09***	
					(7.3e + 08)	
RCI_std						1.12e + 10***
						(1.3e + 09)
Align_std	0.508					
	(0.565)					
EU	9.888					
	(10.233)					
CV	YES	YES	YES	YES	YES	YES
ID_FE	YES	YES	YES	YES	YES	YES
YEAR_FE	YES	YES	YES	YES	YES	YES
Obs	32786	26483	28344	28344	28344	28340
Adj R^2	0.759	0.051	0.772	0.627	0.860	0.861

*Notes. Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01. int = intention; lea = learning; CV = Control Variables.*

Robustness Checks

To ensure the robustness of our conclusions, we conducted sensitivity analyses by replacing key variables: the capability measure in Proposition 1 was substituted from per capita efficiency to fixed

asset turnover; the industry TFP volatility calculation in Proposition 2 was changed from the LP method to the OP method; the dependent variable in Proposition 3 was lagged to the t + 2 period; and the market value measure in Proposition 4 was replaced from firm market capitalization to Tobin's Q. Results in Table 3 show that the core findings of the first three propositions remain highly robust.

Notably, when using Tobin's Q to measure performance (Table 3, Columns 5–6), the coefficients of the CIL and RCI indices are significantly negative. This does not negate the main conclusions but rather reveals the short-term adjustment costs of high-synergy organizations. Specifically, high-synergy firms often undergo high-intensity asset allocation and organizational restructuring, leading to rapid short-term expansion of total assets. Since returns from these new assets are lagged, Q values are temporarily depressed.

Dynamic effect analysis shows that the negative impact of synergy is concentrated in the initial stage (t + 1). From t + 2 to t + 4, coefficients rebound to positive but remain statistically insignificant, indicating that after passing the adjustment period, asset efficiency quickly returns to the baseline with no long-term value destruction. Although the direct positive effects in t + 2 to t + 4 are not significant, the difference in dynamic paths between t + 1 and t + 4 is marginally significant at the 10% level (Diff = 0.043, p = 0.117). This provides evidence for a recovery trajectory following strategic growing pains, implying that synergy effects are overcoming short-term resistance to release potential value. However, this adjustment-cost explanation lacks robust statistical evidence, and the text-based “synergy” measure may suffer from impression management, requiring future semantic decomposition to refine.

Table 3
Robustness Check Results

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	int	***△int***	***F1.int***	***F1.lea***	***market***	***market***
Align_EU	3.447**					
	(1.727)					
Shock_con		0.064***				
		(0.011)				
imagination			1.444***	0.321***		
			(0.078)	(0.015)		
CIL_std					-0.121***	
					(0.023)	
RCI_std						-0.254***
						(0.045)
Align_std	-3.033*					
	(1.813)					
EU	9.908					
	(10.229)					
CV	YES	YES	YES	YES	YES	YES
ID_FE	YES	YES	YES	YES	YES	YES
YEAR_FE	YES	YES	YES	YES	YES	YES
Obs	32786	26483	28344	28344	28344	28340
Adj R^2	0.759	0.051	0.772	0.627	0.334	0.496

Notes: Standard errors in parentheses. * p < 0.1; ** p < 0.05; *** p < 0.01. int = intention; lea = learning. CV = Control Variables.

To address potential reverse causality in industry Total Factor Productivity (TFP), this study employs a Leave-One-Out (LOO) method to construct an instrumental variable defined as the one-period lagged industry average TFP excluding the firm itself (L1_TFP_Industry_LOO). These variable leverages prior to industry trends to predict current shocks, satisfying both relevance and exogeneity requirements. Grouped regressions yield statistics of 351.75 (High Cognition) and 438.03 (Low Cognition), both far exceeding the critical value of 16.38, thereby rejecting the weak instrument hypothesis. Results indicate that the Low Cognition group exhibits a significantly negative coefficient (Coef. = -8.590, p < 0.05),

reflecting "passive adjustment," whereas the High Cognition group shows an insignificant coefficient (Coef. = -5.480, $p > 0.1$). These findings confirm a "Cognitive Buffering Effect," whereby high-cognition firms maintain strategic coherence through strategic resolve rather than blindly adjusting to industry fluctuations.

Furthermore, by measuring the frequency of "action" terms and the semantic co-occurrence of "intent" and "action" in annual reports, this study reveals the evolutionary dynamics between strategic imagination and substantive action (Fig. 3). Figure 3a demonstrates that as environmental complexity rises, "imagination" scores expand exponentially, while "imagination-action" coupling scores decelerate due to resource constraints. This "scissors difference" validates the objective law that vision outpaces implementation. Figure 3b confirms that despite divergent growth rates, both dimensions maintain highly synchronized co-evolution over the long term. This pattern of strong correlation but non-identical speed demonstrates that imaginative narratives in annual reports are not empty rhetoric, but rather authentic cognitive projections and strategic leadership regarding future resource allocation.

Note

Figure 3a *depicts the evolution path of strategic imagination scores and imagination-action coupling scores over time.* Figure 3b *presents the synergistic growth relationship between strategic imagination scores and substantive action scores through a dual-axis view.*

DISCUSSION

Main Findings

Based on the Unified Adaptive Agent Theory (UAAT) framework, this study empirically tested the adaptive evolutionary mechanisms of Chinese A-share listed companies in highly dynamic environments. The data results reveal the complex interaction logic between the structural subsystem (RCI) and the process subsystem (CIL) when organizations face environmental turbulence.

First, structural synergy constitutes the physical foundation of organizational adaptability. Empirical results robustly show that the marginal contribution of structural subsystem synergy to long-term firm value is significantly higher than that of the process subsystem. This finding revises some initial hypotheses and confirms that in the complex process of organizational evolution, the optimization and matching of physical structures are the cornerstones of value sedimentation. This indicates that organizational agencies must be rooted in specific resource endowments and institutional structures. Mental conceptions can only create value when transformed into physical forms.

Second, environmental turbulence triggers a significant "internal anchoring" mechanism. Facing external environmental uncertainty, organizations tend to anchor their strategic intentions on controllable resource bases. This mechanism verifies the defensive rationality of managers under pressure. It is worth noting that this phenomenon is particularly significant in the unique institutional context of China.

As an emerging market in economic transition, the external institutional environment of Chinese enterprises often presents high ambiguity. In this context, reliance on internal resources is not only a strategic choice but also a survival rationality to cope with institutional uncertainty. This suggests that the "structure-dominant" logic in the UAAT framework may exhibit stronger explanatory power in policy-driven markets.

Finally, the process subsystem plays a key role in navigation and empowerment. Cognition is the sensor for identifying external shocks, while imagination is the engine driving future intentions. Its core value lies in providing directional guidance for the reconstruction of structural synergy.

In addition, addressing the academic concern regarding the "impression management" tendency in annual report texts, this study further revealed the deep dynamic evolutionary laws between strategic imagination and substantive actions through long-cycle data tracking.

The descriptive statistical results in Fig. 3 present a unique "scissors difference" effect. As environmental complexity increases, corporate strategic imagination scores expand exponentially, while constrained by the objective laws of resource accumulation, the growth rate of substantive actions (i.e., imagination-action coupling) is relatively flat. This divergence between nonlinear leadership and linear support does not imply empty corporate narratives but reveals the objective tension in strategic management that "vision is ahead of implementation."

More importantly, the dual-axis analysis confirms that although the two grow at different speeds, they maintain highly synchronous co-evolution over the long cycle. This strongly correlated but non-isochronous mode powerfully proves that imagination narratives in annual reports are not merely rhetorical impression management but real cognitive projections of future resource allocation. The process subsystem (imagination) in the UAAT framework always leads to the boundary of the structural subsystem (action). This "moderate disconnection" is precisely a necessary condition for organizations to maintain adaptive tension..

Theoretical Contributions

The most important theoretical contribution of this study lies in responding to the long-standing micro-macro disconnect in organization theory through the dynamic coupling mechanism of RCI and CIL.

First, it establishes an integration mechanism of physical embodiment. Addressing the theoretical gap of how micro-cognition transforms into macro-structures, this study proves that micro-level cognition and imagination must be transformed into economic value through macro-level resources and structures. The significantly larger structural synergy coefficient compared to process synergy strongly supports the view of physical embodiment. Organizational agency is not an ethereal subjective will but the projection and reconstruction of mentality on physical entities.

Second, it expands the cross-level explanatory power of the UAAT framework. UAAT is not only a corporate strategy theory but also a generic analytical framework for "adaptive agents." Its core logic is

that mental processes drive the evolution of physical structures. This logic has strong extensibility. At the micro level, it can explain how entrepreneurs leverage resources through personal cognition. At the macro level, it is equally applicable to analyze how nations reconstruct economic foundations through institutional imagination. Although this study uses firms as samples, the mechanism revealed is essentially a generic survival rule for all adaptive agents facing environmental entropy increase.

Third, it corrects cognitive biases regarding organizational adaptability. Unlike existing literature that generally emphasizes dynamic capabilities or top-level cognition dominating value creation, this study emphasizes that in complex transitional environments, the reconstruction of physical resources is more decisive than the updating of mental models.

Theoretical Extrapolation

The ultimate vision of this study is to attempt to build an "Organizational Adaptive Economics" that connects micro-behavior and macro-evolution, based on "adaptive agents" as the cornerstone. Existing mainstream economic theories often face dilemmas such as "missing micro-foundations" or "insufficient endogenous power" when explaining macro-imbalance, institutional change, and innovation emergence. Based on the logical deduction of the UAAT framework, it is expected to provide a deeper unified explanation for the core pillars of modern economics.

First, reconstructing New Institutional Economics: from transaction costs to matching algorithms. Coase and Williamson's transaction cost theory views institutions as tools to reduce transaction friction but fails to explain how institutions evolve endogenously. The UAAT framework reveals that the essence of institutions is a "matching algorithm." The micro-essence of transaction costs is the matching cost among the three elements of "resources, capabilities, and intentions." Whether market mechanisms or corporate hierarchies, their core function is to reduce the cost of mismatch among these three elements. Inclusive institutions are superior because they improve matching efficiency at the social level by lowering cognitive barriers and activating intentions. Extractive institutions lead to systemic resource misallocation by suppressing intentions and distorting capability distribution. The driving force of institutional change stems from society's adaptive need to find more efficient matching algorithms.

Second, deepening Schumpeterian innovation theory: from heroic narratives to cognitive leaps. Schumpeter attributed innovation to entrepreneurs' "creative destruction" but failed to explain the endogenous source of this destructive power, often falling into the stereotype of "heroic narratives." The UAAT framework indicates that innovation is not a mysterious talent, but a systemic reconstruction driven by "cognition-imagination-learning." The outbreak of innovation is not accidental but the result of social cognition reaching a certain threshold, where imagination breaks existing paradigm constraints, thereby pulling resources and capabilities for nonlinear reorganization. Policy design should not only focus on R&D subsidies (resource end) but also on cultivating social cognitive flexibility and imagination (process end), as this is the source of innovation.

Third, decoding macro-imbalance: from effective demand to intention suppression. Keynesian "insufficient effective demand" and the "expectation changes" emphasized by the Lucas Critique are mechanistically unified under the UAAT framework. UAAT theory posits that macroeconomic stagnation is essentially the systemic suppression of "intentions" at the social level. When external shocks cause collective cognitive confusion, people's confidence in the future collapses. Even with abundant resources and capabilities, they are unwilling to invest or consume. At this time, the market cannot automatically restore equilibrium. The effectiveness of fiscal or monetary policy lies not in simple capital injection but in whether it can restart the social "cognition-imagination-learning" cycle through signal transmission and rebuild stable expectations for the future.

Fourth, correcting Classical Economics: conditional constraints on market efficiency. Adam Smith's "invisible hand" depicts a picture of the market achieving social optimality through self-interested behavior, but this ideal implies a premise that individuals possess basic resource endowments, production capabilities, and willingness to participate. The UAAT framework indicates that the effectiveness of market mechanisms is conditional. In environments of extreme resource scarcity or severely distorted intentions, the market not only fails to automatically correct imbalances but amplifies gaps. Therefore, free markets are not a panacea. They must be premised on "human capability development" and "activation of social intentions." This provides a new perspective for development. The core of development is not simple factor accumulation but the enhancement of organizational adaptive capabilities.

In summary, Organizational Adaptive Economics attempts to transcend the binary opposition of "macro vs. micro" and "planning vs. market." In this new paradigm, all economic phenomena will be reduced to the dynamic process of "adaptive agents" continuously reshaping physical structures through mental processes in uncertain environments. This is not only the theoretical extension of this study but also a new key for future social sciences to understand the complex world.

CONCLUSION

By constructing the Unified Adaptive Agent Theory (UAAT), this study empirically tested the adaptive evolutionary mechanisms of organizations in uncertain environments. The results indicate that organizational adaptability is the dynamic coupling of structure and process over time.

Structural synergy constitutes the physical foundation of organizational evolution, indicating that competitive advantages are ultimately sedimented in difficult-to-imitate physical entities and institutional structures. Process synergy constitutes the power source of organizational evolution, breaking organizational inertia through cognition and imagination. Against the backdrop of increasing environmental uncertainty, organizations exhibit obvious internal anchoring characteristics. This series of findings jointly depicts an organizational evolution picture of physical dominance and mental navigation.

Despite its contributions, this study has limitations. First, the text-based measurement from annual reports may under-capture managers' true cognition. Second, China’s unique institutional context limits sample representativeness and may alter the synergy mechanisms. Third, while instrumental variables were used, endogeneity remains inherent to observational data; future studies could utilize natural experiments for cleaner causal identification. Fourth, keyword frequency cannot distinguish impression management, which could be addressed by using semantic role labeling or pre-trained models to map "concrete-vague" dimensions.

Looking to the future, the true potential of the UAAT framework lies in its deep analytical capability for complex social adaptation phenomena.

First, in the field of institutional reform and public policy, UAAT can provide a completely new analytical perspective. We can view the state or public sector as a super-adaptive agent. Government "Five-Year Plans" or "top-level designs" are essentially manifestations of national-level "strategic intentions" and "imagination," while the fiscal resources and administrative capabilities behind them are the structural subsystem. UAAT can be used to analyze how policy goals are transformed into local economic structures (RCI) through the cognition of layers of officials (CIL), thereby revealing the "top-level design-grassroots practice" coupling mechanism in institutional change.

Second, at the level of collective action under uncertainty, facing highly uncertain events such as climate change, public health crises, or technological disruption, traditional bureaucracies often fail. The UAAT framework can help us understand how to form a common future picture through discourse construction (imagination) and thereby coordinate dispersed social resources (structural matching).

Declarations

Competing interests

The author declares no competing interests.

Note

The original keywords were extracted from Chinese annual reports. This English version is provided for editorial review and international readability.

Author Contribution

G.Y. conceived the study, designed the research framework, performed the data collection and analysis, and wrote the manuscript. G.Y. read and approved the final manuscript.

Data Availability

All datasets, code, and materials supporting this study, including the Python scripts and dictionary for text analysis, representative samples of annual reports (provided as examples due to file size constraints), raw and cleaned panel datasets, Stata do-files for baseline and robustness analyses, and a detailed reproducibility log, are publicly available as Supplementary Information accompanying this article to ensure full transparency and replicability of our findings.

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Figures

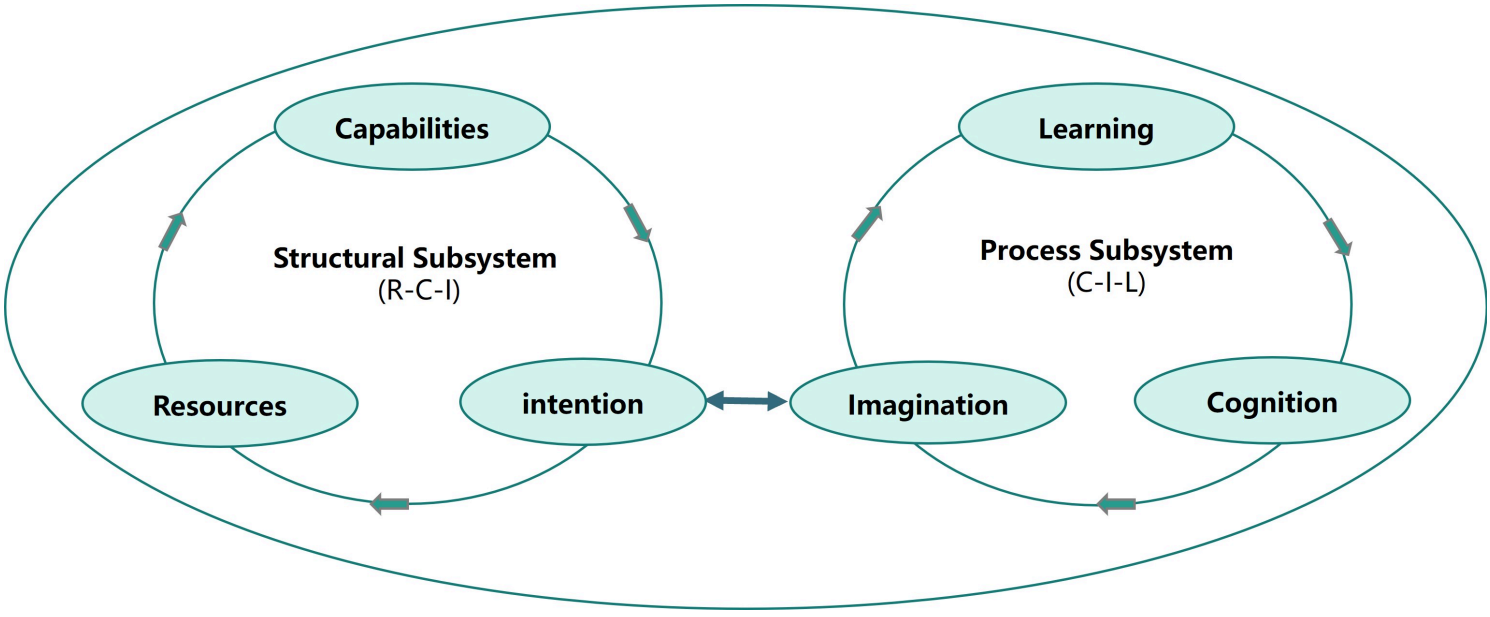


Figure 1

Schematic Diagram of the UAAT Framework

Note. Figure 1 depicts the dual subsystems of organizational evolution and their coupling mechanism. The structural subsystem defines the organization's resource endowment and strategic intent, while the process subsystem drives the psychological cycle from cognition to learning. The two achieve "material-mental" resonance through the interaction of intent and imagination. The learning mechanism then transforms psychological iterations into structural adjustments, forming a dynamic closed loop of continuous adaptation.

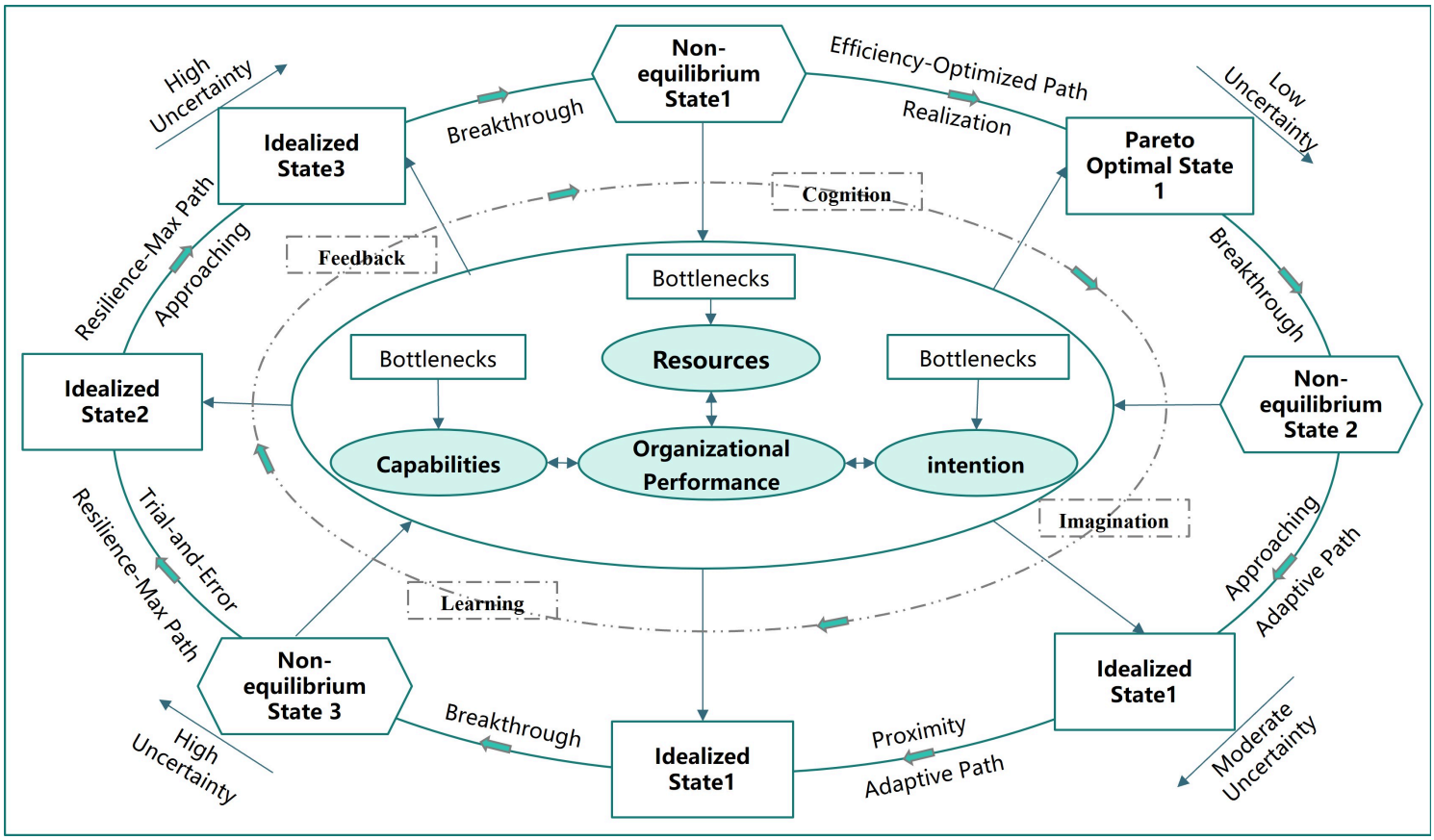


Figure 2

Schematic Diagram of Dynamic Evolution

Note. Figure 2 depicts the mechanism of organizational dynamic evolution driven by environmental uncertainty. The central area displays the endogenous engine of organizational performance. The synergy of resources, capabilities, and intentions forms the steady-state foundation of the structural subsystem, while bottlenecks act as the key constraints breaking the equilibrium. The inner dashed circle represents the process subsystem composed of cognition, imagination, and learning. As the core of mental processes, it provides the driving force for system leaps by identifying bottlenecks and reconstructing intentions. The outer path reveals three evolutionary logics for organizations approaching the ideal state from a state of disequilibrium under different levels of environmental uncertainty. These are the efficiency optimization path under low uncertainty, the adaptive path under moderate turbulence, and the resilient evolution path under high uncertainty.

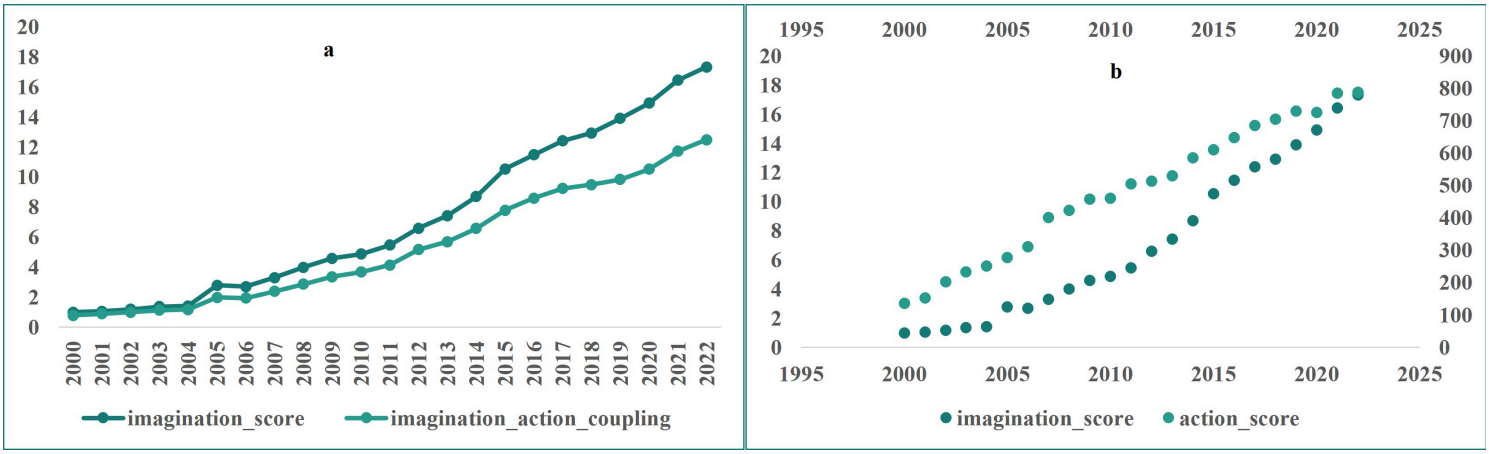


Figure 3

Dynamic Evolutionary Relationship

Note. Figure 3*a depicts the evolution path of strategic imagination scores and imagination-action coupling scores over time.* Figure 3*b presents the synergistic growth relationship between strategic imagination scores and substantive action scores through a dual-axis view.*

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- dataandlog.zip
- Appendix1.docx