EMERGING ORGANIZATIONAL STRUCTURES IN PUBLIC INSTITUTIONS: ADAPTABILITY AND COHERENCE IN VUCA ENVIRONMENTS

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ABSTRACT

In an era defined by volatility, uncertainty, complexity, and ambiguity (VUCA), public institutions — including those forming the national security system — must reconcile structural stability with adaptive flexibility. This paper examines how organizational architectures within these entities evolve as complex adaptive systems (CAS), capable of continuous learning and dynamic response to social, technological, and geopolitical shifts. Grounded in complexity theory, the study explores how nonlinear interactions among leaders, operational teams, and institutional frameworks generate coherence and resilience under stress. It highlights the interdependence between human agency and systemic dynamics, showing how adaptive coordination, feedback mechanisms, and distributed decision-making strengthen institutional robustness and responsiveness. Drawing on insights from public management, defense studies, and complexity science, the paper proposes a conceptual model for institutional adaptability that reframes traditional bureaucratic hierarchies as learning, self-regulating ecosystems. The findings offer both theoretical and practical contributions to adaptive governance, emphasizing how public and security institutions can sustain coherence and decision quality in highly dynamic VUCA environments.

KEYWORDS: *adaptability; adaptive governance; complex adaptive systems (CAS); distributed decision-making; feedback mechanisms; national security; organizational resilience; public institutions; VUCA environments.*

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1. INTRODUCTION

In today's VUCA (volatile, uncertain, complex, and ambiguous) environment shaping modern governance, public institutions face a unique challenge: balancing stability with the need for flexibility. Traditional bureaucratic systems, designed for predictability and strict control, are increasingly strained by crises that require swift, coordinated, and cross-sectoral responses. Events like pandemics, hybrid conflicts, cyberattacks, and socio-political upheavals have revealed significant structural inertia within public administration, where procedural rigidity often impedes decision-making. In response, the Adaptive Governance Transfer Model offers a framework aimed at increasing the adaptability of public agencies by systematically applying governance principles from national and private security sectors.

This study investigates how public institutions can preserve coherence and legitimacy despite systemic inertia. Although public administration often emphasizes compliance and procedural stability, security-focused organizations require flexibility, improvisation, and ongoing learning. Exploring how adaptive governance practices from the security sector can be successfully adapted into administrative settings is key to overcoming this challenge.

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This study posits that public administration has the highest level of structural inertia compared to other institutional systems. Conversely, national security agencies and private security firms demonstrate stronger adaptive mechanisms that could inform reforms in the public sector. These mechanisms—focused on feedback-based decision-making, network coordination, and collaborative intelligence—show how dynamic systems can maintain coherence under pressure while adapting effectively. The research seeks to identify, compare, and synthesize these adaptive mechanisms across the public administration, national security, and private security sectors to develop a comprehensive Adaptive Governance Transfer Model. This model serves as both a conceptual framework and a practical guide to improve resilience, responsiveness, and institutional learning in the public sector. It builds on research conducted post-2020 that has expanded the understanding of adaptive governance and intersectoral knowledge transfer (Minassians & Roy, 2020; Seivold, 2023; Shchokin et al., 2024; Tomić et al., 2025; Uhodnikova et al., 2024; Zhang, 2022).

The model is built on flexibility, responsiveness, and cross-sector collaboration—core principles deeply rooted in adaptive security systems. As Zhang (2022) points out, adaptive governance facilitates quick learning cycles and involvement from multiple actors, helping institutions interpret uncertainty and adjust strategies in real time. Likewise, frameworks inspired by Security Sector Reform (SSR) highlight democratic accountability and transparency as essential for legitimate and effective governance. Combining these principles enables public institutions to be more agile while maintaining their core commitments to legality, ethics, and fairness.

A core aspect of the Adaptive Governance Transfer Model is the inclusion of Public–Private Partnerships (PPPs). These collaborations enable public entities to leverage private security firms' technological advances, analytical capabilities, and rapid decision-making. Seivold (2023) emphasizes that PPPs enhance cost efficiency and facilitate the sharing of expertise, infrastructure, and risk management practices. Furthermore, as described by Tomić et al. (2025), Collaborative Governance reinforces these adaptive links by fostering co-creation, mutual accountability, and shared learning across diverse sectors and administrative levels. Such partnerships evolve governance from a hierarchical, top-down approach into a flexible, learning-centric system.

The Adaptive Governance Transfer Model functions as both an analytical tool and a reform guide. It facilitates the integration of dynamic capabilities from national and private security sectors into public administration procedures and norms. This improves institutional reflexivity, maintaining stability in governance systems while enabling adaptability to emerging challenges. Consequently, the model redefines governance as an ongoing process of learning, adaptation, and cooperation—merging structural stability with adaptive intelligence.

In summary, the Adaptive Governance Transfer Model offers a foundation for modernizing public administration by incorporating adaptive principles from security systems that are effective in high-stress, fast-changing environments. It enriches ongoing discussions on institutional resilience by showing how flexibility, collaboration, and accountability can work together within public governance. Based on recent research (Minassians & Roy, 2020; Seivold, 2023; Shchokin et al., 2024; Tomić et al., 2025; Uhodnikova et al., 2024; Zhang, 2022), this framework promotes comparative analysis of adaptive capacity across sectors and provides a pathway toward a more cohesive, learning-focused model of public administration.

2. THEORETICAL FRAMEWORK: INSTITUTIONAL ADAPTABILITY AND DIRECTIONAL LEARNING

2.1 Structural Inertia in Public Administration

Structural inertia in public administration remains a significant and complex challenge in contemporary governance. It mainly refers to how government entities resist change, a resistance driven by bureaucratic traditions, strict procedures, and institutional conservatism. This inertia

functions as a subtle yet powerful barrier, hindering reform, innovation, and adaptability—particularly when public institutions must react swiftly to rapid social, technological, and political shifts. Recognizing this phenomenon is essential to understanding why public administration often faces difficulties in meeting modern expectations.

Bureaucratic inertia is most evident in the difficulty of implementing reforms. In many developing nations, centralized authority and hierarchical systems sustain an administrative culture resistant to change. Rashid et al. (2025) note that modernization efforts often face deep-rooted practices, low citizen participation, and weak accountability mechanisms. Indonesia illustrates this well: despite decentralization efforts, central authorities' pressure still hampers local institutions' independence, weakening governance and hindering reform. Fathani et al. (2024) highlight that real progress requires not just structural reforms but also improved transparency and ongoing capacity-building within administrative agencies.

The persistence of structural inertia can also be interpreted through the lens of institutional theory, which highlights how organizations conform to established norms and expectations. Aksom and Vakulenko (2023) suggest that institutional pressures often dictate the pace and direction of administrative reform, influencing whether change initiatives succeed or fail. In Sweden, Öberg and Sundström (2025) describe how Business-Type Management (BTM) practices have become embedded through what they call "institutional hooks"—deeply rooted mechanisms that bind management models to the state apparatus. Such institutional embedding creates formidable obstacles to innovation, as attempts to introduce new governance paradigms clash with established administrative logics.

At the decision-making level, structural inertia is reinforced by cognitive and organizational limitations. Herbert Simon's theory of bounded rationality remains particularly relevant here: public officials, constrained by limited information, institutional hierarchies, and procedural norms, make decisions within narrow frameworks of rationality. Schwarz et al. (2022) argue that these cognitive constraints hinder adaptation and responsiveness to new realities. Salcedo Pinela's (2024) research on Ecuador illustrates this dynamic vividly, where resistance to reforming public communication strategies reflects a broader institutional inertia. To overcome it, organizations must cultivate transparent communication channels, encourage employee participation, and build a shared vision capable of aligning public institutions with societal and technological transformations.

Nevertheless, examples of adaptive strategies do exist. Giang (2025) documents how Vietnamese civil servants navigate what Max Weber once described as the "iron cage" of bureaucracy, employing flexible approaches such as compliance, accommodation, and collectivization. These behaviors illustrate how individuals within rigid systems still find ways to maintain stability while promoting incremental adaptation—a balance essential in the volatile, uncertain, complex, and ambiguous (VUCA) environments that characterize contemporary governance. In Korea, Kwon (2023) introduces the notion of "institutional entropy," describing how organizations gradually descend into inefficiency and disorder as they accumulate exceptions to their founding principles. This entropy symbolizes a deeper structural fatigue that exacerbates inertia and erodes institutional coherence.

Ultimately, while structural inertia imposes profound constraints on public administration, it is not an immutable condition. The path to overcoming it lies in acknowledging its institutional, cognitive, and cultural roots and addressing them through deliberate strategies. Transparency, capacity-building, and the integration of adaptive management models are essential steps toward revitalizing public institutions. Moreover, fostering a culture of learning, resilience, and reflexivity can transform bureaucratic systems into dynamic, self-correcting entities capable of thriving amid complexity. In doing so, public administration can evolve from a structure bound by inertia into an adaptive system—one that sustains both stability and responsiveness in the governance of the future.

Overview of organizational ecology and inertia.

Organizational ecology and inertia serve as two interconnected pillars for understanding how organizations evolve, adapt, or resist change over time. Together, they highlight the fragile balance between stability and transformation that characterizes the lifecycle of institutions. Organizational ecology investigates how external factors—such as competition, resource scarcity, or regulatory changes—affect the survival and success of organizations. Meanwhile, organizational inertia focuses on internal forces that resist change, rooted in routines, hierarchies, and cultural norms (Su & Han, 2021). When considered together, these frameworks reveal a key paradox: the very structures that support organizational stability can also hinder the adaptability needed for long-term survival.

At the core of organizational ecology is the idea that no organization exists in a vacuum. The environment—economic, political, social, and technological—serves as both a catalyst and a barrier. Hager and Yoon (2023) assert that external pressures like market competition, regulatory changes, and fluctuating resources shape an organization's existence. The ability to understand and react to these forces influences not only an organization's success but also its survival. Over time, this ongoing interaction results in a form of natural selection, where only those organizations that can adapt to their environment continue to thrive.

Another key principle of organizational ecology is organizational ageing. Vargas Hernández et al. (2022) highlight that longevity can be both an advantage and a disadvantage. Mature organizations gain from experience, stable procedures, and legitimacy. However, these same traits can hinder adaptability when environmental conditions shift. The longer an organization exists, the more it risks developing rigid structures and cultural inertia, which can block adaptation. As a result, younger, more flexible organizations often supplant older ones, leading to cycles of emergence, expansion, decline, and renewal. This demographic pattern—referred to as organizational "mortality" in ecology—shapes the evolutionary rhythm of industries, where density and competition constantly drive the rates of founding and dissolution.

Organizational inertia, although conceptually distinct, acts as the internal counterpart to ecological pressures. It represents the burden of accumulated routines, norms, and mental frameworks that hinder or resist change. Li and Leong (2025) characterize this inertia as multidimensional—encompassing structural, cognitive, and cultural aspects—each reinforcing the others. Structural inertia arises from hierarchies, policies, and procedures; cognitive inertia from ingrained mental models and bounded rationality; and cultural inertia from shared values that prioritize stability over experimentation. Together, these elements create an internal ecosystem that sustains organizational identity but can also restrict adaptability.

The causes and consequences of inertia are equally complex. As Kiyanpour et al. (2024) suggest, resistance to change arises not only from organizational design but also from human psychology—habit, fear of uncertainty, and group conformity all contribute to maintaining the status quo. While inertia can serve as a stabilizing mechanism that preserves coherence and institutional memory, it can also lead to inefficiency, delays, and strategic stagnation. In strategic management, this tension becomes especially clear. Hager and Yoon (2023) highlight that an effective strategy must balance the need for continuity with the need for change: inertia protects organizational identity, but too much inertia limits adaptation and innovation.

The relationship between inertia and attention adds a new dimension to this discussion. The Attention-Based View (ABV) posits that organizational strategy is influenced not only by external factors or structure but also by how decision-makers allocate their mental focus. Inertia affects what leaders and teams prioritize—such as identifying urgent issues, seizing opportunities, and interpreting environmental cues. Because attention is a limited resource, inertia influences its distribution. Consequently, successful organizations are those that continuously manage this balance—maintaining enough inertia for stability while staying flexible enough to adapt and respond to change.

Balancing inertia and adaptability is vital for an organization's survival. Too much stability leads to stagnation, whereas excessive change can cause chaos. Organizations should cultivate "dynamic stability," meaning systems remain stable while remaining adaptable. Achieving this requires structural adjustments, mental flexibility, and a culture open to change—traits that enable growth without losing essential integrity.

Ultimately, organizational ecology and inertia together reveal the complex nature of institutional life. Ecology highlights that adaptability and responsiveness are crucial for survival in changing environments, while inertia stresses the stabilizing forces that preserve identity and coherence. The challenge for modern organizations is to balance these opposing forces—using inertia as a foundation for resilience while encouraging adaptability to evolve. Mastering this balance enables institutions not just to survive but to thrive—turning the tension between stability and change into a powerful source of long-term vitality.

Bureaucratic rigidity, compliance culture, and slow feedback cycles

Bureaucratic rigidity, a compliance culture, and slow feedback cycles are still key features of many government systems worldwide, shaping how public institutions function—and often how they fail to adapt. These traits, deeply rooted in the traditional bureaucratic legacy of governance, favor procedure over purpose and conformity over creativity. Based in structures built for stability rather than flexibility, such systems have difficulty responding effectively to today's societal needs. Recognizing the origins and persistence of these traits is crucial for finding practical ways to reform and for rethinking governance models that combine accountability with flexibility.

Bureaucratic rigidity is central to administrative inefficiency. As Sarahadil (2025) notes, excessive red tape creates unnecessary administrative burdens that hinder decision-making and slow down institutional responses. Layers of regulation, duplicated procedures, and hierarchical approvals not only delay outcomes but also diminish initiative and responsibility among public officials. This is especially clear in public procurement, where legislation has fostered an administrative culture focused on compliance rather than effectiveness. The result is what they call "passive waste" of public resources—an outcome where effort is spent on procedural correctness instead of achieving meaningful results.

This rigidity reflects a structural inheritance from the Weberian model of bureaucracy, which once provided a rational framework for public administration based on hierarchy, specialization, and rule-bound order. However, as Fascia (2024) observes, the pace of social and technological change in the twenty-first century has made this model increasingly inadequate. The very principles that once ensured predictability now hinder flexibility. The shift toward agile governance, emphasizing adaptability, citizen engagement, and interdepartmental collaboration, thus emerges not as a managerial trend but as a systemic necessity.

Closely connected to rigidity is the persistence of a compliance culture—a mindset that values rule-following over performance and accountability. Coral and Bernuy (2022) demonstrate this phenomenon in Peruvian public universities, where administrative procedures often serve personal or political interests rather than public value. The focus on procedural conformity, instead of on results or service quality, results in institutional stagnation and significant delays in decision-making. Behnke et al. (2025) trace this culture back to deeper structural causes, including the rigid separation of legislative authority and executive function, along with widespread mistrust between state institutions and citizens. This mistrust appears in the growing number of documentation and oversight mechanisms—attempts to enforce control that, paradoxically, undermine both efficiency and trust.

The same tension is evident in Vietnam, where Giang (2025) describes the dilemma faced by civil servants who must maintain stability through hierarchical norms while operating in a volatile, uncertain, complex, and ambiguous (VUCA) environment. The attempt to balance rigidity with flexibility leads to organizational fatigue and disengagement, leaving public institutions poorly equipped to handle dynamic governance challenges.

Slow feedback cycles worsen these challenges by blocking learning and accountability within bureaucratic systems. As Fathani et al. (2024) demonstrate, local institutions often operate under the shadow of central authority, limiting their decision-making independence and slows their response to citizen needs. This structural dependence maintains bureaucratic inertia—a state of organizational paralysis reinforced by weak information flows and fragmented duties. Fathani et al. (2024) argue that such inertia leads to procedural complexity and corruption, as hidden systems allow discretionary power while hiding accountability. They suggest digitalization and transparency as quick solutions—tools to simplify processes, speed up feedback, and reduce the risk of manipulation. Behnke et al. (2025) also emphasize that bureaucracies often lack methods for collecting and analyzing data on the real-world results of administrative actions. This weakness prevents institutions from learning from their own performance.

Despite these deep-rooted challenges, the path to reform remains open. Emerging models of agile governance provide a strong alternative to traditional bureaucracy. As Fascia (2024) and Sarahadil (2025) highlight, the principles of flexibility, teamwork, and citizen-centered design can revitalize administrative systems if implemented correctly. Digital tools can reduce feedback times, process mapping can eliminate redundancy, and participatory approaches can restore human agency to decision-making. However, transitioning from procedural rigidity to adaptive governance requires more than just technological advances—it calls for cultural and institutional change. Resistance within government hierarchies, along with restrictive legal frameworks, often blocks the adoption of agile practices. Overcoming these hurdles involves a deliberate rebalancing of control and autonomy, in which accountability exists alongside trust and where compliance yields to creativity.

Essentially, bureaucratic rigidity, a compliance culture, and slow feedback loops are not just administrative issues; they are deep-rooted remnants of an outdated system. Fixing them requires rethinking governance itself—not as a simple process of enforcing rules, but as a dynamic system of learning, adapting, and creating public value. Only through this shift can public institutions become responsive, transparent, and innovative enough to handle the complex challenges of modern governance.

2.2 Adaptive Capacity in High-Stress Institutions

Adaptive capacity is the lifeline of high-stress institutions—their ability to maintain performance, coherence, and purpose during disruptions. In sectors like healthcare and public administration, where uncertainty and pressure are constant, adaptive capacity influences not only operational continuity but also the institution's survival. It embodies the collective competence of an organization to learn, reorganize, and adapt in real time when facing crises. This capacity isn't a single trait but a dynamic combination of leadership, organizational structure, and team functioning—elements that together define the institution's resilience.

Leadership is central to adaptive capacity. As Avery (2025) emphasizes, adaptive leaders stand out because of their perceptiveness and responsiveness. They have a rare skill to detect changes in their environment, interpret unclear signals, and rally teams for cooperative problem-solving. In healthcare systems, this type of leadership becomes essential. Fagerdal et al. (2022) show that hospital leaders who manage workloads, develop team skills, and maintain situational awareness help their organizations endure the constant pace and unpredictability of clinical work. Such leadership turns stress into structure—transforming uncertainty into an opportunity for coordinated action. Adaptive leaders act as both stabilizers and innovators, fostering psychological safety while encouraging innovation under pressure.

The structure of an organization deeply influences its ability to adapt. Rigid hierarchies often slow decision-making and break up communication, while polycentric structures—those combining decentralized control with overall coordination—provide a more resilient model. Cedergren and Hassel (2024) show that in polycentric systems, trust, communication, and shared responsibility become key assets that enable organizations to act quickly and coherently during disruptions. In the

public sector, Afshar and Shah (2025) point out that adaptive governance structures, combined with effective stakeholder coordination, help institutions anticipate, handle, and recover from shocks without sacrificing long-term goals. This connection between structure and purpose turns governance from a static framework into a dynamic, responsive system.

Even the most well-constructed structures rely on the vitality of the teams that bring them to life. Team dynamics—characterized by interpersonal trust, role clarity, and effective communication—are the foundation of operational resilience. Fagerdal et al. (2022) point out that diverse hospital teams, when supported by technology and strong relationships, are better prepared to handle complex and rapidly changing tasks. The psychological, cognitive, and motivational aspects of team functioning, as seen in the study by Tsandila Kalakou et al. (2023), determine how well professionals adapt to standardized procedures and operational challenges. In high-stress situations, adaptability becomes a shared skill developed through experience, empathy, and mutual accountability.

From a practical perspective, strengthening adaptive capacity requires both strategic foresight and organizational discipline. Institutions must develop continuity plans that address essential resources—space, personnel, and systems—while ensuring these plans are clearly communicated at all levels of operation (Göras et al., 2023). Frameworks such as REACT, proposed by Minucci (2021), offer structured methods for evaluating and improving adaptive performance, enabling organizations to identify vulnerabilities and make targeted investments. However, adaptive capacity cannot be improvised during a crisis; it must be cultivated well before disruptions happen. This involves embedding learning mechanisms, nurturing a culture of experimentation, and supporting ongoing professional development as core parts of institutional life.

Cedergren and Hassel (2024) further remind us that adaptive capacity depends on the context. The COVID-19 pandemic highlighted that each crisis presents unique challenges—some requiring quick structural changes, others needing psychological resilience or collaboration across sectors (Göras et. al., 2023). Therefore, resilience cannot be one-size-fits-all; it must be tailored to each situation, shaped by the specific pressures and resources of each institutional setting.

In essence, adaptive capacity is both a mindset and a system property—a form of organizational intelligence that thrives where leadership, structure, and teamwork come together. It signifies not just the ability to survive disruption but the discipline to learn from it, turning uncertainty into renewed strength. For high-stress organizations, developing this capacity involves embracing change as an ongoing process, practicing resilience, and making adaptability a core organizational value.

Specialized entities within the national security system: real-time adaptability and systemic learning

Real-time adaptability and systemic learning are now vital for national security systems facing rapidly changing threats. As adversaries adopt more sophisticated tactics, security architectures must automatically learn, adapt, and respond, making this capability a strategic necessity beyond just a technological advantage. The use of artificial intelligence (AI), machine learning (ML), and reinforcement learning (RL) in defense and cybersecurity has revolutionized how agencies identify vulnerabilities, manage crises, and sustain operational resilience. These intelligent systems act as adaptive components within complex digital ecosystems, continuously sensing, analyzing, and adjusting to uphold stability amid uncertainty.

Leading this shift are adaptive cybersecurity systems that evolve in real time. Ahmadi (2025) discusses the rise of dynamically retrainable firewalls employing machine learning to monitor network traffic and detect anomalies instantly. Unlike static defenses, these systems continuously update their models with new data and adapt to changing threat patterns through reinforcement and ongoing learning. This allows them to identify new attack methods and modify their security protocols accordingly. Similarly, AI-powered intrusion detection and prevention systems (IDPS) are revolutionizing cybersecurity by integrating behavioral analytics, generative AI, and predictive

modeling. As Kushwah (2025) explains, these systems surpass the limitations of rule-based approaches, achieving greater accuracy and efficiency through self-learning that enables attack prediction before they occur.

Reinforcement learning has become notably influential in this domain, transforming autonomous defense units from merely reactive to proactive, self-improving agents. Yapar (2024) and Nithya (2025) highlight that RL algorithms enable these systems to identify optimal defense strategies through trial and error, enhancing their responses based on past results. In simulated combat and cybersecurity environments, RL-based frameworks are trained on diverse attack scenarios, developing adaptive incident response capabilities that can adjust in real time. This learning from environmental feedback—akin to human experiential learning—helps defense systems navigate the complexity and unpredictability inherent in modern warfare. These architectures are not static; they continuously evolve, narrowing the divide between detection, decision-making, and action.

Detecting zero-day vulnerabilities—a persistent and critical issue in cybersecurity—demonstrates the clear advantages of adaptive machine learning. Unlike traditional signature-based methods that rely on past data and often fail to identify new exploits, adaptive ML algorithms, as Sajeevan et al. (2025) illustrate, can recognize malicious patterns and provide early alerts in real time without needing prior examples. Utilizing frameworks like TensorFlow, Apache Spark, and Apache Kafka, scalable, low-latency systems can handle large data streams efficiently and stay vigilant continuously. These architectures combine speed with intelligent decision-making, transforming cyber defenses from simple reactive shields into predictive, self-adjusting systems. Currently, information systems are central to national security, supporting operational control and strategic foresight. Dragomir (2025a, 2025b) notes that real-time data analytics and predictive modeling have revolutionized decision-making, enabling governments to respond swiftly and accurately to crises. This technological evolution also reflects an epistemological shift—from reactive intelligence to proactive, data-driven governance. Moreover, Nithya (2025) recommends applying agile methodologies, originally from software engineering, to enhance national security. By emphasizing iterative learning, cross-team collaboration, and proactive risk management, agile principles bring flexibility and innovation to traditionally rigid institutions.

However, the intersection of AI and national security adds new layers of ethical, operational, and strategic challenges. Yapar (2024) and Nithya (2025) warn that adaptive systems with autonomous learning capabilities can also be susceptible to manipulation or errors. Reinforcement learning, despite its strength, is vulnerable to environmental fluctuations and biased data. Delegating decision-making to autonomous systems—especially in military settings—raises serious ethical concerns about accountability, proportionality, and control. Additionally, adversarial attacks such as data poisoning or model inversion targeting these algorithms demonstrate the double-edged nature of algorithmic intelligence.

As nations incorporate AI and learning systems into their security setups, they must also focus on governance, transparency, and adherence to international standards. Trust—both public and institutional—serves as strategic capital, crucial for legitimizing autonomous technologies in defense. Ultimately, national security's future relies not just on algorithm sophistication but on the careful design, deployment, and regulation of these tools.

Essentially, real-time adaptability and systemic learning mark a shift from static defense to dynamic resilience. They indicate the rise of intelligent security systems that evolve with evolving threats. This change not only redefines how nations defend themselves but also reshapes their approach to security—viewing it less as a fixed protection and more as an ongoing cycle of learning, adaptation, and renewal.

Technology-Driven Evolution: The New Competitive Landscape of Private Security

The private security industry is at a pivotal moment, influenced by rapid technological progress and rising competition. Originally centered on physical security and surveillance, it has transformed into a complex, technology-driven system that must confront threats in both physical and digital spaces.

Increasing cyber threats, smart technology integration, and evolving global security concerns have compelled private security companies to overhaul their strategies—employing advanced tools, developing adaptable operations, and partnering strategically with government agencies. This development goes beyond mere technological upgrades; it fundamentally alters the way security is conceptualized, delivered, and sustained in the twenty-first century.

Technological innovation is central to this transformation. As noted by Ranga (2024) and Kommera (2024), the rising frequency and sophistication of cyber threats—from ransomware to state-sponsored attacks—necessitate ongoing improvements in cybersecurity infrastructure. AI and ML are now essential tools for real-time threat detection, behavioral analysis, and automated incident response, enabling private security companies to shift from reactive to predictive security measures. Additionally, blockchain and quantum cryptography are transforming data integrity, authentication, and encryption, setting new trust standards in information security. The growth of IoT and interconnected smart systems, as discussed by Soni et al. (2023), has created a complex security landscape that demands continuous innovation to defend against both known and unknown vulnerabilities. In this environment, the private security sector does not just deploy technology; it evolves alongside it.

However, successfully leveraging technology relies on organizational agility—the ability to anticipate, absorb, and respond to rapid changes. Agility serves as a vital link between innovation and competitive edge, converting technical capabilities into strategic success. Bin Abdul Satar et al. (2024) highlight that companies that quickly and efficiently adopt new technologies are better equipped to maintain long-term competitiveness in unstable markets. This flexibility goes beyond infrastructure to include knowledge management systems that gather, share, and utilize expertise throughout the organization. Effective knowledge management improves not only responsiveness to new threats but also the capacity to seize new opportunities, making innovation a continuous process rather than an isolated event.

The growth of the private security industry highlights the increasing role of public-private partnerships (PPPs). As security issues cross traditional boundaries, cooperation between governments and private companies has become essential. Seivold (2023) mentions that municipalities are more and more turning to private firms for specialized skills, cutting-edge technology, and flexible operations—qualities that complement public resources and improve safety. These partnerships can provide cost-effective, advanced technological solutions and foster innovation across sectors. However, their effectiveness relies on clear regulations, transparent governance, and strict quality standards to ensure accountability and trust. In this way, PPPs serve not just as operational tools but as strategic alliances that enhance societal resilience.

Despite technological progress, the private security sector still contends with significant human resource and policy challenges. Seivold (2023) points out that while technology has revamped operational approaches, it cannot substitute the expertise, judgment, and ethical duties of experienced personnel. Hiring, training, and retaining competent professionals are vital for maintaining high service standards, especially as roles increasingly blend technical skills with strategic insight. On the policy front, stress that coherent regulation is crucial for guiding responsible development of cybersecurity innovations within frameworks of accountability and interoperability. Consequently, policymakers, business leaders, and cybersecurity specialists must collaborate to develop adaptive regulatory systems that promote technological advancement while safeguarding public interests.

Ultimately, transforming the private security sector presents a paradox: technological and organizational advances increase resilience yet also create new vulnerabilities and dependencies. The way ahead requires managing this duality through strategic foresight—balancing rapid innovation with ethical governance, agility with stability, and competition with collaboration. As the sector develops, its long-term resilience will rely not just on technological sophistication but also on the maturity of its institutions and the adaptability of its personnel.

Essentially, the future of private security depends on balancing technological innovation with human intelligence—using new advancements to boost trust, safeguard assets, and maintain resilience in a world where security boundaries are constantly shifting.

2.3 Knowledge Transfer and Adaptive Governance

Adaptive governance and knowledge transfer form the core of managing complex social-ecological systems, where human activities, environmental changes, and institutional behaviors are constantly shifting and interconnected. Adaptive governance is about decision-making systems being flexible, participatory, and focused on learning amidst uncertainty. Knowledge transfer ensures that insights, data, and expertise flow seamlessly across different institutions and disciplines. Together, these processes build governance frameworks that are not only reactive during crises but also capable of proactive, anticipatory adaptation—learning as they act and evolving alongside the systems they aim to oversee.

A key aspect of adaptive governance is its emphasis on stakeholder involvement. This approach views governance as ineffective if dominated solely by the state or a single authority; instead, it must arise through collaboration among various actors—government bodies, private sector, academics, and local communities. Studies by You et al. (2021) show that such cooperation combines different knowledge systems and value perspectives, leading to decisions that are more legitimate and tailored to local contexts. For example, in the Kruger to Canyons Biosphere Region, Schultz and West (2020) highlight the ongoing negotiations needed to balance cultural values and environmental needs, emphasizing that inclusivity and dialogue are essential for resilience. Similarly, in China, digital platforms like WeChat enable real-time knowledge sharing and co-creation of solutions, demonstrating how technology can foster participatory governance (You et al., 2021). These cases illustrate that adaptive governance is not a static institutional model but a dynamic process of interaction, negotiation, and mutual learning.

The learning aspect of adaptive governance highlights its evolving nature. It involves simultaneous learning at the individual, organizational, and systemic levels, through both formal scientific studies and informal experiential understanding. Miyanaga and Nakai (2021) note that adaptive governance relies on ongoing cycles of knowledge creation, feedback, and adjustment. Their research on Lake Biwa in Japan demonstrates how scientific findings on invasive species are directly incorporated into policymaking, allowing for quick updates and iterative improvements in management. In addition to technical learning, social learning—where stakeholders collectively interpret complex issues, reflect on results, and modify actions—is vital. As Akamani (2023) points out, social learning strengthens communities' ability to adapt to climate disruptions by building shared understanding and trust. Thus, learning is both a driver and an outcome of adaptive governance, creating a feedback loop that turns uncertainty into institutional intelligence.

In this paradigm, the government's role shifts from command and control to enabling and facilitating. Adaptive governance redefines the state as a convenor and mediator, guiding self-organizing networks toward collective objectives while safeguarding equity and accountability. Cosens et al. (2023) highlight the need for governments to foster conditions that allow bottom-up management structures to develop, with oversight to protect public interests. Bamiedakis (2022) offers a practical example from water management efforts in Australia and California, where government and non-government actors work together to combine scientific knowledge with local ecological insights. These collaborations help bridge historical distrust, incorporate diverse perspectives, and improve policy consistency. Additionally, Cosens et al. (2023) emphasize that legitimacy and fairness are crucial for the sustainability of adaptive systems: governance must be firmly rooted in democratic principles, ensuring participation not only broadens voices but also addresses power imbalances.

Yet, adaptive governance still faces ongoing challenges in practice. Its success relies on how quickly institutions can learn and reorganize, which is often limited by bureaucratic inertia and

political contestation. Cosens et al. (2023) highlight that issues of legitimacy and coordination become especially critical in rapidly changing situations, where decisions have to be made before full consensus is reached. Another complex area is the science-policy-practice interface (SPPI), discussed in *Conceptualising the Science-Policy-Practice Interface of Adaptive Governance* (Wyborn et al., 2023). This interface shapes how knowledge influences decisions, and its political dynamics—such as who defines evidence and who controls interpretation—significantly affect the reflexivity of governance. Without transparency and shared accountability at the SPPI, adaptive governance risks reinforcing the very rigidity it aims to dismantle.

Despite these challenges, adaptive governance remains a highly promising approach for guiding complex systems toward sustainability. Its strength is in its ability to integrate: combining empirical data with local expertise, expert planning with community knowledge, and innovation with legitimacy. However, this integration is an ongoing process that requires continuous refinement through experimentation, dialogue, and reflection. As environmental, social, and technological conditions change, the governing institutions must evolve as well. The goal is not to create a perfect governance system but to develop systems that can learn and improve over time—fostering adaptability, knowledge sharing, and inclusiveness as core principles of collective resilience.

Theories of organizational learning.

Organizational learning theories provide a valuable perspective for understanding how institutions grow, adapt, and maintain performance amid complexity and ongoing change. These theories focus on how organizations acquire, develop, retain, and share knowledge—learning from both successes and failures—and how this learning becomes embedded in their structures, cultures, and routines. Beginning with the pioneering ideas of Chris Argyris and Donald Schön (1974) and later expanded by Peter Senge (1990), the field has gradually moved beyond its early focus on individual thinking to embrace a broader, more interconnected understanding of how knowledge circulates within and between organizations (Donald et al., 2025; Sidani, 2024). Modern research broadens this foundation by exploring concepts like knowledge creation, expansive learning, and learning ecosystems, highlighting the dynamic interplay between personal growth and collective intelligence (Guo, 2022; Kühbacher, 2023).

A key framework in this tradition is Senge's idea of the learning organization, which views institutions as dynamic systems capable of ongoing self-renewal. Sidani (2024) emphasizes that organizations should create conditions where individuals are motivated to expand their skills, question mental models, and align their personal goals with the collective mission. As Sidani (2024) and Sok and Le (2023) note, this approach promotes developing new thinking patterns—replacing rigid hierarchies with environments that foster inquiry, experimentation, and shared purpose. Consequently, the learning organization is not a fixed structure but a vibrant culture that emphasizes reflection and continuous change.

Building on this, Schwengber's (2024) relational governance theory redefines organizational learning as the process of coordinating diverse stakeholder rationalities across various contexts. It views organizations not just as knowledge stores but as interwoven networks of relationships where power, interests, and information continuously interact. Learning happens through ongoing negotiation and adaptation within these relational systems, highlighting cooperation rather than competition. This relational approach links economics, sociology, and organizational theory, depicting learning as a social activity rooted in trust, reciprocity, and shared governance.

The link between knowledge management and learning stands as a key pillar of modern organizational learning theory. Guo (2022) and Chuah and Law (2020) emphasize that knowledge management goes beyond just storing data; it involves developing innovative knowledge communities and fostering environments that support broad learning. These communities act as hubs for creativity and ongoing improvement, turning individual insights into shared intelligence. In this view, organizational learning is a continuous dialogue between discovery and application, where creating knowledge is just as important as distributing and utilizing it.

A deeper layer of this concept is shown in triple-loop learning (Carrión Bósquez et al., 2022). Building on Argyris and Schön's single- and double-loop theories, triple-loop learning encourages organizations to do more than just find and solve problems (single-loop) or challenge their assumptions (double-loop). It prompts them to critically reexamine and redefine their core norms, values, and goals. This third level of learning represents a form of institutional self-awareness, enabling organizations to adapt not only their strategies but also their identities in complex and uncertain environments. It transforms learning from a purely operational tool into a fundamental, existential capacity.

Organizational learning theories are applicable across many managerial fields. In strategic management, they boost long-term flexibility by combining analytical planning with ongoing learning processes (Azadegan & Feizabadi, 2022). These theories motivate firms to go beyond mere predictive control, promoting iterative testing—helping strategy develop as a discovery process. In human resource management (HRM), organizational learning provides the basis for building a culture of constant improvement, integrating training and development into daily routines (Sidani, 2024). Likewise, in supply chain management, learning frameworks support collaborative problem-solving, enhance decision-making, and increase agility within connected production and distribution networks (Azadegan & Feizabadi, 2022).

However, these theories face certain limitations and critiques. Researchers point out that Senge's learning organization model, while motivating, often presumes a top-down leadership style that may weaken the participatory spirit it aims to foster (Sok & Le, 2023). Additionally, cultural and contextual factors—especially in non-Western or resource-scarce settings—can hinder the successful adoption of learning-focused structures. The idea that team learning automatically develops into organizational learning has also been challenged, with evidence remaining inconsistent. Greve (2020) notes that as environments become more unpredictable, learning theories must adapt by integrating insights from behavioral economics, complexity science, and digital transformation to stay relevant.

In summary, theories of organizational learning remain essential for understanding how organizations adapt and succeed in uncertain environments. They highlight that learning is at the heart of management—an ongoing, iterative process that maintains organizational health. Their full potential is realized in their ability to evolve, incorporating new insights from fields like cognitive science, data analytics, and network theory, all while staying rooted in the human and relational aspects of learning. As organizations operate within increasingly complex global ecosystems, the ability to learn more quickly and effectively than their environment could become not only a competitive edge but also a key factor for survival.

Asymmetric Learning Flows: Transferring Adaptive Knowledge from Security to Administration

Asymmetric learning flows describe how knowledge moves from fast, adaptable subsystems to slower, more stable ones within organizations. This process shows how insights from volatile and uncertain settings—like security operations or crisis management—can improve and adjust traditional bureaucratic structures that operate under stability and rules. By doing so, organizations can turn the agility of dynamic systems into the reliability of formal frameworks, helping them stay aligned with changing environments. In today's interconnected and risk-filled world, especially in areas like cybersecurity and strategic planning, asymmetric learning flows enable resilience, innovation, and foresight to spread across otherwise rigid structures.

Adaptive security management depends on asymmetric learning flows, forming the foundation of responsive and intelligent defense strategies. Petukhov et al. (2022) demonstrate that adaptive contours—feedback systems combining retrospective and real-time analysis—enable security systems to learn from incident data and offer actionable insights to administrators. This creates a two-way connection between operational security and decision-making, where agility in security offsets procedural delays. The model proposed by Petukhov et al. (2022) emphasizes how dynamic-to-static knowledge transfer helps organizations convert security events into strategic learning

opportunities, embedding adaptability into governance. The use of artificial intelligence and machine learning in adaptive physical security further enhances this process. As described by Rizki et al. (2025), reliance on advanced technologies and adaptive frameworks also demands ongoing investment and a long-term strategic approach. AI-driven surveillance, anomaly detection, and predictive analytics show how data-based tools can improve traditional administrative tasks, linking operational complexity with managerial foresight.

Within organizations, the flow of knowledge functions like a circulatory system of learning. Miranda Júnior et al. (2022) highlight that the vitality of institutional knowledge depends on how seamlessly insights move between subsystems, each with their own rhythms. In this interconnected framework, dynamic systems foster ongoing innovation, while administrative systems serve as reservoirs of institutional memory and stability. Huang and Chen (2025) introduce the metaphor of knowledge flow viscosity, representing resistance that hampers circulation. Factors such as communication silos, cultural barriers, or mismatched cognitive frameworks create viscosity, hindering the spread of adaptive insights. To enhance organizational learning, it is vital to reduce viscosity through cross-functional collaboration, digital integration, and trust-based communication. Roham et al. (2025) expand on this by proposing AI-driven antifragile systems that not only resist disruption but transform it into learning opportunities. These systems view volatility as input, allowing static structures to become stronger through exposure to uncertainty.

In cybersecurity, asymmetric learning flows are vital and form a fundamental design principle. As threats grow more complex, organizations must shift from static, belief-based security models to dynamic, continuously learning systems. Burrell and Jones (2024) show that integrating adaptive learning improves detection accuracy, accelerates responses, and enhances organizational intelligence over time. Likewise, Collins (2025) advocates for a systems-thinking approach that transitions from reactive protection to adaptive resilience, leveraging feedback from threat environments to evolve defense protocols. Linking knowledge management practices with frameworks like the NIST Cybersecurity Framework illustrates how static systems can be revitalized through ongoing learning. By combining innovative technologies with adaptive learning cycles, organizations can respond to known threats and also anticipate and prevent emerging ones (Burrell & Jones, 2024).

Despite their potential to transform, asymmetric learning flows pose significant challenges. Huang and Chen (2025) point out that coordinating knowledge sharing among different organizational subsystems—which have varying priorities, languages, and feedback speeds—can create friction and reduce efficiency. Addressing this complexity requires careful planning, including mapping knowledge pathways, standardizing interfaces, and fostering cultures of openness that support bidirectional communication. According to Rizki et al. (2025), reliance on advanced technologies and adaptive frameworks also demands ongoing investment and a long-term strategic approach. Without continual updates, even adaptive systems risk becoming static, losing the responsiveness they were designed to sustain.

Ultimately, asymmetric learning flows are more than just a technical process—they represent a new paradigm for how institutions evolve. They change the way knowledge spreads within organizations, allowing insights from volatile areas to strengthen governance stability. By combining adaptive and administrative intelligence, organizations can turn fragmentation into coherence, making dynamic learning a core structural trait rather than a temporary response. The ability to manage and speed up these learning asymmetries will increasingly set apart resilient, forward-looking organizations from those limited by their rigidity. In this way, asymmetric learning flows not only improve security and operations but also guide the broader shift toward adaptive, knowledge-based governance in an ever-changing world.

Adaptive Governance Transfer Model

The Adaptive Governance Transfer Model bridges the flexible approaches of national and private security sectors with the more structured frameworks of public administration. It stems from the

idea that principles fostering agility and resilience—such as crisis response, cybersecurity, and defense—can modernize bureaucratic systems often hindered by uncertainty and rapid change. By incorporating adaptability, cooperation, and continuous learning into administrative tasks, this model aims to enable the public sector not only to manage disruptions but also to evolve from them. Transferring adaptive governance concepts signifies a strategic and philosophical shift, transforming governance from merely following rigid rules into a dynamic process of understanding, coordination, and continuous enhancement.

Adaptive governance is grounded in two core principles: flexibility and collaboration. Flexibility allows institutions to respond swiftly and intelligently to unforeseen challenges like pandemics or cyberattacks by engaging in ongoing learning and involving multiple stakeholders. As Zhang (2022) notes, this strategy enables decision-makers to experiment, adapt, and take action in uncertain situations without waiting for hierarchical approval. This is crucial for public administration, which must balance procedural accuracy with the need for quick, evidence-based decisions. Moreover, collaboration and inclusivity are essential, expanding decision-making beyond government boundaries. Tomić et al. (2025) emphasize the growing importance of cross-sector partnerships—among government, private entities, and international organizations—in tackling complex global issues such as misinformation and cyber threats. Through sharing intelligence, pooling resources, and co-developing strategies, collaboration strengthens collective resilience and drives institutional innovation.

The transfer from national and private security sectors to public administration creates practical ways to implement these principles. Benchmarking—systematically comparing performance metrics, best practices, and governance models—is among the most effective transfer methods. Ramos et al. (2022) show how benchmarking helps public institutions identify gaps, adopt successful strategies, and develop continuous improvement mechanisms. Beyond technical learning, this approach fosters accountability and growth within administrative systems. Additionally, integrating strategic planning and resilience frameworks—long used in the defense sector—provides public organizations with robust tools to anticipate, prevent, and recover from risks. As Shchokin et al. (2024) and Uhodnikova et al. (2024) highlight, these frameworks promote proactive engagement and scenario planning, replacing static compliance cultures with foresight-driven management. They shift the focus from reactive crisis responses to systemic preparedness, allowing public bodies to maintain continuity during disruptions.

Implementing adaptive governance in the public sphere faces several challenges and tensions. One major concern involves legitimacy and speed. According to Cosens et al. (2023), adaptive governance often depends on informal, network-based structures that emphasize agility over formal procedures. While this improves responsiveness, it also raises issues related to democratic accountability, transparency, and fair participation. Public administrations must carefully balance the need to respond quickly to emerging issues with maintaining procedural integrity that fosters public trust. Another challenge pertains to complexity and scale. According to Minassians and Roy (2020), public systems operate on multiple levels—local, national, and international—each governed by unique legal, political, and cultural factors. Managing these multilevel interactions requires advanced coordination strategies that can adapt responses to the specific context while ensuring coherence across the entire governance system.

From a wider viewpoint, the Adaptive Governance Transfer Model provides a strong framework for rethinking the future of public administration. Its advantage is in its hybridity: it merges the operational flexibility of security systems with the ethical and institutional responsibility of democratic governance. However, this hybridity also reveals vulnerabilities. Adaptive governance relies on informality, experimentation, and quick iteration—qualities that may clash with the slow, procedural processes of bureaucratic legitimacy. Additionally, effectively handling multiscale, cross-sectoral issues requires tailored design; solutions suitable for cybersecurity might need substantial reinterpretation when applied to healthcare, education, or urban planning.

Public administration continually struggles to balance stability with flexibility—staying reliable without becoming rigid, and adaptable without losing legitimacy. The Adaptive Governance Transfer Model offers a structured yet flexible method to attain this equilibrium. It integrates lessons from security and private-sector adaptability into the public sector, proposing a governance style that learns, evolves, and endures. This model prioritizes ongoing learning rather than strict control, with the goal of enhancing collective resilience.

3. METHODOLOGY

This research is grounded in the interpretivist–constructivist paradigm, which views reality not as a fixed, measurable entity but as something continually shaped through interaction, perception, and meaning-making. In line with this philosophical approach, the study indicates that the adaptive structures and governance mechanisms present in public administration, national security agencies, and private security companies are socially constructed through the practices, discourses, and relationships of the involved actors. The aim is therefore not to measure performance but to understand how adaptability, learning, and coherence develop within complex institutional environments.

From an ontological perspective, the study recognizes the existence of multiple, context-dependent realities. Each institutional domain creates its own understanding of what "adaptability" or "resilience" means, reflecting different operational cultures, constraints, and sources of legitimacy. The epistemological stance is therefore subjectivist: knowledge about adaptive governance is co-developed by researchers and the institutional actors whose experiences and practices form the basis of the inquiry. Instead of seeking universal generalizations, this research aims to develop a deep interpretive understanding of how institutions learn, coordinate, and evolve in VUCA conditions. As Turin et al. (2024b) emphasize, interpretivist–constructivist research emphasizes understanding meanings and reconstructing experiences over measurement or prediction.

The approach used here is qualitative, exploratory, and comparative, focusing on theory development rather than testing hypotheses. The study looks at three related yet distinct institutional areas that operate under different levels of environmental change and internal resistance: (1) public administration, which is marked by procedural consistency and structural inflexibility; (2) national security agencies, especially those functioning in high-pressure or mission-focused settings, where adaptability is essential; and (3) private security firms, which are nimble, market-driven organizations where feedback and innovation are vital for survival. These cases are not viewed as separate entities but as interconnected parts of a larger security–governance system.

The data corpus includes documentary and secondary sources such as institutional reports, national resilience strategies, policy frameworks, and scholarly analyses from international organizations like the OECD, NATO, and the European Commission. Each of these materials is analyzed not for statistical evidence but for discursive and structural patterns that show how adaptability and coherence are understood and implemented. Following the interpretivist approach outlined by Schwandt (1994) and reaffirmed by Turin et al. (2024a), the researcher's role is to interpret the contextual meaning of these documents, identifying how institutional narratives build their own models of governance and learning.

The analytical process proceeds through iterative thematic interpretation, drawing on both inductive and deductive reasoning. Core analytical categories—such as feedback mechanisms, distributed decision-making, organizational learning, and adaptive coordination—were initially identified from complexity and systems theory and then refined through multiple readings of institutional data. The analysis aims to reveal how these categories appear differently across the three domains and how they interact to create cross-sectoral patterns of adaptive learning. In this context, the study views governance as an evolving narrative in which institutions continually reinterpret their experiences in response to stress and uncertainty.

Reflexivity has been vital throughout the process. The interpretivist–constructivist paradigm recognizes that the researcher is not a neutral observer but actively participates in shaping meaning. Each interpretation is affected by previous knowledge, disciplinary assumptions, and conceptual frameworks. To address this, reflexive notes were kept during analysis to record interpretive decisions, promoting transparency and consistency. This method boosts credibility not by replicating results but through interpretive coherence—the logical connection between the researcher's analytical choices and the emerging insights.

The research design intentionally aligns with the study's paradigm and objectives. It treats adaptability and coherence as interconnected, relational phenomena that cannot be measured in isolation. Instead, these should be viewed as patterns of interaction, dialogue, and collective sensemaking across different institutions. Through an interpretivist–constructivist lens, the focus shifts to understanding deeply rather than explaining superficially, prioritizing complex relationships over simple ones, and emphasizing evolution over static states. The primary goal is to create the Adaptive Governance Transfer Model, a conceptual framework that demonstrates how knowledge and adaptive intelligence flow unevenly between systems. This underscores that learning occurs through institutional connections rather than in isolation.

4. FINDINGS AND DISCUSSION

The findings of this exploratory and comparative inquiry suggest that adaptability, resilience, and coherence do not manifest uniformly across the three institutional domains under investigation. Instead, they unfold as situated responses to contextual constraints and opportunities, reflecting how each system constructs meaning and operational logic within its environment. In the interpretivist–constructivist sense, the results reveal how institutions make sense of volatility and complexity—how they interpret uncertainty, translate it into action, and reconstruct their internal structures in response to evolving challenges (Turin et al., 2024a).

Within public administration, adaptability remains primarily procedural rather than systemic. Hierarchical control, regulatory compliance, and institutional caution act as both strengths and limitations. They ensure continuity and legitimacy but often impede reflexivity and responsiveness. Administrative reforms tend to be episodic, driven by policy mandates or external pressures rather than intrinsic learning cycles. Feedback mechanisms are generally formal and retrospective—such as audits, evaluations, or performance reports—rather than dynamic and anticipatory. As a result, public institutions often operate as slow-learning systems, in which adaptation is filtered through bureaucratic inertia and normative expectations of stability (Tõnurist & Hanson, 2020). The interpretive analysis of official policy documents and reform strategies illustrates a persistent gap between learning as discourse and learning as practice.

National security institutions, especially those operating in high-stress or mission-driven settings, show a unique culture of immediate adaptability. Their organization combines centralized authority with decentralized decision-making and quick feedback. Through practices like after-action reviews, joint missions, and debriefings, these agencies make learning a collective instinct rather than just a managerial task. This structured flexibility helps them stay coherent even amid chaos. Boikanyo (2025) highlight that such systems are examples of complex adaptive systems, where leaders enable emergence by supporting networks that self-organize based on real-time information. In this setup, coherence depends less on strict control and more on shared goals and trust. Learning becomes a social activity woven into daily routines, constantly improved through ongoing iteration and reflection (Mara & Vlad, 2024).

The private security sector exemplifies a flexible third form of adaptation, driven by competition and innovation rather than traditional hierarchy or mission-focused goals. These companies exhibit adaptive entrepreneurship by transforming uncertainty into opportunities through quick testing and the adoption of new technologies. Strategic reports and industry analyses highlight their capability

to integrate emerging tools such as AI-assisted monitoring, data-driven threat assessment, and predictive modeling into their daily operations. Their learning accelerates through market feedback and client demands, promoting a culture of ongoing improvement and real-time responsiveness. As Demircioglu and Van der Wal (2022) explain, hybrid professionalism at the public–private interface fosters new governance models where innovation complements accountability. In this sector, adaptability remains a constant organizational feature—cultivated through feedback loops, technological proficiency, and agile coordination.

These three domains, when compared, form a spectrum of adaptability. Public administration is situated on the stable end, prioritizing predictability and order, while private security lies on the agile end, emphasizing responsiveness and efficiency; while national security institutions occupy a middle position, blending command discipline with adaptive capabilities. This spectrum underpins the core hypothesis of the study: public administration exhibits the greatest structural inertia, and the adaptive mechanisms employed in security sectors—both national and private—can inform public sector reform. However, these mechanisms are not automatically or equally transferable; they must be translated across different organizational languages, value systems, and timeframes. What is considered "learning" during a crisis might be regarded as "risk" in an administrative context.

The interpretive analysis suggests that learning moves from dynamic to static systems, consistent with Sturmberg's (2022) idea of reflective knowledge transfer—the process where experiences from uncertain situations are reinterpreted and applied elsewhere. This is similar to what complexity theorists call coevolutionary learning —an ongoing process in which changes in one system lead to similar adjustments in another (Almudi & Fatas-Villafranca, 2021). The findings indicate that while national and private security entities often learn through experience, driven by urgency and feedback, public institutions tend to learn discursively—through interpretation, documentation, and codification rather than direct exposure to volatility.

This asymmetry carries important consequences. Adaptive intelligence—the skill to turn feedback into strategic consistency—mainly develops in environments of limited stability rather than systems focused on control. Security agencies and private entities, by treating uncertainty as an ongoing operational reality, foster reflexive learning processes that enable them to stay coherent without relying on predictability. Conversely, public administration often equates stability with control, underestimating the adaptive capacity of managed instability. This contrast highlights Qi and Ran (2023) governance paradox: the more an organization tries to maintain coherence through formal controls, the less capable it becomes of doing so amid change.

The connection between these areas is not just comparative but also interdependent. Adaptability spreads through collaboration: via joint actions, shared policy structures, and public–private partnerships that help turn adaptive lessons into administrative practices. Both NATO (2025) and the High Representative of the Union for Foreign Affairs and Security Policy to the Council (2024) highlight that effective security governance relies on this permeability—public systems' capacity to integrate operational insights from private and hybrid sectors while maintaining normative accountability. The current research supports this perspective, indicating that governance resilience results from ongoing systemic dialogue rather than isolated reforms.

Thus, the discussion shifts toward viewing governance not as a static structure but as a learning ecology—a dynamic system of interconnected actors that evolve together through feedback, interpretation, and adaptation. In this ecosystem, the public sector acts as the foundation of legitimacy, the national security sector as the facilitator of operational learning, and the private sector as the driver of innovation. Coherence is maintained not through hierarchy but through interaction, and adaptability becomes the common language through which institutions learn to think systemically in a VUCA world.

5. CONCLUSIONS AND IMPLICATIONS

This study sought to explore how adaptability and coherence manifest across three interconnected sectors—public administration, national security agencies, and private security firms—and examine how learning in dynamic contexts can inform bureaucratic reform. Adopting an interpretivist–constructivist perspective, the research found that institutions actively shape adaptive behaviors rather than merely display them. It confirmed that adaptability is not an innate organizational characteristic but a socially constructed process that arises through interaction, interpretation, and the transformation of experiences into organizational structures (Turin et al., 2024a).

The analysis validated the study's core hypothesis: public administration is the most inert system, with its rigid procedures and structure limiting its capacity for rapid and profound adaptation. Nonetheless, this inertia also maintains the normative stability vital for public legitimacy and accountability. In contrast, national security agencies—especially those operating in high-stress, mission-critical environments—have built flexible structures, balancing hierarchical command with decentralized decision-making and real-time responses (Uhl-Bien & Arena, 2022). Private security firms exhibited high agility, leveraging market signals, technological insights, and client feedback for ongoing learning. Together, these three sectors create a spectrum of adaptive maturity, forming the empirical basis for the Adaptive Governance Transfer Model (AGTM) introduced here.

The research redefines adaptability as an ecological aspect of governance rather than merely a managerial reform. Institutions function within interconnected networks; their ability to learn and adapt hinges on how permeable their boundaries are and how open their feedback mechanisms are. Thus, resilience results from interaction, not isolation. Systems that learn collectively—through joint training, shared data infrastructures, or inter-organizational collaboration—exhibit greater adaptive coherence (Donald et al., 2025). In contrast, systems that isolate themselves to maintain procedural purity risk becoming cognitively rigid, confusing control with stability.

These insights have several implications for theory and practice. The study adds to the expanding literature on complex adaptive governance by showing how learning flows unevenly across institutional ecosystems (You et al., 2021). It questions the traditional view that the public sector is the main source of order, and the private sector merely follows. Instead, adaptive learning flows upward, from dynamic and high-pressure environments to stable administrative systems. This reversed influence indicates that reforms should focus on making the public sector "smarter"—more capable of identifying, absorbing, and institutionalizing lessons from volatile operational contexts —rather than simply making it "faster" in the private-sector sense.

The study highlights the importance of developing institutional absorptive capacity (Senivongse, 2023). In public administration, this involves creating systems that enable the incorporation of external adaptive intelligence while preserving procedural integrity. Such mechanisms include joint crisis simulations, adaptive leadership initiatives, and cross-sectoral task forces that facilitate this knowledge transfer. In the context of national security, it is crucial to formalize how experiential learning translates into governance innovation, ensuring lessons from operational settings influence policy and institutional structures. Meanwhile, the private security sector, often at the forefront of adaptability testing, faces the challenge of aligning ethical and regulatory standards as these adaptive practices become part of public governance.

Systemically, the results suggest that adaptive governance needs to be co-created across different institutions. Modern crises—ranging from hybrid threats to climate emergencies—make isolated responses ineffective. A resilient approach involves a networked learning model, where government, security agencies, and private sectors work together, sharing feedback, expertise, and innovations (Tõnurist & Hanson, 2020; NATO, 2025). In this framework, public administration acts as the system's memory, ensuring legitimacy and stability; national security functions as the sensor

and coordinator; and the private sector drives innovation and growth. The ecosystem's health relies on balancing these roles effectively.

This research proposes a new perspective on adaptability within governance debates. Rather than treating it as merely a reactive skill, it should be viewed as a form of institutional intelligence—collective capacity of systems to think, learn, and evolve in unison. Fundamentally, adaptive governance involves relational intelligence on a broad scale. It transforms volatility into valuable insights, turns ambiguity into constructive dialogue, and simplifies complexity into coordinated understanding. Future research could empirically evaluate the AGTM through multi-case studies or simulation models to explore how feedback mechanisms and leadership configurations influence adaptive learning across various institutional sectors.

In conclusion, the study confirms that in a VUCA environment, coherence and adaptability are not conflicting but complementary aspects of institutional survival. Public institutions can sustain their legitimacy by becoming more adaptable, while security and private actors can stay agile by adhering to shared governance principles. Together, they form the dynamic framework of modern governance — a complex, evolving system that learns, reforms, and persists through the balance of order and emergence.

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