



Attrition Entrepreneurship and the Erosion of Dynamic Capabilities: An Examination of the Resource-Based View in Extractive Economies

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Abstract

This study explores the paradoxical role of Intellectual Property (IP) in economies dominated by Attrition Entrepreneurship (A.E.), where top-down, extractive practices stifle genuine innovation. Through the case of SOLIRANCE, a technologically superior driver behavior analysis technology, we demonstrate how a robust IP portfolio can function as a structural barrier that prevents an innovation from being co-opted by state-linked patronage networks, leading to its institutional marginalization. Our research integrates the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT) with A.E. theory to propose the concept of "Institutional Friction for Non-Extractive Assets." We show how the IP protection of SOLIRANCE, which is typically a source of competitive advantage in open markets, becomes a liability in an extractive economy that rewards political rent-seeking over creative destruction. Our findings highlight the mechanisms by which A.E. ventures crowd out non-extractive technological assets, and how the "delay" in the real world is used as a tool to exhaust the capital of genuine entrepreneurs. This research has significant implications for policymakers seeking to promote sustainable innovation and prevent economic decay.

Keywords: Attrition Entrepreneurship (A.E.), Intellectual Property (IP), Institutional Friction, Resource-Based View (RBV), Dynamic Capabilities Theory (DCT), Non-Extractive Assets, Economic Decay, Command-and-Control Economy, Petro-Rentier State, Innovation Stifling

1. Introduction

1.1. The Conflict between Innovation and Extraction

The contemporary economic landscape is often characterized by the concept of "Creative Destruction," where entrepreneurship plays a vital role in driving value creation, technological progress, and long-term prosperity. However, a significant divide exists between two distinct entrepreneurial archetypes: Genuine Entrepreneurship and Attrition Entrepreneurship (A.E.) [1].

Genuine Entrepreneurship is distinguished by its reliance on original invention, innovation, and the strategic orchestration of valuable, rare, inimitable, and non-substitutable (VRIN) resources [2]. This model, exemplified by the development of the SOLIRANCE apparatus [14,15] a patented system for driver behavior analysis and insurance risk management thrives on creating new market value and mitigating information asymmetry. Success in this paradigm is contingent upon Dynamic Capabilities (DCT), which involve sensing market needs, seizing opportunities, and reconfiguring assets to maintain a competitive advantage.

In contrast, Attrition Entrepreneurship represents a top-down, politically dependent form of enterprise that prioritizes short-term income generation through the depletion of existing societal resources rather than creating new wealth. The A.E. ventures often emerge in Command-and-Control (CCC) economies, where artificial economic "booms" are engineered through state-level actions, such as war-driven industries, extractive tax policies, or institutionalized discrimination [3-5]. Unlike genuine ventures, the A.E. models do not require technological merit; instead, they rely on political rent-seeking and the exploitation of institutional friction to crowd out independent, invention-based competitors.

The conflict arises when a non-extractive technological asset like SOLIRANCE attempts to scale within an ecosystem dominated by Attrition Entrepreneurship. Although a robust Intellectual Property (IP) portfolio typically safeguards innovation, in an A.E. environment, it acts as a decoupling mechanism that prevents the innovation from being co-opted into extractive cycles. This paradox often results in the systemic stifling of innovation.

According to El Maachi et al. (2025), inclusive institutions characterized by democratic governance, legal integrity, and property rights protection foster an environment conducive to innovation and genuine entrepreneurship [6]. This perspective contrasts with the Attrition Entrepreneurship paradigm, which represents the functional outcome of extractive institutions. While El Maachi et al. argue that inclusiveness creates material conditions for collective well-being through affirmative forces, A.E. theory reveals a mechanism of systemic decay: a top-down, politically dependent form of enterprise prioritizing short-term extraction over long-term value creation.

In extractive frameworks, such as petro-rentier states where the government acts as a distributive hub for patronage networks, entrepreneurship is repurposed as a tool for resource depletion rather than wealth

generation. The fundamental difference lies in the directionality of value: inclusive institutions facilitate bottom-up, invention-based growth that ensures sustainability, whereas extractive environments that give rise to Attrition Entrepreneurship enforce a parasitic cycle where the pursuit of political rents actively crowds out technological progress necessary for long-term economic resilience. Thus, while inclusive institutions are a cause of sustainability, Attrition Entrepreneurship is an active agent of institutionalized decay. The comparison between the features of these two kinds of entrepreneurship activities has been shown in Table 1.

By examining the commercialization trajectory of SOLIRANCE in a highly constrained real-world environment, this paper investigates how institutional decay and the prevalence of A.E. create a hostile friction for genuine entrepreneurs, ultimately leading to systemic economic attrition despite the presence of high-merit technological solutions.

1.2. Problem Statement: Institutional Stifling of Innovation

Neoclassical economic models predict that technically superior products will dominate markets through "creative destruction." However, in extractive institutional environments, a significant divergence from this ideal is observed [1]. El Maachi et al. (2025) argue that long-run sustainability relies on inclusive institutions that protect property rights and incentivize merit-based competition [6]. In contrast, petro-rentier frameworks, such as Iran, exhibit institutional decay, where the state acts as a distributive hub for patronage networks.

The problem lies not in market demand or technical inferiority but in the systemic stifling of non-extractive innovations like SOLIRANCE. In an environment dominated by Attrition Entrepreneurship (A.E.), institutions are optimized for resource depletion and political rent-seeking [13]. As SOLIRANCE relies on technological meritocracy and data-driven transparency, it threatens the information asymmetry and artificial booms that A.E. ventures depend on. Consequently, this innovation is not outcompeted by a superior product but is systematically crowded out by institutional friction designed to protect extractive cycles from genuine value creation.

Feature	Institutional Sustainability (El Maachi et al.)	Attrition Entrepreneurship (A.E. Theory)
Institutional Type	Inclusive: Decentralized, legal integrity, property rights.	Extractive: Centralized (CCC), patronage networks.
Economic Driver	Innovation/Genuine Entrepreneurship: Bottom-up, value-creating.	Political Rent-Seeking: Top-down, resource-depleting.
Outcome	Long-Run Sustainability: Prosperity through creative potential.	Economic Decay: Artificial short-term booms leading to erosion.

Feature	Institutional Sustainability (El Maachi et al.)	Attrition Entrepreneurship (A.E. Theory)
Role of the State	Facilitator: Protects markets and encourages merit.	Allocative Hub: Distributes oil/resources to political loyalists.

Table 1. Comparison between Institutional Sustainability (El Maachi et al.) and Attrition Entrepreneurship (A.E. Theory)

1.3. The Thesis: The Paradox of Intellectual Property as a Structural Barrier

This paper proposes a novel theoretical paradox: in an economy characterized by Attrition Entrepreneurship, a robust Intellectual Property (IP) portfolio traditionally a vehicle for market entry and competitive advantage serves as a structural barrier that leads to institutional marginalization.

Drawing on the Resource-Based View (RBV), we argue that the Valuable, Rare, Inimitable, and Non-substitutable (VRIN) nature of the SOLIRANCE patent prevents it from being easily co-opted by state-linked patronage networks [2]. In a healthy, inclusive institutional framework, this IP would secure investment and scaling. However, in an A.E.-dominated system, the inability of the political elite to absorb or extract rents from a protected, independent invention leads to strategic institutional rejection.

Thus, our thesis is that IP acts as a defensive decoupling mechanism: it preserves the integrity of the invention but prevents its integration into the extractive patronage machine, ensuring its exclusion from the state-controlled market. By analyzing the commercialization failure of SOLIRANCE, this study illustrates how the real-world delay the time exhaustion of the genuine entrepreneur is a deliberate byproduct of an extractive system that prefers systemic economic decay (attrition) over sustainable progress offered by independent technological innovation.

Research Questions

This study aims to investigate three key research questions that explore the intersection of institutional dynamics, intellectual property, and innovation-based entrepreneurship.

RQ1: The Institutional Decoupling Paradox

How does a robust Intellectual Property (IP) portfolio, typically a driver of competitive advantage, function as a decoupling mechanism within a petro-rentier economy characterized by Attrition Entrepreneurship?

This question seeks to understand how IP protection, instead of facilitating market entry and growth, can actually isolate a venture from the state-controlled allocative hub. It examines the disconnect between legal protection (IP) and the institutional reality of an extractive state.

RQ2: The Liability of Innovation-Based Dynamic Capabilities

To what extent do dynamic capabilities such as sensing and seizing opportunities transform from strategic assets to systemic liabilities when the institutional framework prioritizes rent-seeking arbitrage over Schumpeterian creative destruction?

This question explores the "dark side" of dynamic capabilities. In a rentier state, the ability to sense market needs (e.g., road safety) becomes irrelevant if seizing those opportunities requires integration into patronage networks that the entrepreneur's IP strategy is designed to avoid.

RQ3: The Crowding-Out of Non-Extractive Capital in Petro-Patronage Ecosystems

Why do non-extractive technological assets, such as SOLIRANCE, face systemic marginalization in economies where sovereign wealth distribution prioritizes the attrition of oil rents over the scaling of invention-based value creation?

This question directly addresses the crowding-out effect. It investigates why the Iranian Petro-Patronage system inherently rejects technologies that create new, transparent value because they do not allow for the recycling of existing state resources (oil money).

2. Theoretical Framework: Strategic Foundations of Innovation

2.1 The Resource-Based View (RBV): VRIN Assets and Intellectual Property

The Resource-Based View (RBV) posits that a firm's performance is primarily determined by its internal resource endowment, rather than external market structure [7]. According to Barney's seminal framework (1991), for a resource to confer a sustained competitive advantage, it must meet the Valuable, Rare, Inimitable, and Non-substitutable (VRIN) criteria. Specifically, a VRIN resource must be:

- (1) **Valuable:** capable of neutralizing threats or exploiting opportunities
- (2) **Rare:** not easily accessible to a large number of competitors
- (3) **Inimitable:** costly or difficult to duplicate
- (4) **Non-substitutable:** lacking functional equivalents

In the context of invention-based ventures, Intellectual Property (IP) – specifically patent-protected technology like the SOLIRANCE apparatus – represents a quintessential VRIN resource. As Grant (1996) emphasizes in the knowledge-based theory of the firm, the most critical resource in modern entrepreneurship is the tacit and explicit knowledge embedded within the venture's technological core [8]. In a functioning market, these knowledge-based assets are protected by IP frameworks to ensure that the value created by "Genuine Entrepreneurship" is not immediately dissipated by imitation. This provides the protective shell necessary for long-term firm survival and growth.

2.2 Dynamic Capabilities Theory (DCT): The Microfoundations of Strategic Maneuver

While RBV focuses on the possession of resources, Dynamic Capabilities Theory (DCT) addresses a firm's ability to renew those resources in response to shifting environments [9]. Teece, Pisano, and Shuen (1997) define dynamic capabilities as a venture's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.

The microfoundations of DCT are categorized into three key components:

- 1. Sensing:** the analytical process of identifying and assessing technological opportunities and market threats. In the case of SOLIRANCE, this involved recognizing a gap in granular data for insurance risk estimation.
- 2. Seizing:** mobilizing resources to capture value from sensed opportunities. This requires strategic investment in R&D and formalization of IP through Patent Cooperation Treaty (PCT) filings to secure a market position.
- 3. Reconfiguring:** continuously aligning and realigning assets and organizational structures. This is essential for maintaining the Inimitable status of a venture as it scales and encounters institutional or competitive friction.

While previously viewed as engines of success, these capabilities must be re-evaluated in the context of Petro-Rentier economies. In an environment characterized by Attrition Entrepreneurship, sensing a market need may lead to an institutional dead-end, and seizing opportunities may be blocked by patronage networks [10-12]. This transforms strategic capabilities into sources of friction.

2.3 Introducing Attrition Entrepreneurship (A.E.): The Architecture of Economic Decay

While traditional entrepreneurial theories, such as those by Schumpeter (1942), emphasize the role of innovation in driving societal progress, the Attrition Entrepreneurship (A.E.) framework offers a critical lens for analyzing economic activities that are inherently extractive and unsustainable [1]. A.E. represents a top-down, politically dependent form of enterprise that functions as the antithesis of genuine, invention-based entrepreneurship.

The A.E. framework is structured around three core pillars that explain how systemic economic decay is institutionalized:

2.3.1 Pillar I: Political Dependency and State-Level Patronage

Unlike genuine entrepreneurship, which thrives on market-driven validation and technological merit, A.E. is characterized by a fundamental political dependency [13]. This form of enterprise emerges and persists through state-level interventions, such as the institutionalization of discriminatory practices, war-driven industrial mandates, or specialized extractive tax policies.

In the context of a petro-rentier state, this pillar manifests as a patronage network where the government serves as an allocative hub, distributing oil-based rents to "entrepreneurs" whose primary capability is political loyalty rather than innovation. The state does not facilitate a market; it engineers one to serve extractive ends.

2.3.2 Pillar II: The Engineering of Artificial Booms

A.E. ventures are notorious for creating artificial economic booms, which are short-term surges in economic activity that give the illusion of growth but are, in reality, unsustainable and extractive [13]. These booms often result from resource siphoning, where existing wealth is moved from the public or environment into the hands of politically connected entities.

Because these ventures do not produce lasting wealth or societal progress, they create a volatile economic environment where capital is misallocated toward rent-seeking arbitrage rather than developing VRIN resources like SOLIRANCE technology.

2.3.3 Pillar III: Long-Term Economic Decay and Systematic Attrition

The terminal pillar of A.E. is systemic economic decay [13]. By prioritizing short-term extraction, A.E. erodes the foundations of a healthy economy through a cycle of attrition, where continuous resource siphoning exhausts national capital, stifles creative destruction, and perpetuates societal stagnation.

In this environment, time is not a resource for growth but a tool of exhaustion a delay that wears down the genuine entrepreneur [13]. For ventures like SOLIRANCE, A.E. pillars create a predatory market where the institutional framework is optimized to protect recycled income of political workmen, making transparent and value-creating technological innovations a threat to state-level extraction mechanisms.

2.4 The Merge: Institutional Friction and the Paradox of "Honest" Assets

The intersection of Genuine Entrepreneurship (governed by RBV and DCT) and Attrition Entrepreneurship (A.E.) gives rise to a phenomenon known as "Institutional Friction for Non-Extractive Assets". In contrast to traditional management literature, which suggests that Valuable, Rare, Inimitable, and Non-substitutable (VRIN) resources drive growth, A.E.-dominated economies trigger a systemic immune response from the institutional framework.

2.4.1 The Transparency Trap: Why VRIN Assets are "Too Honest"

At its core, the SOLIRANCE innovation is built on data-driven transparency [14,15]. By utilizing advanced driver behavior analysis technology, SOLIRANCE transforms subjective insurance risks into objective, verifiable data points. In an inclusive economy, this reduces information asymmetry and promotes efficiency.

However, within a Petro-Rentier framework, the "allocative hub" relies on preserving information asymmetry [2]. Extractive patronage networks depend on opaque processes to siphon resources without public or technical accountability. A VRIN resource like the SOLIRANCE patent is legally formalized and technically precise, making it "too honest" for an extractive market. Its clarity and merit-based competition threaten artificial booms engineered by A.E. ventures.

2.4.2 The Mechanism of Systemic Friction

In an A.E. ecosystem, institutional friction is not a passive consequence of bureaucracy but an active strategic tool protecting extractive cycles [3]. For non-extractive assets like SOLIRANCE, this friction manifests in three ways:

- (1) **Regulatory Decoupling:** Formal IP laws are decoupled from actual enforcement, creating regulatory dead-ends that prevent entrepreneurs from reconfiguring.
- (2) **The Meritocracy Barrier:** By requiring a shift toward technical merit, SOLIRANCE poses a threat to dominant political interests [4]. The system creates friction (delays, denied permits, lack of infrastructure access) to exhaust genuine innovation through time.

(3) **Capital Exhaustion as Attrition:** A.E. frameworks use entrepreneurs' resources against them by forcing high-tech ventures to navigate politically motivated barriers, ultimately attriting the startup's capital until it exits or is absorbed by a state-aligned entity [5].

2.4.3 Conclusion of the Merge: Strategic Marginalization

The intersection of these theories reveals that SOLIRANCE was not stifled due to lack of value but because its non-extractive nature made it incompatible with an A.E.-dominated system designed for oil rent siphoning [6]. IP protection in a Command-and-Control (CCC) economy acts as a "glass wall": entrepreneurs can see market opportunities, and markets can see technologies, but institutional friction ensures they never meet.

3. The Case of SOLIRANCE: From Innovation to Institutional Stagnation

3.1 Technical Merit and IP Strategy: The Foundation of a Non-Extractive Asset

The SOLIRANCE apparatus represents a self-contained, solar-powered device engineered for objective driver behavior analysis [14]. Specifically designed for the Usage-Based Insurance (UBI) and fleet management sectors, it utilizes an Inertial Measurement Unit (IMU) to capture vehicle dynamics. These include tri-axial linear acceleration and angular velocity while deliberately excluding sensitive GPS location data.

The system's architecture comprises a microcontroller for score calculation, an ultra-low-power E-Ink display for secure data extraction via QR code, and a one-time physical initialization key [15]. This ensures an immutable, tamper-proof record of long-term driving habits. The strategic positioning of SOLIRANCE is built upon a "Privacy-by-Design" philosophy.

This approach resolves the ethical and commercial conflict of consumer distrust in GPS-reliant telematics. A robust IP strategy was implemented through the Patent Cooperation Treaty (PCT) application, establishing priority across multiple jurisdictions [15]. This provided the venture with a critical protective shield for global commercialization.

3.2 Validation of Value: Awards and International Acclaim

The technical merit and innovative value of SOLIRANCE have been validated by prestigious international bodies, demonstrating its status as an effectively VRIN resource in innovation:

- (1) Gold Medal Certificate at the Innoverse Invention & Innovation Expo in Georgia, USA (August 2025)
- (2) Star of United States Gold Medal during Innovation Week IWA (OFED) in the USA (September 2025)
- (3) Gold Medal Certificate from the International Federation of Inventor's Associations (IFIA) in Switzerland (August 2025)
- (4) Gold Medal at the Development Invention Show (DIS) in the UAE (December 2024)
- (5) Certificate of Achievement at TUMMIAD National Design, Idea, and Startup Competition in Türkiye (April 2025)

(6) Erasmus Prize Gold Medal at the European International Invention and Innovation Festival in Belgium (December 2024)

These awards serve as external validation of SOLIRANCE's rarity and value. They reinforce its scholarly novelty and practical utility within the telematics industry.

To facilitate global understanding, a video representation has been published to explain the invention comprehensively in eight languages [14].

3.3 The Commercialization Attempt in a Command-and-Control (CCC) Economy

3.3.1 Phase I: Transition from Technology Concept to Proof of Concept (TRL 2–3)

Following the formalization of Intellectual Property through a Patent Cooperation Treaty (PCT) filing, the venture entered its Seed Stage of development [14]. At this juncture, the innovation was at Technology Readiness Level (TRL) 2, denoting a formulated technology concept. It rapidly progressed toward TRL 3, characterized by an analytical and experimental critical function or proof of concept [16].

Utilizing in-house Research & Development (R&D) and rapid prototyping through available hardware-software integration, a functional prototype was developed. This validated the "Privacy-by-Design" IMU-based scoring algorithm. In standard innovation ecosystems, achieving TRL 3 is crucial as it bridges the "Valley of Death," demonstrating technical feasibility to attract early-stage seed capital and strategic partnerships.

Phase	Normal Startup Path (Best Practice)	The SOLIRANCE CCC Experience
TRL 2-3	Seed Funding: Access to Angel Investors or Government Grants for "Non-Extractive" tech.	Self-Funded R&D: Limited capital; reliance on in-house resources.
Validation	Incubation/Acceleration: Partnerships with University labs or private tech hubs.	Institutional Isolation: Lack of support from local technical/financial infrastructure.
Stakeholder Interaction	Pilot Projects: Insurance firms provide data sandboxes to test UBI effectiveness.	Information Asymmetry: Incumbents withhold feedback to preserve opaque risk models.
Manufacturing	Outsourced Prototyping: Access to global supply chains (e.g., PCB-Way, local 3D hubs).	Regulatory Friction: Bottlenecks in material acquisition and "Command-and-Control" delays.
Market Entry	Lean Startup Iteration: Fast failure or fast scaling based on consumer feedback.	Systemic Attrition: Successive delays lead to capital exhaustion and project "freezing."

Table2. Comparison: The "Normal Environment" vs. The CCC Experience

3.3.2 Phase II: Stakeholder Outreach and the "Silence" of Rentier Players

With a functional Proof of Concept (PoC), the venture initiated a Market Orientation strategy targeting key incumbents in insurance and automotive safety sectors [15]. The goal was to transition from a prototype to Minimum Viable Products (MVPs) for real-world pilot testing, fostering iterative feedback loops essential under Dynamic Capabilities Theory (DCT).

However, it encountered **Asymmetric Institutional Silence**. Despite initial meetings receiving "relatively positive" qualitative receptions, institutional players predominantly state-aligned or petro-rentier entities provided zero actionable data, feedback, or integration pathways. In Command-and-Control economies, these gatekeepers prioritize patronage over profit maximization.

Their lack of response indicates a systemic **Crowding-Out Effect**, where transparent and merit-based technological solutions like **SOLIRANCE** are viewed as threats to established rent-seeking equilibria rather than opportunities for efficiency.

3.3.3 Phase III: Manufacturing Stagnation and the Real-World Delay

The attempt to move toward small-batch MVP manufacturing was stifled by structural constraints in a Command-and-Control environment, leading to **Manufacturing Stagnation**. The "Digital-to-Real-World Delay" became an attrition mechanism where institutional friction manifesting as opaque regulatory bottlenecks or lack of access to specialized infrastructure halted physical production.

This stagnation was not due to technological failure but a deliberate systemic exhaustion through temporal and bureaucratic attrition. Table 2 contrasts this pathway with global "Best Practices" in market-driven innovation ecosystems.

4. Discussion: The Anatomy of Attrition

The commercialization failure of SOLIRANCE provides a diagnostic window into how **Attrition Entrepreneurship (A.E.)** functions as a systemic immune response against genuine innovation. This section dissects the mechanisms through which extractive institutions prioritize economic decay over technological progress.

4.1. The Systematic Roots of A.E.: Institutional Bias and the "Disclosure Trap"

The primary root of Attrition Entrepreneurship (A.E.) lies in the **Institutional Design** of the state's Intellectual Property (IP) apparatus. In a petro-rentier state like Iran, the systematic IP structure is often leveraged to provide legitimacy to the existing political-cultural order. Our analysis reveals a stark divergence in the Iranian Patent Office (PTO): while there is a streamlined emphasis on protecting **Traditional Knowledge (TK)** which aligns with a medievalist, path-dependent governance model there is a structural resistance toward modern technological novelty.

This resistance manifests as a **Non-Tariff Barrier to Innovation**. While the author's inventions such as the AU 2022228113 [18]; US 12018974 [19]; US 12014618 [20] achieved successful grant status in

advanced jurisdictions, the domestic PTO systematically questioned the **inventive-step** without technical evidence or justification.

Furthermore, we identify a predatory perversion of the "Social Contract" of Patent Law. Classically, a patent is a bargain: the inventor reveals the intricate details of their invention (**disclosure**) in exchange for a period of exclusivity (**VRIN status**). However, the Iranian framework has engineered a **"Disclosure Trap."** By providing a non-working domestic patent system, the state encourages independent inventors to reveal their proprietary "know-how" and technical architecture. Yet, once the disclosure is made, the system offers no functional support or enforcement mechanism. In this situation, the PCT at least preserve inventors reputation while the national applications does not even publish in an accessible way for public.

This creates an **Asymmetric Extraction of Intellectual Capital**: the state effectively "siphons" the invention's details into the public or patronage-controlled domain while using institutional friction to ensure the inventor never receives the legal right (the grant). By raising the cost of **Granting Rights** and providing a hollow protection system, the state ensures that only those aligned with patronage networks can survive the process. This effectively "attrition" the individual's intellectual asset, turning the patent office from a protector of innovation into an active agent of **Invention Extraction** and "genuine" capital destruction.

The primary root of Attrition Entrepreneurship lies in the **Institutional Design** of the state's Intellectual Property (IP) apparatus. In a petro-rentier state like Iran, the systematic IP structure is often leveraged to provide legitimacy to the existing political-cultural order while maintaining a state of **Informational Isolation**.

Another critical evidence of this isolation is the state's selective participation in international treaties. While Iran has acceded to the **Patent Cooperation Treaty (PCT)** and the **Paris Convention** which facilitate the state-level management of industrial assets it remains one of the few significant global actors that has not joined the **Berne Convention for the Protection of Literary and Artistic Works** [17].

This legal vacuum creates a landscape of **"Static Law,"** where modern computational and intellectual reason is imprisoned within archaic frameworks. In this environment, the absence of the **"Fixation"** principle the international standard that protects a work's authenticity the moment it is recorded allows for a systemic **"Distortion of Authenticity."** For the independent inventor or scholar, "theft" in a CCC economy is not merely a loss of revenue; it is a narrative manipulation where the state or patronage networks can "rewrite reality" and strip an innovation of its authorial integrity.

When the institutional architecture fails, the entrepreneur is forced to resort to **"Digital Architecture"** as a defensive bastion. The use of complex infrastructures like **GitHub**, technical redirects, and canonical tags to "fix" the authenticity of an invention represents a strategic decoupling from the domestic legal silence. This technical pivot is a direct response to a system where intellectual property is not recognized as a pillar of human dignity, but as a resource to be either co-opted or suppressed through institutional friction.

4.2. IP as an Anti-Co-option Mechanism: The "Too High to Swallow" Barrier

A paradox emerges when analyzing SOLIRANCE through the **Resource-Based View (RBV)**. Typically, a VRIN asset is desirable for acquisition. However, within an A.E. framework, the PCT-protected status and the technical complexity of the driver behavior apparatus made it **Anti-Co-optable**. Because the invention was "too honest" (data-driven) and protected by a transparent international filing, it could not be easily "absorbed" or "recycled" by state-linked patronage networks without acknowledging its independent origin. In an extractive machine that thrives on the siphoning of oil rents and opaque "workman" loyalties, an asset that demands technological meritocracy is rejected by the system as a foreign body.

4.3. The Failure of "Seizing": Technical Efficiency vs. Political Loyalty

Under **Dynamic Capabilities Theory (DCT)**, the ability to "seize" an opportunity is the hallmark of a successful venture. However, our case study illustrates how this capability is neutralized in a Command-and-Control (CCC) economy. In this environment, the "Seizing" mechanism is decoupled from technical efficiency and re-coupled to **Political Loyalty**.

The "Sensing" of the insurance market's need for better risk management was technically accurate, but the "Seizing" required integration into a petro-patronage ecosystem where the key players (insurance firms) are shielded from market forces by state oil-rents. When an entrepreneur refuses to trade technological integrity for political rent-seeking, the "Seizing" capability results in a **Strategic Deadlock**, where the venture is technically ready but institutionally paralyzed.

4.4. Economic Decay as a Competitive Weapon: The Attrition Cycle (Real-World Delay)

Finally, we analyze the "**Attrition Cycle**" the deliberate use of time as an exhaustible resource. In the digital realm, time is a minor delay; in the real world of hardware-based entrepreneurship, time is **Burn Rate**. The institutional apparatus uses the "Real-World Delay" (denied permits, arbitrary patent rejections, regulatory silence) as a tool of attrition.

By stretching the time between TRL 3 and commercial scaling, the A.E. machine ensures the exhaustion of the entrepreneur's private capital and psychological resilience. This is the ultimate goal of Attrition Entrepreneurship: to wait out the innovator until the venture collapses, thereby removing the "threat" of creative destruction and allowing the extractive cycle of economic decay to continue undisturbed.

5- Conclusion and Policy Recommendations

The case of SOLIRANCE, a demonstrably valuable and internationally recognized driver behavior analysis apparatus, serves as a stark diagnostic tool for identifying the systemic attrition inherent within economies dominated by Attrition Entrepreneurship (A.E.). This research has revealed that the failure to commercialize SOLIRANCE was not a product of market deficiencies or technical shortcomings, but rather a deliberate outcome of an institutional framework optimized for resource depletion and political rent-seeking – a Command-and-Control (CCC) system actively hostile to genuine innovation. The paradox lies in how a robust Intellectual Property (IP) portfolio, traditionally a safeguard for invention-based ventures, functioned as a “decoupling mechanism,” preserving the integrity of SOLIRANCE while simultaneously isolating it from the state-controlled allocative hub and ultimately leading to its marginalization.

We've demonstrated that A.E.'s core pillars – political dependency, engineered artificial booms, and long-term economic decay – manifest in concrete institutional friction: a biased IP system prioritizing Traditional Knowledge over modern technological novelty (“Disclosure Trap”), an inability of state-aligned entities to co-opt the invention due to its inherent transparency (“Too High to Swallow” barrier), and the neutralization of Dynamic Capabilities through the decoupling of “seizing” from technical meritocracy. The resulting “Real-World Delay,” a deliberate exhaustion of entrepreneurial resources, underscores that time itself is weaponized as a competitive disadvantage in extractive environments. This isn't simply bureaucratic inefficiency; it's strategic marginalization designed to protect existing patronage networks and perpetuate systemic decay.

Strategic Recommendations

Recognizing the inherent hostility of A.E.-dominated ecosystems, genuine entrepreneurs face a challenging landscape. Our analysis suggests two primary pathways for navigating these cycles:

- **Digital Realm Decoupling:** Prioritize building robust digital infrastructure – utilizing platforms like GitHub to establish irrefutable proof of invention authorship and canonical tags to fix authenticity in the absence of domestic legal protection. This creates an independent record, minimizing vulnerability to “invention extraction” and establishing a foundation for future opportunities when institutional conditions shift.
- **Strategic Time Management (Wait-Out Strategy):** Acknowledge that scaling within the CCC environment is likely impossible in the short term. Focus on preserving capital through minimal viable operations, seeking international partnerships outside of the extractive state's influence, and patiently waiting for potential shifts in political or economic conditions. This requires a long-term perspective and a willingness to accept delayed gratification, leveraging the “digital realm” as a defensive bastion during periods of institutional stagnation. Essentially, entrepreneurs must treat their venture not as a rapidly scaling enterprise but as a strategically preserved asset awaiting more favorable conditions.

Policy Call

The findings of this research necessitate urgent institutional reforms aimed at fostering inclusive economic ecosystems that prioritize bottom-up innovation over top-down political enterprise. Specifically, we call for:

- **Depoliticization of the Patent Office (PTO):** Implement rigorous transparency measures within the PTO to eliminate bias in patent granting processes and ensure objective evaluation based on technical merit, regardless of origin or affiliation. This includes establishing independent review boards comprised of international experts and removing discretionary power from politically appointed officials.

- **Legal Recognition of “Fixation” Principle:** Accede to the Berne Convention for the Protection of Literary and Artistic Works to establish a clear legal framework protecting intellectual property rights and deterring unauthorized appropriation.
- **Investment in Independent Innovation Hubs:** Establish publicly funded, but independently managed, innovation hubs that provide seed capital, mentorship, and infrastructure support to genuine entrepreneurs without requiring political connections or patronage networks. These hubs should prioritize technologies with demonstrable societal value and long-term sustainability potential.
- **Transparency in State Contracts & Procurement:** Implement open bidding processes for all state contracts and procurement initiatives, ensuring equal access for independent ventures based on technical merit and competitive pricing.

Failure to address these systemic issues will inevitably lead to continued economic decay, the erosion of national capital, and a perpetuation of extractive cycles that stifle creative destruction and undermine long-term prosperity. The case of SOLIRANCE is not an isolated incident; it represents a warning signal, a diagnostic symptom of a deeper institutional malaise, requiring immediate and decisive action to prevent total economic stagnation. Only by prioritizing “bottom-up” IP protection, fostering genuine entrepreneurship, and dismantling the structures that incentivize political rent-seeking can economies escape the insidious trap of attrition and unlock their full potential for sustainable growth.

References:

- [1] Mehdi Farzpourmachiani, & Ali Farzpourmachiani., (2024). “Attrition Entrepreneurship Theory: A Novel Interpretation for Analyzing Economic Decay”. Tubittum Journal. Tubittum, 2024; 80:28, ISSN: 2822-5295, Available from: www.tubittumjournal.com
- [2] Salar Basiri SB, Mehdi Farzpourmachiani, Nazarian FI, Fojlaley M, Baroness Rajacic S. “The Impact of Intellectual Property on Entrepreneurial Outcomes: Insights from SOLIRANCE”. International Journal of Advances in Engineering and Management. 2025 Feb;7(2):659–72. <https://doi.org/10.35629/5252-0702659672>
- [3] “Why Nations Fail: The Origins of Power, Prosperity, and Poverty” [Internet]. Harvard.edu. 2020. Available from: <https://www.wcfia.harvard.edu/publications/why-Nations-Fail-Origins-Power-Prosperity-And-Poverty>
- [4] Teece, D. J. (2007). “Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance”. Strategic Management Journal.
- [5] North, D. C. (1990). Institutions, Institutional Change and Economic Performance.
- [6] El Maachi S, Saadane R, Chehri A. “Institutions as a Fundamental Cause for Long-Run Sustainability”. Journal of Risk and Financial Management. 2025 Feb 22;18(3):114. <https://doi.org/10.3390/jrfm18030114>
- [7]. 1.Barney J. Firm “Resources and Sustained Competitive Advantage”. Journal of Management. 1991 Mar;17(1):99–120. DOI <https://doi.org/10.1177/014920639101700108>
- [8] Grant RM. “Toward a Knowledge-Based Theory of the Firm”. Strategic Management Journal. 1996;17(S2):109–22. DOI <https://doi.org/10.1002/smj.4250171110>
- [9]. Teece, D.J., Pisano, G. and Shuen, A. (1997), “Dynamic capabilities and strategic management”. Strat. Mgmt. J.,18: 509-533. [https://doi.org/10.1002/\(SICI\)1097-0266\(199708\)18:7](https://doi.org/10.1002/(SICI)1097-0266(199708)18:7)

- [10] Teece DJ. Explicating Dynamic Capabilities: “the Nature and Microfoundations of (Sustainable) Enterprise Performance”. *Strategic Management Journal*. 2007 Aug 7;28(13):1319–50. <https://doi.org/10.1002/smj.640>
- [11] Peteraf MA. “The Cornerstones of Competitive advantage: a resource-based View”. *Strategic Management Journal*. 1993 Mar;14(3):179–91. <https://doi.org/10.1002/smj.4250140303>
- [12] Helfat CE, Peteraf MA. “The Dynamic resource-based view: Capability Lifecycles”. *Strategic Management Journal*. 2003;24(10):997–1010. <https://doi.org/10.1002/smj.332>
- [13] Farzpourmachiani, M., Farzpourmachiani, A., & Basiri, S. (2024). “Attrition Entrepreneurship Theory: A Novel Interpretation for Analyzing Economic Decay”. 2nd International Conference on THE TRANSFORMATIVE ECONOMY, Human Capital Development, Co-creative Innovative Economy and Sustainable Inclusive Growth, Yerevan State University (YSU) , October 8-10, 2025 , Oral Presentation
- [14] SOLIRANCE-An Apparatus for Driver Behavior Analysis [Video]. YouTube. Available from: <https://www.youtube.com/watch?v=m77S8j4UD8Y>.
- [15] Farzpourmachiani M, Basiri S, Farzpourmachiani A. “An apparatus for driver behavior analysis”, World Intellectual Property Organization patent application WO2025120590. 2025 Jun 12. Available from: <https://patentscope.wipo.int/search/en/detail.jsf?docId=WO2025120590>
- [16] Mihalyi B. “Technology Readiness Levels (TRL); The Role of TRL in System Development”. European Commission, Horizon 2020 Framework Programme; 2014. Available from: https://ec.europa.eu/isa2/sites/isa/files/technology_readiness_revisited_-_icegov2020.pdf
- [17] WIPO Lex [Internet]. www.wipo.int. Available from: https://www.wipo.int/wipolex/en/treaties/ShowResults?search_what=C&treaty_id=15
- [18] Australian Patent, Basiri S, Shafighi Malekshah A. , “Liquid Level Measurement Apparatus” , 2024, Grant Number 2022228113 , Available from: <https://patentscope.wipo.int/search/en/detail.jsf?docId=AU376108758>
- [19] US Patent , Basiri S, Shafighi Malekshah A. , “Liquid Level Measurement Apparatus” , 2024, Grant Number 12018974 , Available from: <https://patentscope.wipo.int/search/en/detail.jsf?docId=US398806945>
- [20] US Patent , Basiri S , “Wearable reminder for drinking ” , 2024 , Grant Number 12014618 , Available from: <https://patentscope.wipo.int/search/en/detail.jsf?docId=US428680879>