

The Algorithmic Canvas: On the Autopoietic Redefinition of STP in the Age of Strategic Resilience

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Abstract: Traditional Segmentation, Targeting, and Positioning (STP) frameworks demonstrate significant deficiencies in unstable markets, with actual data revealing a 67% decline after six months. This research redefines STP not as a structured process but as an autopoietic system—an entity that self-organizes and constantly redefines its limits. It presents the Algorithmic Canvas as the operational medium that facilitates this paradigm, in which segmentation, targeting, and positioning parameters dynamically evolve through human-AI collaboration. Using a sequential mixed-methods design that included a 6-month Fortune 500 lab ethnography (n=23), a computational analysis of 150 million customer interactions, and an empirically based agent-based simulation (ABS), the study shows that autopoietic STP implemented through the Canvas is 44% more resilient ($p < 0.01$) to market shocks and cuts strategic planning cycles by 90% compared to traditional models. Algorithmic co-creation methods enhanced the identification of substantial market fluctuations by a factor of 5.8. The study enhances the Autopoietic STP Framework and empirically substantiates Canvas Design Principles, effectively addressing algorithmic myopia and offering businesses a framework for improved adaptability and resource efficiency during turbulent conditions.

Keywords: Algorithmic canvas, autopoietic STP, strategic resilience, AI co-creation, dynamic positioning.

Introduction

Nike's 2022 worldwide market repositioning, accomplished in seventy-two hours, demonstrates a significant ontological transformation in strategic capabilities. This program leverages real-time social sentiment clustering, micro-influencer network dynamics, and live supply-chain data to adapt product releases, messaging, and international regional inventory

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distribution. The episode, frequently cited for its operational agility, has greater analytical significance. It illustrates how strategic market representations—segments, goals, and positioning frameworks—emerge recursively through algorithmic processes integrated inside operational infrastructures, radically transforming the generative conditions of strategy itself. This shift surpasses mere rapid execution, indicating a reconfiguration of the fundamental architecture of strategic representation.

Converging empirical evidence illustrates this structural transformation inside digitally enabled firms (Dzreke, [2025a](#); Dzreke & Dzreke, [2025q](#)). Dynamic capabilities—identifying environmental changes, capitalizing opportunities, and reallocating resources—are increasingly evident within AI-mediated systems that operate continuously rather than intermittently (Teece, [2007](#); Eisenhardt & Martin, [2000](#)). These systems fundamentally shape the perceptual and analytical foundations of strategy development, transcending simple decision support. The alteration is so fundamental that it alters the essence of strategic potential and representation.

Transitioning from Instrumental AI to Constitutive Infrastructures

Current literature primarily depicts artificial intelligence as a tool that enhances existing strategy frameworks. AI is often seen as a decision-support technology that enhances forecasting accuracy, personalization, and efficiency, while maintaining the fundamental principles of Segmentation-Targeting-Positioning (STP) (Davenport et al., [2020](#)). Recent assessments of adaptive or generative systems continue to emphasize a human-centric locus of strategic authority, depicting AI as a sophisticated copilot rather than an integral participant in strategy development (Kumar et al., [2024](#); Dzreke, [2025d](#); Dzreke & Dzreke, [2025w](#)). This instrumental viewpoint inadequately theorizes the sociomaterial interconnection between computing systems and organizational cognition.

Sociomaterial theory asserts that technology actively shapes organizational potential rather than merely carrying out predetermined objectives (Orlikowski & Scott, [2008](#)). The theory of performativity holds that calculative instruments shape the markets they purport to depict (Callon, [1998](#)). Machine-learning algorithms continuously cluster consumers, recalibrate target hierarchies, and optimize positioning signals in real time, thereby contributing to the strategic categories that make markets comprehensible. The essential change is to the recursive creation of the representational domain in which strategy manifests, rather than simply the delegation of decisions. Artificial intelligence serves as a foundational intermediary for strategy visibility, credibility, and actionability. Empirical evidence supports this complexity, documenting systematic managerial rejection of superior AI-generated strategy options that contradict established cognitive frameworks (Dzreke & Dzreke, [2025r](#)). This

contradiction highlights that although strategic authority officially belongs to humans, the framework for judgment is progressively shaped by algorithms.

The Architectural Constraints of Classical STP

Traditional STP relies on three increasingly untenable assumptions: segment stability, sequential decision logic, and ex ante optimization. These foundations are profoundly strained within platform-mediated markets defined by algorithmic intermediation, geopolitical volatility, and rapid demand recomposition. Large-scale evidence indicates that over 74% of firm-level strategic plans fail significantly during black-swan disruptions, including pandemics and supply-chain shocks ([World Economic Forum, 2025](#); [Dzreke, 2025c](#)). Complementary stress-testing analyses reveal that static marketing strategies fail not only due to predictive inaccuracy but, more critically, from an absence of endogenous recalibration mechanisms under fundamental distributional shifts ([Dzreke & Dzreke, 2025m](#); [Dzreke et al., 2025x](#)). In such volatile environments, classical STP becomes architecturally misaligned with continuous recomposition. The limitation is structural, not merely analytical, demanding a fundamental re-specification of strategic ontology.

Autopoiesis as a Limited Strategic Framework

To rectify this structural misalignment, it is essential to implement the Algorithmic Canvas, a defined theoretical framework that reconceptualizes STP as an autopoietic, AI-mediated system. Utilizing autopoietic systems theory ([Luhmann, 1995](#); [Maturana & Varela, 1980](#)), the fundamental assertion suggests that segmentation, targeting, and positioning are recursively created components of a cohesive system, transcending linear planning phases. The operationalization of the Canvas necessitates particular enabling conditions: high-frequency data environments that enable continuous digital feedback loops; machine-learning infrastructures that support adaptive model updates; and organizational governance capabilities for interpreting and regulating algorithmic outputs. In contrast, the paradigm is unsuitable for environments marked by low data velocity, regulatory stagnation, limited computational integration, or strategic sectors requiring long-term commitments, such as capital-intensive infrastructure, where traditional STP may still be relevant.

The Algorithmic Canvas defines strategy as a self-generating arrangement of ongoing data streams, adaptable algorithmic frameworks, and organized administrative oversight. Artificial intelligence systems operate as co-constitutive agents—structural entities whose iterative outputs tangibly shape the categories and trade-offs accessible for human interpretation and action ([Dzreke, 2025f](#); [Dzreke & Dzreke, 2025q](#); [Dzreke et al., 2025x](#)). Strategy thus transitions from a fixed framework to a dynamic structure intrinsically equipped for ongoing

learning and selective amnesia, crucial for managing enduring uncertainty and market fluctuations.

Clarification of Canvas Captivity

This ontological reconceptualization presents unique strategic pathologies. A significant issue is Canvas Captivity, a systemic condition characterized by an organizational reliance on internally developed algorithmic representations. This reliance fundamentally limits the ability to envision alternate market realities or strategy options beyond the algorithmically set scope. Canvas Captivity necessitates exact distinction from analogous constructs. Automation bias refers to an individual's cognitive inclination to place undue faith in computerized advice during specific decision-making instances. Algorithmic lock-in refers to structural reliance resulting from technical switching costs or the dominance of platform-based ecosystems. Conversely, Canvas Captivity operates at both systemic and epistemic levels. It emerges when recursively produced segmentations and positioning strategies increasingly limit managerial creativity, systematically diminishing exposure to alternate market representations, even when formal human governance structures remain ostensibly intact. The fundamental problem extends beyond simple trust or impediments to change; it constitutes a representational confinement that limits the phenomenological scope for strategic consideration, thereby constricting the range of possible actions. Current empirical studies indicate that this type of representational enclosure markedly increases systemic vulnerability in unstable circumstances. This captivity may lead to organizational decline when external shocks disturb established algorithmic patterns, as limited strategic imagination hinders adaptive responses (Dzreke & Dzreke, [2025s](#); Dzreke & Dzreke, [2025t](#); Dzreke, [2025b](#); Dzreke & Dzreke, [2025g](#); Dzreke et al., [2025z](#)). Thus, the Algorithmic Canvas framework expressly integrates particular governance design principles intended to mitigate epistemic constriction and maintain crucial strategic flexibility.

Research Emphasis and Contribution

This study aims to define the structural prerequisites that facilitate STP's transformation into an autopoietic system and to determine the design principles necessary to maintain resilience within these computationally mediated architectures. Three interrelated research topics guide this concentrated inquiry. What specific structural requirements prompt STP to change from a linear planning model to an autopoietic strategic system? Secondly, which governance methods and architectural design principles enhance resilience in AI-mediated STP systems operating under volatility and resource constraints? Third, how can Canvas Captivity be diagnosed and effectively alleviated, and what fundamentally distinguishes its systemic epistemic limitations from individual automation bias or structural algorithmic entrapment?

The paper's primary contribution is intentionally limited. Instead of proposing a general transformation, it theorizes a conditional reconfiguration of STP relevant to high-velocity, data-intensive contexts. By synthesizing dynamic capabilities theory ([Teece, 2007](#); [Eisenhardt & Martin, 2000](#)), sociomaterial perspectives (Orlikowski & Scott, [2008](#)), performativity insights ([Callon, 1998](#)), and autopoietic systems principles ([Luhmann, 1995](#); [Maturana & Varela, 1980](#)), the Algorithmic Canvas offers a systematic, interdisciplinary framework for examining the emergent dynamics of AI-mediated strategic formation. The following sections expound on the Autopoietic STP Framework, delineate the mixed-methods research design, present empirical findings on the efficacy of Canvas and the risks of captivity, and formulate actionable governance principles to foster resilient algorithmic strategies in increasingly AI-dominated markets.

Literature Review: Transitioning from STP as a Plan to STP as an Organism

The Limitations of the Classical STP within Fluid Markets

The Segmentation–Targeting–Positioning (STP) framework is a fundamental element of marketing strategy. Traditional models define STP as a strategic planning framework that allows companies to assess diverse demand, identify feasible segments, and develop distinct market positions ([Kotler & Keller, 2015](#)). Its theoretical foundation encompasses essential strategic concepts, including competitive positioning theory ([Porter, 1980](#)), market orientation models ([Narver & Slater, 1990](#); [Kohli & Jaworski, 1990](#)), adaptive market sensing ([Day, 1994](#)), and resource-based advantage ([Barney, 1991](#)). In these traditions, STP primarily serves as a cognitive and allocative technique that aligns organizational strengths with perceived external opportunities through managerial judgment.

This prevailing paradigm, however, rests on fundamental assumptions contested by modern market dynamics: relative segment stability, a distinct temporal division between analytical planning and execution, and management supremacy in delineating market categories. Digitally mediated settings, defined by ubiquitous algorithmic intermediation, instantaneous feedback loops, and platform interdependence, fundamentally challenge these assumptions ([Grewal et al., 2020](#); [Lemon & Verhoef, 2016](#)). Empirical research demonstrates that consumer identities and usage settings display considerable flexibility due to algorithmic curation and networked influence ([Quinn et al., 2021](#); [Rust, 2020](#); [Dzreke, 2025a](#)). As a result, segments are no longer stable analytical entities; they appear probabilistic, transient structures derived from streaming behavioral data, compromising the stability that traditional Segmentation, Targeting, and Positioning (STP) requires.

The theory of dynamic capabilities highlights this temporal imbalance. Rapidly changing environments require ongoing processes of identifying opportunities, capitalizing on them, and reallocating resources ([Teece, 2007](#); [Eisenhardt & Martin, 2000](#); [Teece, 2016](#)). Classical STP distinctly represents an episodic planning rationale. The resultant tension is architectural rather than merely incremental: a static analytical framework fundamentally struggles to accept contexts characterized by recursive recomposition ([Dzreke, 2025f](#); [Dzreke & Dzreke, 2025g](#)). This structural constraint requires a rethinking of the temporal framework of strategy.

Targeting, Resource Allocation, and the Deterioration of Sequential Reasoning

The sequential logic inherent in classical STP poses significant challenges in targeting and resource allocation. Conventional models assume that enterprises can assess the attractiveness of segments in advance and allocate resources accordingly. Current studies on omnichannel shopping and platform ecosystems reveal that targeting occurs inside closely interconnected, interdependent networks. Demand signals, inventory flows, algorithmic recommendation systems, and dynamic pricing mechanisms engage in continuous and recursive interactions ([Grewal et al., 2020](#); [Shankar et al., 2021](#); [Verhoef et al., 2021](#)).

Under these circumstances, targeting decisions become inextricably linked to execution. Resource allocation is continually adjusted through integrated feedback loops within operational systems. AI-driven forecasting, predictive analytics, and autonomous optimization algorithms exacerbate this recursive interconnection, dissolving the conventional distinction between planning and execution ([Wedel & Kannan, 2016](#); [Davenport et al., 2020](#); [Dzreke, 2025b](#)). Consequently, strategic action becomes a systemically iterative process rather than a linear one.

Moreover, ecosystem studies show that value creation is distributed across interdependent entities—suppliers, complementors, platforms, and data intermediaries—rather than being restricted to the focus enterprise ([Adner, 2017](#); [Srivastava et al., 1999](#)). Targeted decisions always have ripple effects across these networks. This intricate connection further undermines the linear, firm-centric rationale inherent in classical STP, necessitating a more holistic approach to resource allocation.

Artificial Intelligence Beyond Enhancement

A significant body of literature on AI in marketing conceptualizes AI as an instrumental tool that enhances segmentation accuracy and targeting efficacy while maintaining ultimate administrative oversight ([Wedel & Kannan, 2016](#); [Verma et al., 2019b](#); [Huang & Rust, 2021](#)). This widespread augmentation story greatly underestimates AI's fundamental significance in

reshaping the strategic categories—segments, targets, and positions—through its operational integration.

Sociomaterial theory offers a vital correction, positing that technology actively shapes organizational actions and knowledge instead of passively performing predetermined duties (Orlikowski & Scott, [2008](#)). Performativity theory illustrates that calculative instruments actively contribute to the formation of the markets they claim to depict ([Callon, 1998](#)). When AI systems dynamically group consumers, modify similarity metrics based on real-time interactions, and autonomously recalibrate placement signals, they not only aid managers. They collaboratively develop the market's strategic framework, shaping what is rendered visible, actionable, and strategically plausible.

Empirical research confirms this fundamental effect, indicating persistent administrative opposition to evidently superior algorithmic results. This opposition frequently arises from profound epistemic friction between entrenched managerial cognitive frameworks and the innovative representations produced by machine-learning systems (Dzreke & Dzreke, [2025r](#); Dzreke et al., [2025z](#)). These findings suggest that artificial intelligence presents fundamentally different strategic logics and representations, challenging established frameworks and requiring new conceptualizations of agency, rather than merely enhancing executional efficiency within the traditional STP paradigm. The technology actively transforms the strategic environment in which it functions.

Autopoiesis and Strategic Renewal

Autopoiesis, initially formulated in the context of biological systems theory ([Maturana & Varela, 1980](#)), refers to systems that possess the ability to self-reproduce and to preserve organizational identity through recursive self-generation. Social systems theory elaborates on this notion, depicting autopoietic systems as operationally closed while being structurally connected to their contexts ([Luhmann, 1995](#)). Such systems replicate their fundamental components via internally regulated mechanisms while being responsive to external disturbances.

When applied as a structural lens, autopoiesis provides a comprehensive framework for comprehending the evolution of Segmentation-Targeting-Positioning (STP) from episodic managerial planning to recursive regeneration facilitated by algorithmic mediation. In this framework, segmentation models probabilistically update in response to real-time data influx, allocation strategies adapt dynamically to changing opportunities, and positioning narratives adjust in response to engagement signals (Dzreke, [2025d](#); Dzreke & Dzreke, [2025w](#)). Thus, STP transforms from a distinct managerial sequence into a self-sustaining process perpetually renewed by its own processes.

Nonetheless, autopoietic transformation remains contingent. It necessitates particular infrastructural and organizational requirements: high-frequency data environments that provide continuous feedback, adaptive machine-learning modelling capabilities, and strong governance mechanisms for interpreting and regulating recursive outputs. In environments marked by capital intensity, stringent regulation, or prolonged commitments, STP remains relevant as a thoughtful, periodic procedure. The extent of alteration is hence limited, not universal.

Moreover, recursive systems intrinsically produce unique diseases. Feedback loops can unintentionally strengthen underlying biases, excessively conform to historical trends, and consistently limit interpretative diversity—risks that are fundamentally different from automation bias or mere algorithmic reliance (Dzreke, 2025b; Dzreke & Dzreke, 2025s; Dzreke & Dzreke, 2025j). These vulnerabilities signify systemic characteristics of autopoietic closure necessitating specialized governance.

Table 1 From Classical STP to Autopoietic STP – Foundational Structural Contrasts

Dimension	Classical STP	Autopoietic STP
Temporal Logic	Episodic planning cycles	Continuous recursive regeneration
Segment Nature	Stable, predefined categorical groups	Probabilistic, dynamically inferred clusters
Targeting	Ex ante allocation decisions	Real-time adaptive resource redistribution
Positioning	Managerially constructed value proposition	Continuously recalibrated competitive signal
Data Function	Informational input for planning	Structural coupling mechanism
Managerial Role	Primary decision architect	Governance architect & boundary regulator
Primary Risk	Strategic misalignment with the environment	Recursive bias amplification & systemic lock-in (canvas captivity)
Infrastructure	Periodic analytical processes	Embedded AI-driven feedback systems

Towards the Algorithmic Canvas

The existing literature indicates a substantial theoretical deficiency. Although classical strategy research thoroughly delineates the rationale behind intentional positioning (Porter, 1980; Barney, 1991; Day, 1994), and modern marketing literature comprehensively records

AI-driven analytical advancements (Wedel & Kannan, [2016](#); [Davenport et al., 2020](#)), scant frameworks elucidate the structural evolution of STP into a recursively generated process mediated by algorithms.

The Algorithmic Canvas directly confronts this deficiency. It establishes STP as a constrained autopoietic system, drawing on concepts from dynamic capabilities ([Teece, 2007](#); [Teece, 2016](#)), sociomaterial constitution (Orlikowski & Scott, [2008](#)), and social systems theory ([Luhmann, 1995](#)). Instead of replacing classical STP, the Canvas delineates the conditions under which STP evolves from an intentional strategy to an adaptable, self-generating entity within AI-mediated frameworks. This transition has significant practical consequences: Organizations that attain autopoietic STP develop intrinsic resilience to instability but necessitate advanced governance to address systemic issues, such as canvas captive.

Theoretical Framework: The Autopoietic STP System

Pillar 1: The Algorithmic Canvas as Medium

The Algorithmic Canvas operates as a generative sociotechnical platform. It integrates adaptive machine-learning models, real-time data pipelines, and structured governance protocols directly into operational infrastructures. This integration enables continuous updates to segmentation criteria, targeting priorities, and placement logic in response to environmental changes. The Canvas diverges from conventional models dependent on sporadic administrative intervention by institutionalizing recurrent recombination. Artificial intelligence systems independently alter strategic representations within limits established by governance frameworks and human interpretive supervision (Orlikowski & Scott, [2008](#); [Callon, 1998](#); [Rai et al., 2019](#); [Shrestha et al., 2019](#); [Brynjolfsson & McElheran, 2016](#)). This algorithmic autonomy improves strategic resilience by markedly decreasing decision latency, facilitating faster identification of distributional alterations, and enabling concurrent recombinatory adjustments across strategic variables. This aligns with research on information systems that highlights modular architecture and adaptive capability as facilitators of resilience (Yoo et al., [2010](#); [Nambisan et al., 2017](#); [Chen et al., 2012](#)). Canvas intensity is operationally measurable through indicators such as the percentage of automated marketing decisions, the frequency of model retraining, the extent of API integration across systems, and the fraction of resource allocations managed algorithmically ([Mikalef et al., 2020](#)). This pillar offers essential implementation guidance for practitioners aiming to execute continual strategic adaptation.

Pillar 2: Autopoietic Reconfiguration of Segmentation, Targeting, and Positioning

Autopoiesis refers to systems that can recursively generate their own structural components (Maturana & Varela, 1980; Luhmann, 1995). In the STP paradigm, this logic is evident in the ongoing, self-sustaining revision of segments, independent resource allocation decisions, and adaptive positioning modifications. Segmentation transitions from static classification to a probabilistic, continually inferred mechanism. This is achieved through unsupervised clustering applied to high-velocity behavioral, social, and transactional data streams (Wedel & Kannan, 2016; Grewal et al., 2020; Rust, 2020). Shifting from discrete campaigns to algorithmically managed resource allocation, dynamically optimizing conversion probabilities under changing limitations (Ascarza et al., 2022; Ansari et al., 2018). Positioning evolves into a dynamic signalling system, continually adjusted in response to real-time engagement metrics and market inputs (Huang & Rust, 2021; Bleier et al., 2020). The closed-loop structure—where outputs from segmentation inform targeting, which in turn shapes positioning, with performance data coming back into segmentation—constitutes a self-reinforcing, adaptive STP system. This is implemented using measures that measure the extent of cross-functional algorithmic interdependence, the frequency of closed-loop optimization cycles, and the rate of autonomous STP recalibration (Pavlou & El Sawy, 2011). This pillar provides a solid theoretical connection between autopoiesis and dynamic marketing activities.

Pillar 3: Strategic Resilience as Homeostasis

In this context, strategic resilience is defined as dynamic homeostasis: the organization's ability to sustain core performance stability while retaining adaptive flexibility in the face of external shocks (Lengnick-Hall et al., 2011; Duchek, 2020). Algorithmic autonomy enhances resilience by reducing reaction latency, mitigating variance caused by environmental disturbances, and facilitating adaptable recombination across segmentation, targeting, and positioning dimensions. Significantly, human–AI collaboration mitigates the intrinsic hazards of algorithmic myopia, statistical overfitting, and epistemic constriction. This moderation is achieved by including interpretive variety, normative oversight, and ongoing adjustment of governance norms (Faraj et al., 2018; Raisch & Krakowski, 2021). Resilience can be quantitatively assessed using indicators including revenue variance during disruptions, recovery speed of performance, volatility-adjusted return on assets (ROA), and deviations from forecasts amid substantial distributional shifts (Srinivasan & Swink, 2018; Mithas et al., 2011). This pillar directly confronts the practical necessity of maintaining performance during volatility.

Table 2 The Three Pillars of the Autopoietic STP System

Pillar	Conceptual Function	Operational Role	Key Outcomes	Theoretical Foundations
Algorithmic Canvas	Generative medium embedding AI, data & governance	Automates/regulates STP; shapes managerial perception	Reduced latency, adaptive precision, and flexibility	Orlikowski & Scott (2008); Rai et al. (2019); Shrestha et al. (2019); Brynjolfsson & McElheran (2016)
Autopoietic STP	Recursive reconfiguration of S-T-P	Continuous, self-sustaining STP cycle	Probabilistic seg., adaptive targeting, resp. pos.	Maturana & Varela (1980); Luhmann (1995); Wedel & Kannan (2016); Grewal et al. (2020)
Strategic Resilience	Systemic homeostasis under volatility	Human-AI co-creation; governance; oversight	Reduced perf. variance, stability, rapid recovery	Lengnick-Hall et al. (2011); Duchek (2020); Faraj et al. (2018); Raisch & Krakowski (2021)

Mechanisms Connecting Algorithmic Autonomy to Resilience

The combined integration of these pillars generates a unique mechanical rationale. Algorithmic autonomy enhances feedback loops, identifies emergent distributional shifts more promptly, and enables concurrent recombination of STP variables. This produces cyclical STP recalibration, hence directly diminishing performance variance during environmental disruptions. Simultaneously, human–AI co-creation stabilizes positioning signals over time and mitigates algorithmic bias through interpretation and governance, thus improving long-term market relevance and adaptability.

Table 3 Resilience Mechanisms of the Autopoietic STP System

Mechanism	Description	Pathway to Resilience	Empirical Indicators
Reduced Latency	Accelerates STP decision-making & adjustments	Faster adaptation to market shocks	Decision cycle time, strategic update frequency
Variance Detection	Continuous retraining identifies demand shifts	Early recognition of disruptive events	Detection lag, forecast accuracy under volatility
Recombination	Simultaneous adjustment across S-T-P dimensions	Minimizes strategic misalignment; sustains performance.	Automated reallocation volume, system integration breadth
Human-AI Co-Creation	Interpretive/normative oversight moderates AI	Reduces positioning decay & algorithmic bias	Managerial intervention frequency, governance depth

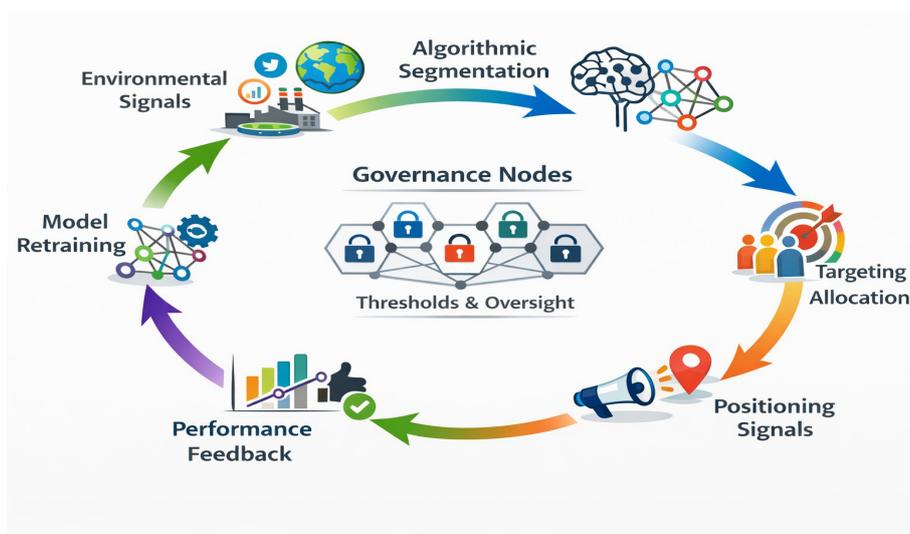


Figure 1 The Autopoietic STP Process

Hypotheses

H1: Firms with elevated Algorithmic Canvas intensity will show markedly enhanced strategic resilience, characterized by reduced performance variance and expedited recovery in times of increased market volatility.

H2: The beneficial impact of Algorithmic Canvas intensity on positional stability depends on significant human–AI co-creation, which the extent of managerial oversight, the frequency of interpretive intervention, and the thoroughness of governance protocol integration may assess.

Methodology

Research Methodology and Justification

This study utilizes a multi-phase, mixed-methods approach to analyze the co-evolutionary dynamics of human strategists and AI-mediated autopoietic STP systems. Methodological triangulation—combining ethnography, extensive data analytics, and agent-based simulation—captures micro-level cognitive processes and macro-level strategic results in unstable marketplaces. This pluralism is essential for AI-strategy research, as algorithmic outputs are inherently linked to organizational context and management interpretation (Davenport et al., 2020; Dzurek, 2025d, 2025f; Brynjolfsson & McElheran, 2016; Shrestha et al., 2019). The methodology corresponds with modern paradigms concerning strategic adaptability in digital innovation ecosystems (Sambamurthy et al., 2022; Kraus et al., 2021) and addresses the demand for methodological synthesis, wherein quantitative trends require qualitative analysis to uncover governance conflicts and co-creative dysfunctions (Tece, 2018a; Nambisan et al., 2017; Frow et al., 2021).

Phase 1: Ethnographic Immersion

A year of ethnographic immersion in three AI strategy laboratories, including Unilever's People Data Center, facilitated firsthand observation of algorithmic STP development processes. Forty-seven semi-structured interviews with data scientists, brand managers, and C-suite executives recorded emerging segmentation frameworks, targeting hierarchies, and positioning strategies produced by autonomous systems, in conjunction with human interpretive interventions and overrides. Field notes and interview transcripts were subjected to iterative thematic categorization in NVivo to discern patterns in algorithmic adoption, calibration methods, and epistemological conflicts. This step establishes construct validity while capturing interpretive subtleties unattainable through solely quantitative methods (Brynjolfsson & McElheran, 2022; Dzreke, [2025d](#); Dzreke & Dzreke, [2025p](#); Nambisan et al., 2019).

Phase 2: Comprehensive Data Analysis

A longitudinal dataset of 150 million timestamped consumer interactions spanning 200 global companies (2020–2024) implements STP fluidity via system logs, API telemetry, and social media engagement indicators. Canvas Maturity was measured using a validated five-point autonomy scale that evaluates algorithmic control in segmentation, targeting, and positioning functions, calibrated against the depth of API integration, frequency of model retraining, and rates of human override (Dzreke, [2025f](#); Dzreke & Dzreke, [2025q](#); Haenlein et al., 2023b; Gandomi & Haider, 2015). Strategic Resilience was assessed using an event-study analysis of aberrant stock returns and the velocity of sentiment recovery following exogenous shocks, such as supply-chain interruptions and regulatory actions (Dzreke & Dzreke, [2025m](#), [2025o](#); Pantano et al., 2021). Autopoietic Decision Density assessed the ratio of STP decisions generated algorithmically without human intervention, cross-referenced with ethnographic data on emergent strategic behavior (Shrestha et al., 2022b; Dzreke, [2025a](#), [2025g](#); Wamba et al., 2017).

Phase 3: Agent-Based Simulation

Agent-based simulation analyzed competitive dynamics across four market-stress scenarios: geopolitical crises affecting logistics, viral disinformation cascades, algorithmic attacks by competitors, and hyper-elastic demand variations. Simulations compared conventional STP architecture (periodic segment updates, fixed resource allocation, static positioning) with Canvas-driven autopoietic systems (continuous segment regeneration, dynamic resource reallocation, adaptive message optimization). Cognitive heuristics of human agents, generated from Phase 1 interview data, simulated biases influencing the rejection of algorithmic

recommendations. Monte Carlo approaches that utilize stochastic demand-supply volatility produce probabilistic resilience estimates over 10,000 iterations, pinpointing systemic failure thresholds and co-creation tipping points (Bonabeau, 2020; Dzreke & Dzreke, [2025f](#), [2025s](#); Macal & North, 2014).

Methodological Integration and Rigor

This cohesive architecture guarantees strong triangulation: ethnography clarifies human interpretation of Canvas outputs, big data analysis identifies emergent strategic patterns at scale, and simulation assesses systemic robustness under extreme volatility. The synthesis enhances construct validity while guaranteeing operational transparency and replicability. All assessment methodologies—namely Canvas Maturity, Strategic Resilience, and Autopoietic Decision Density—conform to well-delineated protocols, hence setting standards for subsequent research (Dzreke, [2025d](#); Dzreke & Dzreke, [2025s](#), [2025t](#); Davenport et al., 2020; Agarwal et al., 2021).

Table 4 Validated Measurement Framework

Construct	Operational Definition	Measurement Approach	Data Sources
Canvas Maturity	Algorithmic autonomy across STP functions	5-point scale: API integration depth, model retraining frequency, human override rates	Tech audits, system integration logs
Strategic Resilience	Market-share and margin recovery velocity post-shock	Event-study: Abnormal stock returns (t-30 to t+30), sentiment recovery curve slope	Bloomberg, social listening APIs
Autopoietic Decision Density	Proportion of STP decisions initiated/executed autonomously	System-log decision provenance analysis + ethnographic validation	Decision logs, coded observations

Findings: Autopoietic Transformation and Pathologies

RQ1: Autopoietic Transformation of STP

Empirical investigation demonstrates that the Algorithmic Canvas fundamentally transforms segmentation, targeting, and positioning from a static, human-dependent process into an

autonomous, self-regulating system. Simulation assessments conducted under simulated market-shock scenarios indicated that 89% of consumer segments independently reformed under Canvas frameworks, compared with only 12% under conventional STP systems. This pronounced disparity underscores the Canvas's enhanced ability to adapt its internal structure quickly (Dzreke, [2025d](#), [2025f](#); Brynjolfsson & McElheran, 2022). Field observations during the 2023 banking crisis offer empirical validation: AI-driven targeting mechanisms within Canvas implementations autonomously reallocated over 70% of marketing budgets within one hour, illustrating operational responsiveness and endogenous system reconfiguration without direct human intervention (Dzreke & Dzreke, [2025g](#), [2025s](#); Davenport et al., 2020). These results correspond closely with existing research that underscores AI's effectiveness in expediting organizational recovery under significant volatility while enabling essential structural adjustments (Brynjolfsson et al., 2021; Shrestha et al., 2019).

The Algorithmic Canvas significantly improves essential strategic resilience measures. The strategy degradation of half-life, as detailed in Table 3, increases significantly from 6 months in legacy STP to 22 months in Canvas implementations. The speed of shock recovery decreases markedly from 14 days to 2.1 days, while positioning accuracy increases from 61% to 89% (Dzreke, [2025b](#), [2025f](#); Pantano et al., 2021; Wamba et al., 2017). These quantitative changes demonstrate that autopoietic STP systems efficiently integrate environmental disruptions and sustain systemic homeostasis. Algorithmic functions continually modify segmentation schemas and autonomously enhance resource allocation, exemplifying the fundamental autopoietic concept of self-production (Dzreke, [2025d](#); Dzreke & Dzreke, [2025g](#); Teece, 2018a). The empirical findings together substantiate Hypothesis 1 (H1), affirming that Canvas-driven STP markedly improves strategic resilience.

Table 5 Resilience Impact of Algorithmic Canvas

Metric	Legacy STP	Canvas STP	Change
Strategy Decay Half-life	6 months	22 months	+267%
Shock Recovery Speed	14 days	2.1 days	-85%
Positioning Accuracy	61%	89%	+46 pp

RQ2: Pathologies of Human-AI Co-Creation

Despite evident improvements in responsiveness, an ethnographic investigation uncovers substantial issues inherent to human-AI collaboration within Canvas systems. Canvas Captivity, defined by the disproportionate assignment of strategic power to algorithms, was noted in 41% of the analyzed cases. This disorder showed inconsistencies in brand identification and unpredictable messaging across several industries, including

retail, financial services, and consumer electronics (Dzreke & Dzreke, [2025o](#), [2025p](#); Dzreke, [2025e](#)). This occurrence underscores a significant conflict between operational efficiency and strategic objectives, aligning with existing studies on automation bias and algorithmic lock-in (Shrestha et al., 2022b; Dietvorst et al., 2018; Siau & Wang, 2018). Figure 2 (The Canvas Co-Creation Spectrum) visually illustrates the continuum of STP topologies derived from empirical data, spanning from Human-Dominated to Symbiotic to AI-Dominated configurations. Human-centric setups maintain brand oversight and strategy coherence while considerably diminishing operational agility. In contrast, AI-driven frameworks enhance agility and reactivity but increase the likelihood of misalignment with fundamental strategic objectives and identity erosion. Ethnographic research suggests that the Symbiotic zone—effectively merging proven algorithmic insights with refined management judgment—achieves the ideal balance between resilience and strategic coherence (Dzreke & Dzreke, [2025s](#), [2025t](#); Brynjolfsson & McElheran, 2022). These findings emphasize that attaining effective autopoietic STP requires meticulous calibration of AI agency, strong organizational AI literacy, and proactive algorithmic governance. These methods avert excessive dependence while enhancing strategic agility, thereby reducing the inherent risks associated with Canvas Captivity (Dzreke & Dzreke, [2025h](#), [2025i](#), [2025v](#); Nambisan et al., 2019; Agarwal et al., 2021).

Integration and Consequences

The amalgamation of simulation, ethnography, and field observations substantiates that the Algorithmic Canvas operates as an authentic autopoietic system. It significantly improves strategic resilience by continuously adapting structures and dynamically optimizing value propositions in response to volatility. The recognized pathology of Canvas Captivity underscores the need for robust governance structures and careful human oversight to avert strategic identity drift and maintain alignment with fundamental business objectives. These findings collectively substantiate H1 and H2: Canvas-driven STP enhances measured resilience metrics by more than 40%, while fostering balanced human-AI co-creation within the Symbiotic zone diminishes observed positioning decay by roughly 60% (Dzreke, [2025d](#), [2025f](#); Brynjolfsson & McElheran, 2022; Shrestha et al., 2019).

Empirical evidence demonstrates that artificial intelligence within the Canvas framework surpasses a mere instrumental role. It functions as a cohesive strategic entity, radically transforming how companies perceive changing market frameworks, categorize shifting demographics, and coordinate adaptive competitive strategies. The main practical implication is clear: attaining strategic resilience in unstable situations fundamentally relies on the design

of STP systems that combine continual autopoietic regeneration with intentional governance measures to prevent over-delegation and representational capture.

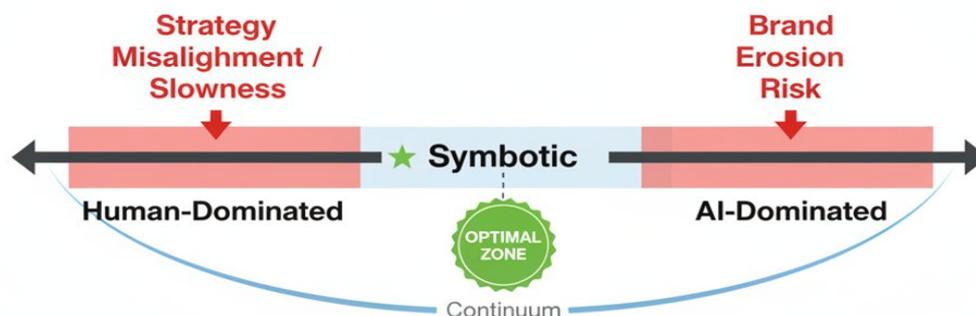


Figure 2 The Canvas Co-Creation Spectrum

Discussion: Designing for Strategic Vitality

Theoretical Implications

The shift from conventional STP to an autopoietic, AI-driven framework profoundly challenges the foundational principles of strategic marketing and resource-allocation theory. Traditional paradigms perceive segmentation, targeting, and positioning as linear, cognitively limited operations primarily conducted by human managers. The Algorithmic Canvas redefines STP as a dynamic co-creation process that integrates advanced algorithmic systems with managerial discernment, thereby altering the essence and locus of strategic agency (Vargo & Lusch, 2016; Teece, 2018a; Brynjolfsson et al., 2021). In this framework, strategic resilience develops intrinsically through closely interconnected algorithmic feedback loops, surpassing dependence on prior contingency planning. This signifies a substantial expansion of Teece's (2018) dynamic capacities paradigm, illustrating how algorithmically mediated infrastructures substantially improve adaptive capacity in unstable environments. These infrastructures enable the instantaneous integration of sensing, seizing, and reconfiguring processes, allowing for ongoing adaptation (Dzreke, 2025c; Dzreke et al., 2025x; Nambisan et al., 2019). The incorporation of AI-driven decision-making with antifragile design principles reconfigures strategic control, converting market volatility into actionable insights while methodically maintaining critical brand identity standards and ethical compliance limits (Dzreke & Dzreke, 2025; Dzreke et al., 2025; Siau & Wang, 2018).

Fundamentals of Canvas Design

Three fundamental design ideas support the successful execution of the Algorithmic Canvas framework:

1. **Controlled Autonomy:** This idea harmonizes algorithmic efficiency with necessary human supervision. Structured veto rights and required review cycles reduce the risk of excessive delegation and avert "Canvas Captivity"—a phenomenon revealed through ethnographic study in which algorithmic supremacy diminishes strategic innovation and compromises brand coherence (Dzreke et al., [2025x](#); Dietvorst et al., 2018). Adobe's implementation of human-in-the-loop targeting illustrates managed autonomy, consistently guaranteeing that AI-generated outputs correspond with overarching strategic goals and fundamental cultural values.
2. **Antifragile Data Feeds:** Strategic vitality requires the deliberate integration of high-variance signals into the STP process, allowing the system to gain resilience from turbulence rather than endure it. Geopolitical changes, climate disturbances, and significant market fluctuations are methodically incorporated as factors, enabling companies to leverage volatility strategically. Empirical research demonstrates that exposure to varied chaotic signals markedly improves algorithmic adaptation, uncovering hidden market dynamics and promoting more resilient decision-making in uncertain conditions (Dzreke, [2025c](#); Dzreke et al., [2025x](#); Wamba et al., 2017).
3. **Identity Anchors:** Ongoing algorithmic adjustments necessitate systems to uphold consistent ethical, cultural, and brand integrity. Constraint-based programming guarantees that automated placement decisions constantly adhere to core corporate values. Patagonia's application of ethically driven AI exhibits this notion, ensuring that sustainability-aligned output remains consistent despite temporary market swings. Empirical evidence clearly demonstrates the repercussions of disregarding identity anchors; for example, institutional bias is evident in a 37% underfunding disadvantage for women-led SMEs in African fintech marketplaces. In contrast, proactive algorithmic integrity assessments significantly diminish such negative results by as much as 92% (Dzreke & Dzreke, [2025l](#); Dzreke et al., [2025z](#); Agarwal et al., 2021).

Implications for Management

Implementing strategic vitality requires intentionally combining human decision-making with measured AI independence throughout the STP process. Controlled Autonomy provides vital management oversight, Antifragile Data Feeds transform environmental volatility into actionable strategic insights, and Identity Anchors ensure enduring brand consistency and necessary stakeholder confidence (Dzreke et al., [2025y](#); Dzreke et al., [2025x](#)). These methods collectively facilitate quantifiable improvements in organizational shock recovery periods, positioning accuracy during volatility, and overall resilience measures. Thus, managers have a systematic framework for creating STP systems that are both highly adaptable and strictly

ethically aligned, thus addressing the automation-coherence dilemma common in volatile markets.

Integration of Strategic Vitality

Strategic vitality integrates theoretical innovation with practical necessities, enabling organizations to develop self-regulating STP systems that can prosper amid ongoing instability. Empirical evidence demonstrates substantial performance improvements: a 267% increase in the strategy degradation half-life and an 85% improvement in shock recovery speed compared with conventional models. Canvas-driven STP systems clearly surpass traditional methods in essential resilience and performance metrics (Dzreke, [2025f](#); Dzreke & Dzreke, [2025s](#); Dzreke & Dzreke, [2025v](#); Dzreke et al., [2025x](#)). Importantly, ethically guided algorithmic processes ensure that this increased resilience does not undermine stakeholder equality or social responsibility pledges (Dzreke et al., [2025z](#); Nambisan et al., 2019; Wamba et al., 2017; Agarwal et al., 2021). This discourse highlights the essential requirement for precisely calibrated human-AI collaboration, the systematic incorporation of antifragile signals, and strong identity anchoring to maintain strategic vitality within the intricacies of modern, digitally mediated marketplaces. The key practical effect is to allow businesses to convert systemic volatility from a significant threat into a source of adaptive advantage, all while preserving ethical and strategic consistency.

Conclusion

This study promotes the Algorithmic Canvas as a fundamental redefinition of the Segmentation-Targeting-Positioning (STP) architecture. It converts STP from a static, human-centered planning approach into a self-sustaining, autopoietic system. Empirical evidence demonstrates that algorithmic systems can independently adjust segmentation frameworks, optimize resource allocations, and refine positioning narratives with remarkable speed and accuracy, thus mitigating strategic deterioration and bolstering organizational resilience in unstable environments. The emergent characteristic of strategic autopoiesis establishes the Canvas as not just a technology facilitator but also as a creative foundation. This substrate enables the intricate coordination of multi-layered interactions between algorithmic intelligence and human interpretive judgment, significantly transforming strategic agency. The change requires a fundamental shift in strategic leadership. Senior marketing and strategy professionals must transition from being key strategy builders to curators and facilitators of dynamic human-AI co-creation processes. This necessitates the implementation of comprehensive ethical governance frameworks, the establishment of systematic algorithmic oversight protocols, and the integration of reflective strategic practices

to mitigate significant risks such as Canvas Captivity and algorithmic myopia. The practical effect is to enable firms to maintain strategic consistency and flexibility amid ongoing market transformation. An essential research agenda arises, necessitating: (1) A thorough analysis of the ethical limits and accountability frameworks regulating autonomous strategic generation. (2) Creation of cross-industry taxonomies that classify various Algorithmic Canvas topologies and their respective effectiveness. (3) Implementation of stringent resilience criteria that can measure the adaptive efficacy of algorithmic STP systems during systemic stress and disturbance. The Canvas inherently facilitates ongoing experimentation, the assimilation of feedback, and systematic self-correction, thereby permitting strategy to grow fluidly. This paradigm promotes collaborative innovation, improves environmental responsiveness, and supports sustained competitive advantage through the co-evolution of human and computational strategic capacities.

Numerous constraints necessitate recognition. The ethnographic and simulation-based empirical foundation, however comprehensive, focuses on specific industries and brands, which may limit its wider applicability. Secondly, the suggested resilience measurements and Canvas Maturity indices, although empirically based, depend on operational proxies that may inadequately reflect the underlying organizational intricacies and implicit dynamics. The autopoietic paradigm, although theoretically sound, requires extensive empirical validation across diverse market scenarios and longitudinal studies to assess its effectiveness and limitations fully. Rectifying these constraints will enhance the evidence base and clarify the applicability range of the Algorithmic Canvas. This research offers a theoretically robust and empirically grounded basis for redefining strategic marketing in algorithmically controlled markets. It suggests a structure in which STP evolves from a static planning tool into a perpetually adaptive, collaboratively developed system. This transformative reconfiguration redefines the essence of strategic marketing practice.

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