

INSTITUTIONAL UNCERTAINTY AND STARTUP FAILURE TRAJECTORIES: A SYSTEMATIC LITERATURE REVIEW AND CAPABILITY-BASED RESEARCH DIRECTIONS

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Abstract

Startup failure remains a central yet insufficiently integrated concern in entrepreneurship research, particularly within environments characterized by institutional uncertainty. Although prior studies consistently demonstrate that regulatory volatility, policy inconsistency, and weak institutional support structures influence venture survival, failure is still predominantly treated as a discrete outcome rather than as a trajectory shaped by firms' adaptive responses over time. Addressing this limitation, this systematic literature review synthesizes insights from institutional theory, venture failure research, and capability-based entrepreneurship to examine how institutional uncertainty, digital opportunity capability, and adaptive learning agility influence startup failure trajectories through strategic experimentation intensity. The review identifies experimentation intensity as a critical yet underexplored mechanism that translates environmental uncertainty and capability conditions into heterogeneous venture decline pathways and develops a capability-based mediation framework to explain variation in failure trajectories across startups operating under unstable institutional environments.

INTRODUCTION

Startup failure is one of the most persistent and defining characteristics of entrepreneurial ecosystems worldwide, yet it continues to receive limited theoretical attention as a dynamic, capability-driven process shaped by institutional environments (Andrea et al., 2023). A growing body of entrepreneurship research recognizes that venture survival is not determined solely by opportunity recognition or innovation performance but is strongly influenced by regulatory conditions, policy stability, and institutional support structures that shape entrepreneurial decision-making processes

(Candeias & Sarkar, 2023). In this regard, institutional environments play a critical role in shaping how startups mobilize resources, interpret market signals, and respond to uncertainty during their early stages of development (Zhuang & Sun, 2024). Particularly in emerging economies, unstable institutional arrangements create additional constraints that influence both venture performance and long-term sustainability trajectories (Andrea, 2022; Vargas-Hernandez et al., 2024).

Institutional uncertainty refers to the instability and unpredictability of regulatory systems, policy

enforcement mechanisms, and governance structures that influence entrepreneurial activity and strategic decision-making (Andrea, 2022; Yildiz et al., 2025). Such uncertainty alters how entrepreneurs evaluate risks, revise commitments, and adjust strategic priorities as they navigate dynamic business environments (Mohd Shahren et al., 2024; Sliuz, 2021). Prior studies suggest that exposure to institutional instability significantly affects venture adaptation behavior and influences the pace and direction of startup decline (Gómez et al., 2021; Tunçalp, 2025). However, existing literature largely treats startup failure as a discrete outcome rather than as a trajectory shaped by firms' adaptive experimentation behavior under uncertain institutional conditions.

Strategic experimentation intensity has increasingly been recognized as a critical mechanism through which startups respond to environmental uncertainty and reshape their survival prospects (Ji et al., 2025). Through experimentation activities such as testing alternative business models, revising market strategies, and reallocating resources, ventures attempt to adapt to institutional volatility and emerging opportunity structures (Vargas-Zeledon, 2025). Nevertheless, the mechanisms through which experimentation intensity interacts with capability conditions to produce heterogeneous failure pathways remain insufficiently explored (Tootoonchy & Clegg, 2025). In particular, limited empirical and conceptual attention has been given to the roles of digital opportunity capability and adaptive learning agility as enabling mechanisms that influence experimentation responses under unstable institutional environments.

This limitation becomes especially significant in emerging economies where institutional discontinuity, financing constraints, and regulatory unpredictability shape entrepreneurial ecosystems. Pakistan represents a particularly relevant context in this regard. Although the country has experienced noticeable growth in entrepreneurial initiatives through digital transformation programs, incubation centers, and technology-based ventures, startups continue to operate within environments characterized by

inconsistent regulatory implementation, fragmented institutional support infrastructures, weak investor protection mechanisms, and macroeconomic instability (Khan et al., 2024). These conditions create uneven venture-survival environments that influence not only whether startups fail but also how their failure trajectories unfold.

Despite the increasing visibility of Pakistan's startup ecosystem, limited research has systematically examined how institutional uncertainty shapes startup failure trajectories through experimentation behavior (Zaidi et al., 2021). Existing entrepreneurship studies in Pakistan primarily focus on opportunity recognition, challenges in SME development, financing barriers, and constraints on innovation adoption, while largely overlooking adaptive experimentation mechanisms that shape venture responses to institutional instability (Iffat, 2023; Rashid et al., 2025). More importantly, prior research rarely integrates digital opportunity capability and adaptive learning agility as capability-based conditions influencing experimentation intensity and venture survival outcomes (Amin & Asif Khan, 2024). Consequently, the literature provides a limited explanation for why startups operating within similar institutional environments experience significantly different decline pathways.

Therefore, in light of these theoretical and contextual gaps, the present study develops a structured conceptual framework to examine how institutional uncertainty influences startup failure trajectories through strategic experimentation intensity, while incorporating digital opportunity capability and adaptive learning agility as critical capability conditions shaping this relationship. Specifically, this study conducts a systematic literature review to synthesize fragmented insights from institutional theory, capability-based entrepreneurship research, and the literature on venture failure trajectories to explain heterogeneous survival outcomes under uncertain institutional conditions. The findings of this study contribute to entrepreneurship scholarship by extending the understanding of failure as a dynamic, capability-driven process and by

providing practical implications for policymakers, incubation centers, and startup support organizations seeking to strengthen venture resilience within emerging institutional environments. Furthermore, integrating institutional uncertainty, experimentation intensity, digital opportunity capability, and adaptive learning agility within a unified analytical framework represents a novel contribution, particularly in the context of Pakistan’s evolving entrepreneurial ecosystem.

By reframing startup failure as a trajectory shaped by experimentation intensity rather than as a single terminal outcome, this review advances theoretical understanding of entrepreneurial decline. It provides a foundation for future empirical research, particularly in emerging economies such as Pakistan.

Prior Research Domain	Established Insight	Missing Explanation	Contribution of This Study
Institutional theory	Explains the effects of environmental instability	No capability mediation mechanisms	Introduces experimentation pathway
Failure trajectory literature	Explains decline timing patterns	Limited institutional integration	Connects uncertainty with trajectory dynamics
Digital entrepreneurship	Explains opportunity recognition	Weak survival linkage	Position digital capability as a buffer
Learning agility research	Explains adaptive cognition	Not linked to venture decline	Introduces a moderating mechanism
Experimentation literature	Explains iterative strategy testing	Not connected to the failure speed	Integrates experimentation with survival dynamics

Literature Review

Institutional Uncertainty and Strategic Experimentation Intensity

Institutional uncertainty represents a defining environmental condition shaping entrepreneurial behavior, particularly in emerging economies where regulatory systems, policy frameworks, and support infrastructures remain unstable or inconsistently enforced (Angelidis et al., 2023). Rooted in institutional theory, the concept refers to the ambiguity surrounding formal rules, legitimacy expectations, and governance structures that influence organizational decision-making (Yüncü, 2020). For startups operating with limited resources and fragile legitimacy, such uncertainty complicates opportunity evaluation, investment planning, and stakeholder coordination, thereby increasing reliance on adaptive strategic responses (Bhidé, 2025).

Existing research consistently shows that institutional instability increases transaction costs, constrains access to finance, and weakens long-

term strategic commitments (Acemoglu et al., 2020). Regulatory volatility and inconsistent

policy implementation often undermine the reliability of predictive planning and force ventures to revise strategic assumptions more frequently (Homkes, 2024). Under these conditions, startups are more likely to engage in iterative experimentation to interpret uncertain signals and adjust their business models accordingly (Reetz, 2022). However, much of the literature continues to treat institutional uncertainty primarily as an external constraint affecting survival probability rather than as a trigger shaping experimentation behavior.

Another limitation concerns the tendency to conceptualize institutional uncertainty as a uniform environmental characteristic measured through macro-level indicators such as regulatory change or policy instability. This approach overlooks variation in how ventures translate uncertainty exposure into adaptive experimentation responses. Consequently, prior

research provides only a limited explanation for why startups facing similar institutional conditions exhibit different levels of experimentation and, ultimately, different failure trajectories.

Addressing this limitation, the present review positions institutional uncertainty as a key environmental driver influencing strategic experimentation intensity. By emphasizing experimentation as the mechanism through which startups interpret and respond to regulatory instability, the study advances a process-oriented explanation linking institutional conditions to heterogeneous venture decline pathways.

Digital Opportunity Capability and Strategic Experimentation Intensity

Digital opportunity capability refers to a startup's ability to identify, evaluate, and exploit opportunities enabled by digital technologies and platform-based ecosystems (Xiong, 2025). As digital infrastructures increasingly reshape market access and reduce entry barriers, the capacity to recognize digitally mediated opportunities has become a critical determinant of entrepreneurial adaptability (Dikshit et al., 2024). Startups with strong digital capabilities are better positioned to explore alternative revenue models, access distributed resource networks, and test innovative solutions under uncertain environmental conditions (Yoo et al., 2021).

Research on digital entrepreneurship demonstrates that digital tools facilitate rapid prototyping, customer experimentation, and flexible business model adjustments (Kyrlyenko, 2025). Platform ecosystems, cloud computing services, and data-driven analytics allow ventures to experiment at lower cost and with greater speed than traditional firms operating in resource-constrained environments (Nicotra et al., 2024; Podeschi, 2022). These capabilities become particularly valuable in contexts characterized by institutional instability, where regulatory uncertainty limits the effectiveness of long-term planning and encourages iterative learning strategies (Pradana & Ekowati, 2024).

Despite these advantages, existing studies largely examine digital opportunity capability as a driver

of innovation performance and competitive advantage rather than as a determinant of experimentation intensity that shapes venture survival trajectories (Zhang et al., 2024). Moreover, digital entrepreneurship research rarely integrates institutional uncertainty into explanations of how digital capability influences adaptive experimentation behavior. As a result, the literature provides limited insight into how digitally capable startups translate environmental uncertainty into strategic experimentation responses.

This study addresses these limitations by positioning digital opportunity capability as a capability condition that strengthens experimentation intensity under institutional instability. By linking digital opportunity recognition to experimentation-driven adaptation, the review contributes to a more integrated explanation of how technology-enabled flexibility shapes heterogeneous startup failure trajectories.

Adaptive Learning Agility and Strategic Experimentation Intensity

Adaptive learning agility refers to the ability of entrepreneurs and organizations to rapidly interpret new information, revise assumptions, and adjust strategic behavior in response to changing environmental conditions (Selvia Wardhani et al., 2022). Within entrepreneurship research, learning agility has been associated with opportunity recognition, strategic flexibility, and innovation responsiveness (Nayak & Malik, 2024)s. Ventures characterized by strong learning agility are typically better equipped to process uncertainty signals and translate them into adaptive experimentation behavior (Keyhani & Jamshidi, 2025).

Scholarly attention to learning agility has increased alongside recognition that entrepreneurial effectiveness depends not only on resource availability but also on the speed and quality of interpretation processes (Nayak & Malik, 2024). In uncertain institutional environments, where regulatory expectations and market conditions evolve unpredictably, learning agility enables entrepreneurs to reassess assumptions and modify strategies before

misalignment becomes irreversible (Ahmed et al., 2024). Startups with higher learning agility are therefore more likely to engage in systematic experimentation as they attempt to refine opportunity evaluations under changing conditions (Vinesian et al., 2023).

Despite its relevance, learning agility has rarely been incorporated into explanations of experimentation intensity shaping venture decline pathways. Most existing studies examine learning agility at the individual leadership level rather than as a venture-level capability that influences adaptive experimentation responses (Janson & Rawlings, 2022). Consequently, the literature provides limited insight into how variation in learning agility contributes to differences in experimentation behavior across startups exposed to similar institutional conditions.

Addressing this gap, the present review conceptualizes adaptive learning agility as a capability driver influencing experimentation intensity under institutional uncertainty. Integrating learning agility into a capability-based framework helps explain why some ventures respond proactively through iterative experimentation while others remain strategically rigid and experience accelerated decline trajectories.

Strategic Experimentation Intensity and Startup Failure Trajectories

Strategic experimentation intensity refers to the extent to which startups iteratively test assumptions, revise business models, and adjust strategic commitments in response to uncertain environmental signals (Agarwal et al., 2023). Influenced by lean startup logic and adaptive strategy perspectives, experimentation enables ventures to reduce uncertainty through structured learning rather than relying solely on predictive planning (York et al., 2024). In volatile institutional environments, experimentation becomes particularly important because regulatory ambiguity weakens the reliability of conventional forecasting approaches (Karali & Sidhu, 2021).

Prior research suggests that experimentation improves opportunity validation, enhances strategic flexibility, and increases responsiveness to

market feedback (Agarwal et al., 2023). Ventures that actively engage in iterative testing are better positioned to identify misalignment early and redirect strategic commitments before resource constraints become critical (Werle & Giones, 2025). As a result, experimentation intensity plays a central role in determining whether startups adapt successfully to institutional instability or progress toward decline through delayed strategic adjustment.

Despite its importance, experimentation has rarely been examined as the primary mechanism linking institutional uncertainty and capability conditions to startup failure trajectories. Existing studies tend to treat experimentation as an innovation tool rather than as a behavioral pathway shaping survival dynamics. Consequently, the literature provides a limited explanation for how differences in experimentation intensity translate into heterogeneous patterns of venture decline.

This study addresses this limitation by positioning strategic experimentation intensity as the central mediating mechanism connecting institutional uncertainty, digital opportunity capability, and adaptive learning agility to startup failure trajectories. By emphasizing experimentation as the process through which ventures interpret uncertainty and adjust strategic commitments, the review advances a capability-based explanation of variation in failure pathways across startups operating under unstable institutional conditions.

Startup Failure Trajectories as an Outcome of Capability-Driven Adaptation

Startup failure trajectories refer to the processes through which ventures progressively move toward decline rather than the final event of exit itself (Permatasari et al., 2024). Traditional entrepreneurship research has largely examined failure as a binary outcome, focusing on predictors of survival or discontinuation (Pisoni et al., 2020). More recent trajectory-based perspectives emphasize that failure unfolds through identifiable stages involving strategic misalignment, resource erosion, and delayed responses to environmental change (Schwarz et al., 2020).

These perspectives suggest that venture decline emerges through cumulative interactions between environmental uncertainty and organizational adaptation processes. Differences in experimentation intensity, opportunity recognition capability, and learning responsiveness often determine whether startups experience gradual deterioration or rapid collapse (Sajjadian et al., 2024). Failure trajectories, therefore, reflect not only structural constraints but also variation in ventures' adaptive capacity under uncertain institutional conditions.

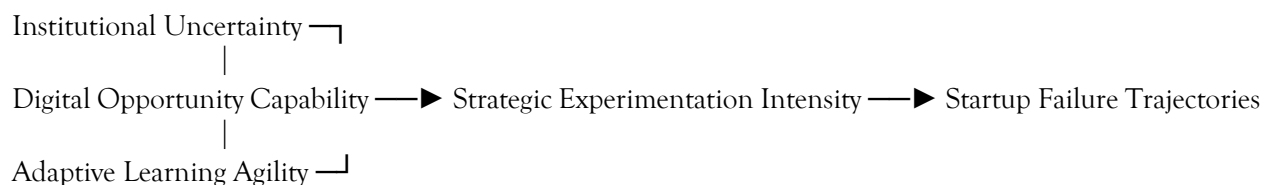
Despite these advances, existing research rarely integrates experimentation behavior as the central mechanism explaining how institutional uncertainty and capability conditions shape failure trajectories. As a result, explanations of heterogeneous venture decline pathways remain

fragmented across institutional and capability-based research traditions.

Addressing this limitation, the present study synthesizes institutional theory with capability-based entrepreneurship research to develop a mediation-based explanation in which strategic experimentation intensity translates environmental uncertainty and capability readiness into differentiated startup failure trajectories. This perspective provides a more coherent framework for understanding how ventures exposed to similar institutional conditions experience markedly different survival outcomes.

Research Stream	Core Focus	Key Contributions	Limitations Identified
Institutional uncertainty research	Regulatory instability and policy volatility	Explains environmental constraints on entrepreneurship	Limited explanation of adaptation mechanisms
Startup failure literature	Exit prediction and survival determinants	Identifies structural predictors of failure	Treats failure as a static outcome
Strategic experimentation studies	Iterative learning and pivoting	Explains opportunity validation processes	Weak integration with failure trajectories
Digital entrepreneurship research	Platform-enabled opportunity recognition	Highlights scaling flexibility	Rarely linked to institutional instability
Learning agility research	Cognitive adaptability	Explains decision responsiveness	Not connected to venture-level survival dynamics

Theoretical Model



Methodology

This study adopts a systematic literature review (SLR) approach to synthesize existing research on how institutional uncertainty, digital opportunity capability, and adaptive learning agility influence startup failure trajectories through strategic

experimentation intensity. A systematic review is particularly appropriate because prior scholarship examining the relationship between institutional instability and venture decline remains fragmented across institutional theory, entrepreneurship research, and capability-based

perspectives. Unlike traditional narrative reviews, the SLR approach follows transparent, replicable procedures that reduce selection bias and support the structured integration of diverse research streams. Accordingly, the present review aims not only to summarize existing findings but also to identify conceptual gaps and to develop an integrative framework that explains how capability conditions shape experimentation intensity and, ultimately, heterogeneous startup failure trajectories.

To ensure comprehensive coverage of relevant scholarship, literature was retrieved from major academic databases widely recognized in entrepreneurship and management research, including Scopus, Web of Science, ScienceDirect, Emerald Insight, and SpringerLink. These databases were selected because they index high-impact peer-reviewed journals addressing institutional environments, venture survival dynamics, digital entrepreneurship, and adaptive capability development. The search strategy combined keywords related to institutional instability with terms describing experimentation behavior and venture decline processes. Boolean search expressions included combinations such as “institutional uncertainty,” “regulatory uncertainty,” and “policy instability,” together with “startup failure,” “venture exit,” and “firm survival,” as well as trajectory-oriented terms including “decline process,” “adaptation,” and “experimentation.” The search covered publications from 2005 to 2024 to capture both foundational institutional theory contributions and recent developments in experimentation-based entrepreneurship research.

Following database retrieval, article screening was conducted using a structured protocol consistent with PRISMA guidelines to ensure transparency and methodological rigor. Duplicate records were first removed from the initial pool of identified publications. Titles and abstracts were then examined to assess relevance to institutional uncertainty, experimentation behavior, and venture failure dynamics. Full-text articles were subsequently evaluated to determine whether they addressed failure as a trajectory shaped by adaptive responses rather than solely as a performance

outcome. Only peer-reviewed journal articles providing theoretical or empirical insight into mechanisms linking institutional environments and capability conditions to experimentation behavior and failure trajectories were retained for inclusion.

Clear inclusion and exclusion criteria were applied to maintain analytical consistency. Studies were included if they examined startups or entrepreneurial ventures operating under uncertain institutional conditions and provided insight into experimentation behavior, capability deployment, or survival outcomes. Studies focusing exclusively on large corporations, macroeconomic crises without institutional framing, or psychological perceptions unrelated to venture-level adaptation were excluded. These criteria ensured alignment between the selected literature and the study’s objective of explaining capability-driven experimentation responses under institutional instability.

Following article selection, the retained studies were systematically coded to identify dominant research themes, theoretical perspectives, and adaptation mechanisms. Each article was analyzed with respect to its conceptualization of institutional uncertainty, its treatment of experimentation intensity as an adaptive response, the role of digital opportunity capability and learning agility in shaping strategic flexibility, and its explanation of venture decline trajectories. Thematic synthesis was then used to integrate insights across institutional theory, experimentation research, digital entrepreneurship literature, and capability-based adaptation perspectives. Building on this synthesis, the review develops a mediation-based interpretive framework explaining how institutional uncertainty and capability conditions jointly influence startup failure trajectories through variation in strategic experimentation intensity.

Prompt: (“institutional uncertainty” OR “regulatory uncertainty” OR “policy instability”) AND (“startup failure” OR “venture exit” OR “firm survival”) AND (“trajectory” OR “decline process” OR “adaptation”)

Contributions of the Study**Theoretical Contributions**

This study contributes to entrepreneurship and institutional theory literature by reframing startup failure as a trajectory shaped by experimentation behavior rather than as a discrete outcome determined solely by environmental constraints. First, the review advances existing research by positioning strategic experimentation intensity as the central mechanism translating institutional uncertainty into heterogeneous venture decline pathways. This perspective shifts attention from static survival predictors toward adaptive processes through which startups interpret and respond to unstable regulatory environments. Second, the study integrates institutional theory with capability-based entrepreneurship research by demonstrating how digital opportunity capability and adaptive learning agility shape experimentation behavior under conditions of uncertainty. While prior scholarship has typically examined these capabilities independently, the present framework explains how they jointly influence the intensity with which startups test assumptions, revise strategies, and adjust commitments in uncertain institutional contexts. Third, the study bridges a longstanding divide between environmental explanations of venture failure and firm-level adaptation research by introducing a capability-driven mediation framework linking institutional instability to failure trajectories. This integration provides a more coherent explanation of why ventures exposed to similar institutional conditions experience markedly different decline patterns. Finally, by conceptualizing experimentation intensity as the behavioral pathway connecting capability conditions to survival outcomes, the study contributes to trajectory-based entrepreneurship research. It provides a foundation for future empirical testing of capability-mediated adaptation processes.

Practical Contributions

Beyond its theoretical implications, the study offers several practical insights for entrepreneurs, policymakers, and ecosystem stakeholders operating in emerging economies. For startup

founders, the findings highlight the importance of strengthening experimentation capabilities to respond effectively to institutional instability. Ventures possessing strong digital opportunity capability and learning agility are better positioned to engage in iterative strategy testing and adjust business models before decline becomes irreversible.

For policymakers, the review underscores the importance of regulatory consistency and institutional support structures that encourage experimentation and digital innovation. Stable institutional environments enable startups to translate experimentation efforts into sustainable growth rather than reactive adjustment.

For incubators and accelerators, the findings suggest that training programs should emphasize experimentation-driven decision-making, opportunity recognition through digital technologies, and rapid learning capabilities. Strengthening these competencies can improve startup resilience in volatile institutional environments.

Limitations of the Study

Despite its contributions, this study has several limitations. First, as a systematic literature review, the analysis relies exclusively on previously published research and does not directly test the proposed mediation framework. Future quantitative studies are therefore required to validate the relationships between institutional uncertainty, capability conditions, experimentation intensity, and startup failure trajectories. Second, the review focuses primarily on peer-reviewed journal articles indexed in major academic databases. Although this ensures methodological rigor, relevant insights from policy reports, practitioner studies, and emerging working papers may not be fully captured. Third, the study adopts a cross-contextual perspective rather than concentrating exclusively on a single national ecosystem. While the framework highlights the relevance of institutional instability in emerging economies such as Pakistan, further context-specific research is needed to examine how local institutional arrangements influence

experimentation behavior and venture decline trajectories.

Future Research Directions

The findings of this review open several promising directions for future research. First, empirical studies should examine the mediating role of strategic experimentation intensity in linking institutional uncertainty to startup failure trajectories using longitudinal research designs capable of capturing adaptation processes over time. Second, future research should investigate how digital opportunity capability strengthens responses to experimentation in unstable institutional environments. Comparative studies across developed and emerging economies may provide deeper insight into the conditions under which digital capability enhances adaptive flexibility. Third, additional research is needed to examine how adaptive learning agility influences experimentation intensity at both individual and organizational levels. Multi-level investigations integrating founder cognition and venture strategy may help explain variation in experimentation behavior across startups exposed to similar levels of uncertainty. Fourth, context-specific investigations focusing on Pakistan and other emerging economies would contribute to understanding how institutional volatility interacts with ecosystem maturity, access to financing, and availability of digital infrastructure to shape experimentation-driven survival pathways. Finally, future studies should test integrated mediation models examining the combined influence of institutional uncertainty, digital opportunity capability, and adaptive learning agility on startup failure trajectories through experimentation intensity.

Conclusion

Startup failure remains an inherent feature of entrepreneurial ecosystems, yet its underlying dynamics are still insufficiently explained, particularly in environments characterized by institutional uncertainty. This study addressed that gap by systematically synthesizing research across institutional theory, venture failure literature, and capability-based entrepreneurship

perspectives to develop a mediation-based explanation of how startups respond to unstable regulatory conditions. The review demonstrates that institutional uncertainty does not directly influence venture outcomes. Instead, its effects are transmitted through variation in strategic experimentation intensity shaped by digital opportunity capability and adaptive learning agility. By integrating these capability conditions into a unified interpretive framework, the study reframes startup failure as an adaptive trajectory rather than a single terminal event. In doing so, the study advances theoretical understanding of entrepreneurial decline while providing a structured agenda for future empirical research on experimentation-driven responses to institutional instability, particularly in emerging economies where regulatory conditions remain fluid and unpredictable.

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