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Entrepreneurial adaptability in Cross-border startups: Navigating institutional voids in developing business environments

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Abstract

The rise of cross-border startups operating in emerging and underdeveloped economies underscores a new wave of entrepreneurial dynamism amid regulatory complexity and infrastructural constraints. Yet, these ventures often confront institutional voids—gaps in legal frameworks, market intermediaries, and support infrastructure—that pose significant challenges to scalability, legitimacy, and operational stability. Entrepreneurial adaptability, defined as the capacity to reconfigure strategies and resource bases in response to volatile environments, becomes a critical survival and growth mechanism in such contexts. This article explores how cross-border entrepreneurs dynamically adjust to institutional discontinuities in developing markets by employing strategic improvisation, localized learning, and agile business model innovation. It synthesizes insights from institutional theory and entrepreneurial resilience to frame adaptability as a multidimensional capability involving cultural intelligence, regulatory navigation, and partnership leveraging. The study examines real-world startup cases from sub-Saharan Africa, Southeast Asia, and Latin America, highlighting how founders tailor solutions to unstructured markets, navigate informal economies, and mitigate uncertainty through digital infrastructure and decentralized operations. Additionally, the research identifies key patterns in how startups reconfigure value propositions, funding approaches, and governance practices to align with fluid institutional landscapes. The role of diasporic linkages, transnational knowledge spillovers, and flexible legal incorporation strategies is analyzed as enablers of cross-border scalability. The article concludes by proposing a strategic adaptability framework for entrepreneurs entering institutionally thin environments, emphasizing adaptive capacity as a competitive advantage in global entrepreneurship.

Keywords: Entrepreneurial Adaptability; Cross-Border Startups; Institutional Voids; Emerging Markets; Strategic Agility; Transnational Entrepreneurship

1. Introduction

1.1. Background and Global Context

Cross-border entrepreneurship has emerged as a powerful force in the global economy, driven by advances in technology, trade liberalization, and migration. Entrepreneurs now operate in increasingly interconnected markets, where ideas, talent, and capital flow across borders with relative ease. However, while globalization offers expanded

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opportunity, it also presents heightened complexity. Entrepreneurs must navigate diverse legal systems, cultural expectations, and regulatory frameworks to build viable ventures in foreign environments [1].

In particular, entrepreneurial activity across borders is growing rapidly in developing and emerging markets, where local ecosystems often lack the formal institutions—such as credit systems, legal enforcement, and transparent regulatory regimes—that support entrepreneurship in mature economies. These environments, commonly referred to as institutional voids, create both challenges and opportunities for business owners attempting to scale or relocate their operations internationally [2].

In contrast to highly structured domestic ecosystems, institutional voids are characterized by fragmented markets, weak contract enforcement, information asymmetry, and unreliable infrastructure. These conditions limit access to finance, suppress market signals, and elevate transaction costs. For foreign entrepreneurs, such voids can magnify the liability of outsidership, making it difficult to establish trust and secure local legitimacy [3].

Despite these barriers, many entrepreneurs continue to succeed by exhibiting entrepreneurial adaptability—the capacity to reconfigure strategies, reallocate resources, and pivot business models in response to uncertain and evolving institutional conditions. This adaptability is not merely reactive but often strategic, reflecting a dynamic process of learning, experimentation, and network-building in new environments [4].

The expansion of global startup ecosystems—ranging from Nairobi's Silicon Savannah to São Paulo's FinTech hubs—demonstrates that entrepreneurial activity can thrive even in institutionally thin settings. These successes are rarely the result of institutional support alone but instead reflect a capacity to creatively fill gaps, engage with informal systems, and negotiate legitimacy across varied cultural and regulatory landscapes [5].

1.2. Problem Statement and Research Significance

Despite increasing recognition of the role of entrepreneurship in economic development, the literature on cross-border entrepreneurial success remains largely biased toward institutional completeness. Many frameworks assume that formal institutions are prerequisites for sustainable business formation and growth. Yet, in many global contexts, entrepreneurs operate under conditions where such supports are weak or absent [6].

The central problem lies in understanding how entrepreneurs adapt in the face of institutional voids, particularly when they originate from one institutional setting and operate in another. There is a lack of clarity around the strategies, behaviors, and mindsets that enable foreign entrepreneurs to navigate host country environments marked by systemic gaps. Most existing models fail to account for the granular, real-time decision-making and behavioral plasticity that characterize entrepreneurial resilience in these contexts [7].

This gap holds practical implications for policy, support systems, and transnational entrepreneurial training. As entrepreneurship becomes increasingly borderless, there is an urgent need to understand how individuals can effectively manage and thrive amid institutional discontinuity. This research therefore contributes to the broader field of international entrepreneurship by shifting the focus from institutional presence to entrepreneurial adaptability, offering new insights into the mechanisms through which entrepreneurs succeed despite, or even because of, institutional incompleteness [8].

1.3. Conceptual Overview: Institutional Voids and Adaptability

Institutional voids refer to the absence, weakness, or dysfunction of formal institutions that facilitate market transactions, such as credit markets, legal systems, labor regulations, and property rights enforcement. In such environments, entrepreneurs encounter challenges in securing reliable information, accessing financial services, and protecting intellectual property. These voids are particularly pronounced in many parts of Africa, Latin America, South Asia, and post-conflict regions, where informal systems often operate parallel to or in place of formal institutions [9].

Navigating these conditions requires a high degree of entrepreneurial adaptability—the capacity to adjust behaviors, strategies, and organizational structures in response to dynamic external challenges. Adaptability involves scanning the institutional environment, experimenting with alternative resource configurations, and building hybrid structures that incorporate both formal and informal mechanisms. It also includes leveraging social capital, forming cross-sector partnerships, and engaging in institutional bricolage—creatively reassembling available elements to perform required functions [10].

Entrepreneurs who succeed in such contexts often demonstrate traits such as flexibility, contextual intelligence, and risk tolerance. They do not rely solely on replicating home market strategies but instead engage in localized learning and continuous recalibration. Understanding this adaptability is essential for explaining entrepreneurial resilience in institutionally diverse and complex global settings.

2. Literature review and theoretical framing

2.1. Institutional Voids: Definitions, Dimensions, and Effects

The term institutional voids refers to the absence or inefficiency of formal institutions that support market functioning, particularly in areas such as capital availability, contract enforcement, property rights, and labor regulation. Originally articulated within the comparative institutional theory, institutional voids are most apparent in developing and emerging economies, where entrepreneurs must often operate in fragmented regulatory landscapes [5].

Khanna and Palepu's seminal framework outlines voids as market failures in product, labor, and capital markets, compounded by the lack of intermediary institutions that support information flow and enforce compliance. In such environments, businesses encounter increased transaction costs, heightened uncertainty, and opaque governance structures [6]. Entrepreneurs face difficulties accessing credit, hiring skilled labor, or resolving disputes legally—conditions that hinder the scalability and sustainability of startups.

Institutional voids manifest along several dimensions: regulatory (weak legal enforcement), cognitive (lack of shared norms), and normative (unwritten codes of conduct). These layers interact and exacerbate each other. For instance, in the absence of effective credit reporting institutions, informal lending practices may dominate, creating unequal access based on social capital rather than business merit [7].

The effects of institutional voids are far-reaching. Entrepreneurs in such settings are often forced to develop workarounds, including reliance on kinship networks, informal agreements, and personal trust to substitute for legal instruments. While these strategies may be effective in the short term, they limit growth potential and inhibit integration into formal markets. Moreover, institutional voids tend to reinforce inequality, as well-connected insiders are better positioned to exploit loopholes than marginalized or foreign entrepreneurs [8].

Understanding institutional voids as layered, multidimensional phenomena is critical for developing entrepreneurial responses that are not only tactical but also strategic, positioning the enterprise for long-term resilience amid structural complexity.

2.2. Entrepreneurial Adaptability and Strategic Agility

Entrepreneurial adaptability refers to the capacity of entrepreneurs to change strategies, realign resources, and reframe goals in response to uncertain or evolving environments. It encompasses cognitive flexibility, emotional resilience, and operational reconfiguration. In contexts defined by institutional voids, adaptability becomes not a choice but a necessity for survival and growth [9].

Adaptability in entrepreneurship is closely aligned with the concept of strategic agility, which focuses on the speed and precision with which organizations detect environmental shifts and pivot accordingly. While adaptability is often individual in nature, agility is organizational—embodied in the systems, structures, and cultures that support rapid experimentation and decentralized decision-making [10].

Scholars have identified several dimensions of entrepreneurial adaptability: absorptive capacity (the ability to acquire and apply new knowledge), bricolage (making do with what is at hand), and improvisation (rapid reconfiguration under pressure). These dimensions are especially relevant in emerging markets, where entrepreneurs often face fluctuating policies, supply chain volatility, and infrastructural constraints [11].

One key adaptive behavior is institutional bridging, wherein entrepreneurs form partnerships with local stakeholders, NGOs, and informal networks to fill gaps in service provision or regulatory infrastructure. Another is institutional navigation, which involves understanding and selectively engaging with multiple regimes of norms and compliance mechanisms [12].

Entrepreneurs operating in cross-border environments further require cultural intelligence and language proficiency to build trust and legitimacy in unfamiliar institutional settings. This adaptability is not just reactive—it involves

proactive sensemaking and continuous learning, enabling entrepreneurs to anticipate institutional change and innovate accordingly.

When embedded within the organizational DNA, entrepreneurial adaptability becomes a competitive advantage. It allows cross-border ventures to not only survive in institutionally weak environments but to thrive by capitalizing on inefficiencies, forming hybrid organizational structures, and crafting locally attuned value propositions [13].

2.3. Cross-Border Startups in Emerging Markets

Cross-border startups—firms established by entrepreneurs in foreign institutional settings—are increasingly prominent actors in global entrepreneurial ecosystems. These startups often emerge at the intersection of global opportunity and local complexity, navigating unfamiliar institutional arrangements while seeking to exploit market inefficiencies and unmet demand [14].

Emerging markets provide fertile ground for such ventures due to their large, underserved populations and rapid urbanization. However, the risks are equally substantial. Entrepreneurs must contend with regulatory opacity, unstable political climates, and uneven infrastructure. These challenges are further amplified for foreign founders, who must also overcome liability of foreignness, limited network ties, and cultural dissonance [15].

Yet, evidence shows that cross-border startups often leverage their outsider status to craft disruptive business models. For instance, international fintechs entering markets with underbanked populations may bypass traditional infrastructure altogether by deploying mobile-first platforms. Similarly, agritech ventures may co-develop solutions with local farmers, circumventing regulatory hurdles by anchoring trust in community-led demonstration projects [16].

The literature on institutional entrepreneurship provides useful insights into how these ventures not only adapt to but shape institutional environments. Cross-border founders may act as agents of change, introducing best practices, advocating for regulatory reform, or establishing new standards of transparency and service delivery. These activities represent a form of embedded agency—where external actors become integrated into local ecosystems by aligning their interests with institutional development [17].

Importantly, cross-border entrepreneurs often pursue dual learning paths: adapting homegrown knowledge to fit the host context while simultaneously absorbing local norms and operational wisdom. This hybridization creates unique organizational cultures that are more resilient and innovative in uncertain environments.

Figure 1 presents a conceptual map that links the layers of institutional voids to entrepreneurial responses. It highlights adaptability strategies such as institutional bridging, resource bricolage, and market improvisation, mapping them to specific void dimensions (regulatory, cognitive, and normative).

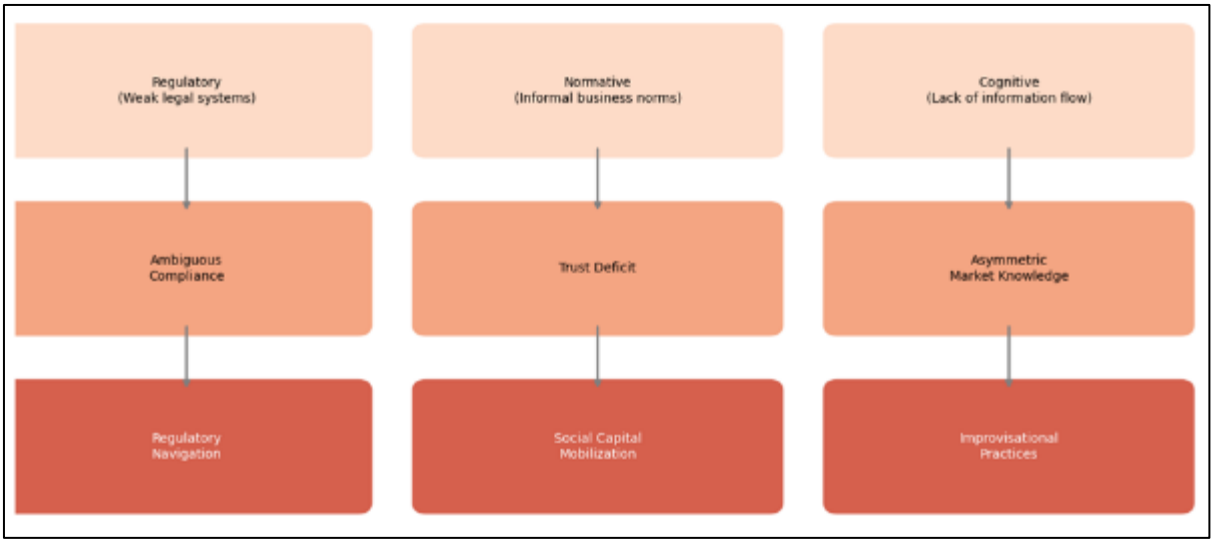

Figure 1 Conceptual Map of Institutional Voids and Entrepreneurial Responses

3. Methodological approach

3.1. Research Design and Qualitative Framework

This study adopts a qualitative case study methodology to explore how cross-border entrepreneurs adapt to institutional voids in emerging markets. Given the context-specific, processual nature of entrepreneurial adaptability, a qualitative design enables the capture of nuanced behaviors, narratives, and strategies that are often overlooked in large-scale quantitative surveys [9].

A case study framework was selected to allow for in-depth, context-rich exploration of entrepreneurial decision-making and institutional engagement. The aim is not to produce generalizable conclusions across all entrepreneurial contexts but rather to develop analytical generalization—insights that can inform theory and practice in similar institutional settings [10].

The framework follows an interpretivist epistemology, focusing on how entrepreneurs construct meaning and make sense of institutional challenges. The research questions are exploratory and designed to uncover the cognitive, strategic, and relational mechanisms underpinning adaptability. The logic of inquiry is inductive, allowing patterns and categories to emerge from the data rather than imposing pre-defined constructs.

Cross-case comparison supports the identification of recurring themes, contextual distinctions, and adaptability trajectories. This comparative approach enhances the internal validity of the findings and allows for theory-building grounded in real-world entrepreneurial practices [11]. Triangulation was achieved through the use of multiple data sources, including interviews, archival documents, and digital platform records.

3.2. Case Selection and Contextual Relevance

The study examines six cross-border startup ventures operating in institutionally constrained environments across Africa, Southeast Asia, and Latin America. Cases were selected using purposeful sampling, based on their relevance to the research objectives and potential to illuminate varied responses to institutional voids [12]. Selection criteria included foreign founding origin, market entry into an emerging economy, sectoral diversity, and evidence of strategic adaptability over time.

Each case represents a distinct institutional context. For instance, the fintech startup based in Kenya operates within a regulatory vacuum for digital lending, while the health-tech firm in Indonesia navigates fragmented licensing regimes. The agritech enterprise in Brazil deals with land ownership opacity, whereas the logistics platform in Nigeria adapts to infrastructural unpredictability. This geographical and sectoral diversity provides a comparative lens through which to assess how entrepreneurial strategies are shaped by different dimensions of voids—regulatory, normative, and cognitive [13].

Contextual depth was ensured through extended engagement with each case, including background research, stakeholder interviews, and market analysis. The selected firms were all in operation for at least three years and had demonstrated some degree of market traction or impact, ensuring maturity of data and relevance to the study's exploration of entrepreneurial resilience and long-term strategic evolution [14].

Table 1 below summarizes the selected cases by region, industry, and founding year, offering a snapshot of their institutional environments and contextual positioning.

3.3. Data Collection and Analytical Techniques

Data collection was conducted over a six-month period using semi-structured interviews, complemented by document analysis and secondary data triangulation. Interviews were held with founders, senior managers, and ecosystem partners such as investors, accelerators, and regulators. This multi-perspective approach enriched the understanding of internal strategies and external constraints faced by the startups [15].

Interview protocols were developed based on key themes from the literature on institutional entrepreneurship, strategic agility, and cross-border adaptation. Questions explored topics such as entry strategy, stakeholder engagement, regulatory navigation, informal partnerships, and resilience during crises. Interviews were conducted remotely via video conferencing and recorded with consent, then transcribed for thematic analysis [16].

Secondary data included press releases, pitch decks, social media content, investor reports, and policy documents. This corpus provided context, validation, and triangulation for interview narratives. The data were coded using NVivo software, following a grounded theory approach. Codes were developed both deductively from the theoretical framework and inductively based on emerging patterns in the data [17].

Analytical techniques included pattern matching, cross-case synthesis, and process tracing to understand how institutional constraints shaped decision-making over time. Particular attention was paid to identifying the adaptive mechanisms employed in response to different categories of voids and how these mechanisms evolved across the lifecycle of each startup [18].

Table 1 Summary of Case Study Startups by Region, Sector, and Founding Year

Startup Name	Region	Sector	Year Founded	Key Institutional Challenge
MobiPay	Kenya	Fintech	2017	Lack of digital lending regulation
VidaHealth	Indonesia	Health-tech	2018	Fragmented medical licensing
AgroNova	Brazil	AgriTech	2016	Ambiguity in land tenure documentation
DropLink	Nigeria	Logistics/Last-mile	2019	Infrastructure and fuel supply inconsistencies
EduBridge	Philippines	EdTech	2015	Limited digital infrastructure in rural areas
MedSafi	Ghana	Health-tech	2017	Import regulation delays for medical devices

4. Patterns of adaptability across institutional gaps

4.1. Navigating Regulatory Uncertainty

One of the most consistent themes across all six case studies was the challenge of regulatory uncertainty—a core feature of institutional voids in emerging markets. Entrepreneurs operating in these contexts reported facing ambiguous licensing requirements, shifting tax codes, and fragmented enforcement regimes. Rather than withdrawing or delaying operations, founders adopted a range of adaptive strategies to mitigate these legal and compliance-related ambiguities [13].

In the case of *VidaHealth* in Indonesia, the startup engaged in pre-emptive compliance mapping, hiring local legal advisors to anticipate multiple interpretations of health regulations. The company operated under temporary licenses while simultaneously lobbying relevant ministries for clearer guidelines. This proactive engagement allowed it to navigate a regulatory vacuum that had paralyzed several local competitors [14].

DropLink, a Nigerian logistics startup, leveraged informal relationships with regional transport unions to ensure smooth delivery routes in areas where state-level regulations were either unclear or conflicting. Instead of viewing these organizations as obstructive, the founders framed them as non-state intermediaries—de facto regulators whose support could enable continuity and legitimacy [15].

In Ghana, *MedSafi* faced delays in the import approval of medical devices due to bureaucratic backlogs. To address this, the startup established a dual-channel importation system, combining small-scale shipments through diplomatic partnerships with NGO health campaigns, which operated outside conventional customs frameworks. This workaround allowed MedSafi to sustain inventory flow while advocating for longer-term reforms to national procurement protocols [16].

These findings underscore the use of parallel regulatory strategies: formal compliance where possible, and informal negotiation where necessary. Entrepreneurs treated the legal environment not as fixed, but as malleable and negotiable, leveraging networks, local expertise, and hybrid structures to reduce the risk of sudden enforcement or legal exposure.

4.2. Building Trust in the Absence of Formal Contracts

The lack of enforceable contracts or reliable dispute resolution mechanisms was cited as a major impediment to cross-border operations. Entrepreneurs responded by cultivating trust-based networks that substituted for legal guarantees.

This trust was built not only through interpersonal rapport but also via visible accountability systems and social proof mechanisms that conveyed reliability to customers, partners, and suppliers [17].

AgroNova, the agritech startup in Brazil, found that traditional contract enforcement was ineffective in rural regions due to land ownership ambiguities and judicial backlogs. Instead, it deployed community liaison officers—local representatives who built relationships with farmer cooperatives and acted as the face of the company in day-to-day negotiations. These liaisons helped facilitate seed distribution, training sessions, and informal agreements that replaced legal contracts with reputational guarantees [18].

Similarly, *EduBridge* in the Philippines secured partnerships with rural schools and parent groups through reciprocal commitments. Instead of contracts, the company relied on memoranda of understanding (MOUs) with village elders and school heads, emphasizing long-term engagement and mutual benefit. Consistency in service delivery and transparency in pricing were cited as critical elements in building a track record of dependability [19].

In Kenya, *MobiPay* created a digital feedback loop embedded within its fintech platform. Customers could rate and review each other, and high ratings were rewarded with discounts or faster loan approvals. This system created a reputation-based trust mechanism that replaced formal credit scoring or legal collection procedures. It also facilitated peer-based dispute resolution, reducing dependence on costly legal channels [20].

Across all cases, entrepreneurs used trust as currency, creating informal enforcement systems rooted in social cohesion, mutual dependency, and transparency. These adaptive mechanisms illustrate how institutional voids in contract enforcement can be mitigated through cultural fluency, long-term engagement, and reputational engineering.

4.3. Managing Market Entry and Distribution Without Intermediaries

Another significant challenge identified was the lack of formal intermediaries, such as distributors, agents, or franchising platforms, that typically enable startups to scale in new markets. Entrepreneurs reported difficulty in accessing existing supply chains, establishing retail presence, and managing last-mile delivery due to infrastructural gaps and the absence of reliable commercial partners. In response, they adopted direct-to-market strategies enabled by technology, local labor, and decentralized logistics [21].

For example, *EduBridge* deployed a mobile learning platform that bypassed traditional educational publishing and distribution channels. Instead of relying on local textbook providers or state ministries, the company distributed low-data learning modules via WhatsApp and SMS. Content was adapted to regional dialects, and user uptake was tracked in real time to assess engagement. By eliminating layers of bureaucracy, EduBridge retained control over its pricing, content, and user experience [22].

MobiPay developed a network of community-based agents, often local shopkeepers or micro-entrepreneurs, who served as transaction points in informal settlements without bank branches. These agents provided cash-in/cash-out services, conducted customer verification, and offered user education. This model turned existing informal infrastructure into a scalable distribution channel, reducing reliance on banks or telecommunications providers [23].

In Nigeria, *DropLink* created its own logistics micro-hubs by hiring motorbike couriers from local communities. Each hub was equipped with GPS-tracked devices and managed through a centralized dashboard that coordinated real-time pickups and deliveries. By investing in this network directly, the company sidestepped the fragmented and unreliable third-party logistics ecosystem [24].

MedSafi and *VidaHealth* pursued partnership-based distribution models with NGOs, religious organizations, and healthcare workers. These entities not only extended reach into underserved areas but also lent social legitimacy to the startups' offerings. In return, startups provided training, revenue-sharing agreements, or digital tools that enhanced partner capacity.

One of the more innovative models was implemented by *AgroNova*, which introduced a pay-as-you-grow model using IoT-enabled soil monitors and micro-irrigation kits. Farmers repaid in kind or through harvest-sharing agreements facilitated by village aggregators. This eliminated the need for financial intermediaries and reduced risk exposure in regions where credit was scarce and insurance nonexistent.

Across all six cases, the absence of intermediaries catalyzed adaptive vertical integration—where entrepreneurs internalized distribution, monitoring, and customer service functions. This approach not only enhanced control and

responsiveness but also built deeper relationships with customers, enabling feedback loops that informed product iterations and strengthened brand loyalty.

Figure 2 presents a synthesis of strategic adaptability mechanisms mapped to specific institutional voids encountered by the case study startups.

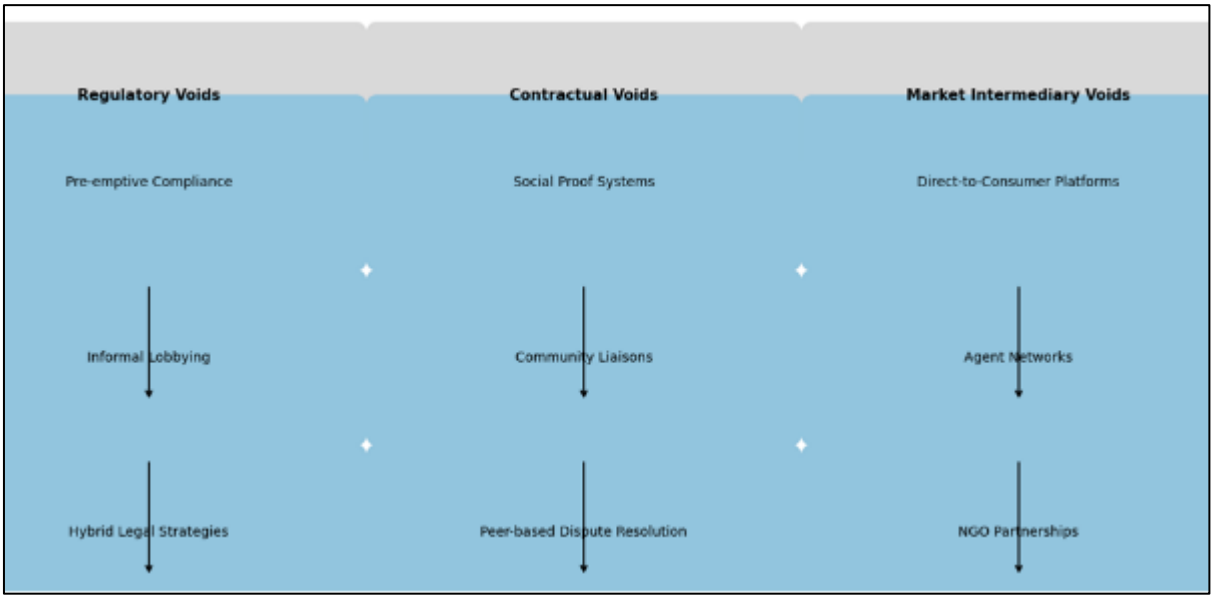

Figure 2 Strategic Adaptability Mechanisms in Response to Specific Voids

5. Strategic capabilities for adaptation and resilience

5.1. Cultural Intelligence and Local Embeddedness

A defining feature of the most successful startups in this study was their ability to develop and apply cultural intelligence (CQ) to build trust, adapt communications, and navigate informal power structures. Cultural intelligence, defined as the capability to function effectively in culturally diverse settings, emerged as both a personal trait among founders and a strategic competency embedded in organizational practices [16].

EduBridge in the Philippines demonstrated high CQ by hiring local outreach coordinators who were fluent in regional dialects and understood local learning customs. These coordinators acted not only as brand ambassadors but also as cultural interpreters, enabling the startup to tailor content and delivery to deeply ingrained community norms. As a result, EduBridge was perceived less as a foreign edtech product and more as a local educational partner [17].

Similarly, *AgroNova*'s co-founder relocated to rural Brazil for 12 months prior to launch, embedding himself in the agricultural community to understand seasonal planting patterns, informal market systems, and social hierarchies. This local embeddedness helped the startup avoid costly errors, such as product misalignment or inappropriate pricing strategies. Instead, AgroNova co-created solutions with local farmer groups, which increased uptake and reduced churn rates [18].

Cultural bridging mechanisms—such as employing local co-founders, creating advisory boards with respected community members, and aligning marketing campaigns with cultural events—were frequently cited as tools for legitimacy. These mechanisms helped overcome liability of foreignness, a condition where outsiders struggle to gain legitimacy or influence in new institutional contexts [19].

Startups that embraced cultural intelligence were more adept at forming alliances, resolving disputes informally, and iterating products based on user sentiment. In institutionally thin environments where formal cues are weak, cultural fluency becomes a critical asset that enables both adaptability and long-term embeddedness.

5.2. Resource Leveraging and Frugal Innovation

In capital-constrained and infrastructure-deficient environments, resource leveraging and frugal innovation emerged as essential capabilities for survival and competitiveness. These strategies allowed startups to maximize value creation with minimal resource input by creatively reconfiguring existing assets, engaging unconventional partners, and applying lean operating principles [20].

MobiPay in Kenya exemplified frugal innovation by designing a mobile transaction platform that operated on feature phones using USSD codes—thus eliminating the need for smartphones or data plans. This approach expanded the user base significantly, particularly among informal merchants and rural consumers who were previously excluded from digital finance solutions [21].

MedSafi in Ghana created a network of low-cost storage hubs for medical devices, co-located within NGO health centers. This infrastructure piggybacking reduced warehouse costs, enabled just-in-time distribution, and helped bypass customs-related inefficiencies. MedSafi also trained local health workers as product champions, eliminating the need for a full-time salesforce while improving patient education and uptake [22].

Startups also practiced asset-light scaling, where they avoided heavy upfront investment by outsourcing logistics, co-developing with suppliers, or using shared infrastructure. *DropLink*, for instance, designed modular courier kits that local motorbike riders could attach to their vehicles, converting them into last-mile logistics agents without needing fleet ownership or insurance management [23].

Frugal innovation extended to product development as well. Several startups adopted rapid prototyping, using inexpensive materials and open-source platforms to test functionality and usability before committing to mass production. These prototypes were often co-developed with end users in iterative cycles, reducing risk and increasing local buy-in.

Such capabilities are not merely short-term cost-saving measures—they reflect structural ingenuity. In settings where institutional support is absent and investor patience is limited, resource leveraging and frugal innovation enable startups to remain agile, resilient, and scalable.

5.3. Transnational Linkages and Knowledge Transfer

Perhaps the most powerful strategic capability observed was the cultivation of transnational linkages—cross-border networks that provided startups with access to knowledge, funding, mentorship, and credibility. These linkages helped overcome local institutional voids by connecting founders to more robust ecosystems abroad and enabling knowledge transfer between markets [24].

All six startups maintained some form of transnational engagement. *VidaHealth*, for example, participated in a Singapore-based health-tech accelerator that provided access to a network of medical device suppliers, AI researchers, and impact investors. This exposure enabled the startup to import best practices in clinical validation, user interface design, and regulatory documentation, which it adapted to Indonesia's fragmented health ecosystem [25].

AgroNova received technical assistance from an EU-funded agricultural research consortium. While the tools and frameworks provided were not directly transferrable, the startup was able to localize them through pilot projects in partnership with regional cooperatives. This contextual translation of knowledge allowed AgroNova to build scientific legitimacy while ensuring relevance to its users [26].

Startups also leveraged diaspora networks to access remittance-backed funding, informal mentorship, and in-kind support. *EduBridge*'s early growth was partially funded by overseas Filipino workers (OFWs), who contributed through collective crowdfunding facilitated by a diaspora fintech platform. The startup rewarded them with impact reports and progress updates, turning them into brand ambassadors abroad [27].

Transnational linkages also contributed to reputational arbitrage. Several founders reported that participation in foreign accelerators or recognition by global institutions helped them overcome local investor skepticism. *MobiPay*, after winning a global fintech challenge, received increased interest from local banks and regulators who had previously been hesitant to engage with early-stage startups [28].

However, the success of these linkages depended on the startup's absorptive capacity—its ability to internalize and apply external knowledge effectively. Startups with flat hierarchies, interdisciplinary teams, and agile development

processes were more successful in adapting foreign frameworks to local realities without imposing inappropriate assumptions or design biases.

This dynamic exchange also operated in reverse. Startups contributed to the global knowledge pool by documenting use cases from resource-constrained environments, participating in global forums, and developing new metrics for inclusion and resilience. In doing so, they not only benefited from transnational flows but also co-produced innovation that challenged conventional thinking in entrepreneurship literature.

Table 2 below presents a comparative matrix of strategic capability sets observed across the six case study startups, organized by function and frequency of application.

Table 2 Comparative Matrix of Strategic Capability Sets Across Startup Case Profiles

Startup	Cultural Intelligence	Frugal Innovation	Transnational Linkages
MobiPay	Moderate	High	High
VidaHealth	High	Moderate	High
DropLink	Moderate	High	Moderate
EduBridge	High	Moderate	High
MedSafi	Moderate	High	Moderate
AgroNova	High	High	High

6. Digital infrastructure and technological leverage

6.1. Digital Platforms and E-Commerce Penetration

Digital platforms have become powerful instruments for bypassing institutional bottlenecks, particularly in environments characterized by weak physical infrastructure, information asymmetries, and poor market access. For cross-border startups operating in such institutional voids, e-commerce and digital marketplaces serve as substitute infrastructure, enabling direct engagement with consumers and suppliers while minimizing reliance on inefficient intermediaries [20].

EduBridge effectively used WhatsApp, Facebook, and a custom-built SMS-based platform to deliver microlearning modules to remote learners in the Philippines. These tools not only bypassed limitations in school infrastructure but also avoided regulatory complications associated with formal curriculum approval. By delivering bite-sized content asynchronously, EduBridge reduced reliance on under-resourced local institutions while reaching previously excluded learners [21].

MobiPay used a proprietary mobile app to offer financial services to Kenya's informal sector. Through digital onboarding, digital KYC processes, and automated credit scoring based on phone usage and transaction patterns, the company circumvented reliance on underdeveloped banking infrastructure and credit bureaus. The platform also served as a trust-building mechanism, offering transparency, transaction histories, and dispute resolution—all digitally embedded [22].

In Brazil, *AgroNova* created a farm-to-market platform that directly connected rural producers with urban consumers. It bypassed multiple layers of distribution dominated by intermediaries prone to price manipulation and delayed payments. The platform featured visual product catalogs, real-time inventory tracking, and multilingual chatbot assistance, effectively removing friction in logistics and market access [23].

Digital platforms offered cost efficiencies and reach but also embedded monitoring and feedback mechanisms critical for quality assurance and customer retention. Entrepreneurs across all cases noted that without these platforms, their ability to scale or even launch in fragmented regulatory and infrastructure landscapes would have been severely hindered.

Thus, digital platforms not only filled infrastructural and institutional voids but also redefined the very architecture of startup operations in emerging economies.

6.2. Mobile Finance and Blockchain for Trust and Transactions

In contexts where financial institutions are weak, expensive, or untrusted, mobile finance and blockchain technologies have emerged as alternative architectures for facilitating transactions and establishing trust. These tools provide critical infrastructure for startups to conduct business, build reputation, and ensure security in environments where traditional instruments such as bank guarantees, credit histories, or notarized contracts are absent [24].

MobiPay's mobile wallet enabled peer-to-peer transactions and micro-loans for unbanked users in Kenya. The firm leveraged telco-based APIs to integrate airtime usage, mobile money transfers, and merchant payments into a seamless user experience. This allowed individuals and businesses to build digital transaction histories, which in turn fed into algorithmic risk models for credit scoring. For entrepreneurs, mobile finance provided a scalable, cost-efficient system for disbursing funds, collecting payments, and issuing rewards [25].

In Ghana, *MedSafi* experimented with blockchain to secure the supply chain for critical medical devices. Using distributed ledger technology (DLT), the startup created tamper-proof records of procurement, shipping, and delivery, which were shared with partners including local NGOs and government health agencies. This added transparency to an otherwise opaque process, reduced the risk of counterfeit goods, and built credibility among stakeholders [26].

Blockchain was also used by *DropLink* to validate courier performance through smart contracts. Couriers' delivery records were recorded on-chain and linked to automated micro-payments, eliminating manual reconciliation and improving operational efficiency. This innovation replaced the need for legal contracts or third-party arbitration, which were unreliable in the local jurisdiction [27].

Moreover, mobile finance tools supported financial inclusion by reducing barriers to entry. Customers and vendors without formal IDs or credit histories could participate in economic exchange through mobile SIM verification or community-based onboarding. These technologies democratized access to finance and lowered operational risk in informal, trust-deficient markets.

In all six startups, digital finance and blockchain played a dual role: as transactional infrastructure and as reputation systems, especially valuable in institutionally weak ecosystems where accountability was often informal or absent.

6.3. Remote Operations, Digital Twins, and AI for Local Insights

The constraints of geographic distance, inadequate infrastructure, and limited on-site presence have led many cross-border startups to embrace remote operations powered by emerging technologies like digital twins and artificial intelligence (AI). These technologies enable monitoring, control, and decision-making without the need for permanent physical infrastructure or localized management teams [28].

AgroNova deployed IoT-based soil sensors that relayed real-time data on moisture, pH, and temperature to a cloud-based dashboard accessible from headquarters. The company then created digital twins of farming plots, which simulated crop behavior under different irrigation and fertilization scenarios. These insights were used to personalize farming guidance and schedule supply deliveries, reducing dependency on local extension services or agronomists [29].

DropLink used AI algorithms to optimize delivery routing in real-time, adjusting for weather, traffic congestion, and rider availability. This minimized fuel usage and maximized delivery efficiency, which was particularly critical in Nigerian cities with unpredictable road conditions. The AI also flagged anomalies in courier behavior—such as frequent delays or route deviations—triggering human review or retraining modules [30].

VidaHealth adopted predictive analytics to identify patient clusters at high risk of discontinuing care. The startup then used targeted SMS nudges and chatbot follow-ups to re-engage these users. Without needing physical outreach, VidaHealth maintained care continuity even in regions with limited medical infrastructure or high dropout rates.

These examples underscore how digital tools help startups operate with hyper-local precision while retaining centralized control. By reducing reliance on formal institutions and ground-based infrastructure, technologies like digital twins and AI become enablers of remote market intelligence, service personalization, and resource optimization.

Figure 3 illustrates how digital infrastructure substitutes for traditional institutional mechanisms, mapping technological interventions across regulatory, financial, and operational dimensions.

7. Policy and ecosystem-level considerations

7.1. Role of Local Governments and Incubators

Local governments play a paradoxical role in cross-border entrepreneurship—acting as both enablers and bottlenecks. While many startups encounter bureaucratic delays and regulatory opacity, several municipalities are becoming more proactive in promoting innovation by offering startup-friendly policies, tax incentives, and digital registration systems [24]. These localized interventions serve to mitigate broader institutional voids, albeit inconsistently across regions.

In Lagos, Nigeria, DropLink benefited from a municipal transport innovation fund that provided early-stage capital and facilitated dialogue between logistics startups and city planners. This public-private partnership enabled DropLink to test routing algorithms with real-time traffic data provided by the government, improving delivery efficiency without requiring full infrastructure control [25].

In the Philippines, EduBridge participated in a city-funded pilot program that subsidized mobile learning platforms in underserved communities. Local education departments co-financed data access for students, while regional startup hubs provided office space, mentorship, and testing access to rural schools [26]. These arrangements were crucial for reducing cost burdens and gaining early traction.

Startup incubators and accelerators also served as institutional proxies—offering regulatory literacy, ecosystem navigation, and soft advocacy. AgroNova's entry into Brazil's northern states was facilitated by a regional agritech incubator that provided land use advisory services and introduced the startup to cooperatives, thereby overcoming land documentation challenges [27].

However, the influence of local governments and incubators varied widely by geography and political will. While some cities fostered innovation zones and regulatory sandboxes, others remained inert or extractive. Inconsistent coordination between local and national policy structures often led to duplicated efforts or conflicting mandates, limiting startups' ability to scale within or across municipal boundaries.

7.2. Diaspora and International Development Organizations

The entrepreneurial ecosystems examined in this study consistently featured strong involvement from diaspora communities and international development organizations (IDOs). These actors filled critical gaps in finance, mentorship, and policy advocacy, particularly where domestic institutions were absent or underperforming [28].

Diaspora networks contributed remittance-backed seed funding, often funneled through crowdfunding platforms, angel groups, or impact investment collectives. EduBridge raised over $100,000 in its first year through a U.S.-based Filipino diaspora group, which provided both financial and strategic guidance. Diaspora actors also played roles as cultural brokers—translating business ideas for foreign markets or advocating for policy changes in home countries [29].

Transnational knowledge exchange was another major benefit. Several founders reported that diaspora members introduced them to operational best practices, tech vendors, and distribution models used in more developed ecosystems. AgroNova's soil sensor protocol was co-designed with agronomists from its founder's diaspora network in Portugal, resulting in a hybrid solution tailored to Brazilian micro-climates [30].

International development organizations, including UNDP, GIZ, and USAID, provided catalytic funding, policy dialogue platforms, and technical assistance. VidaHealth scaled its diagnostics app through a digital health partnership co-funded by a European development agency, which also facilitated introductions to the Indonesian Ministry of Health. This multi-level engagement lent the startup both credibility and implementation bandwidth [31].

However, reliance on diaspora and international actors brought risks of misalignment—such as imposing external frameworks that lacked local fit or reinforcing urban-rural divides by focusing primarily on capital cities. Startups that successfully integrated these actors without over-dependence demonstrated the highest levels of sustainability and contextual embeddedness.

7.3. Gaps in Support Infrastructure

Despite notable enablers, all startups in the study highlighted gaps in ecosystem support infrastructure that constrained their scalability. The most prominent deficiencies included inconsistent regulatory frameworks, limited access to localized market data, and absence of follow-on funding mechanisms [32].

In Kenya, MobiPay noted that while seed funding was available through competitions and accelerators, there was a lack of growth-stage capital, particularly for non-traditional startups operating in informal sectors. This funding gap made it difficult to invest in core infrastructure or expand nationally without risking overextension [33].

Startups also reported a lack of structured mentorship in emerging markets. While global accelerators offered business model support, few local institutions provided domain-specific advisory or operational coaching. Founders expressed the need for ecosystem actors who understood both local nuances and global standards.

Regulatory fragmentation—across regions, ministries, or sectors—emerged as a critical constraint. Multiple licenses, overlapping jurisdictions, and opaque compliance processes discouraged expansion, particularly in federated systems such as Brazil or Nigeria.

Table 3 below synthesizes the ecosystem gaps and support levers across different regions, highlighting the asymmetries and strengths within the institutional landscapes where startups operated.

Table 3 Summary of Ecosystem Gaps and Support Levers by Region

Region	Key Support Levers	Major Gaps
East Africa	Mobile infrastructure, diaspora finance	Growth-stage funding, regulatory transparency
Southeast Asia	Public-private pilots, international partnerships	Rural inclusion, fragmented policy enforcement
Latin America	Incubators, local universities, agri-networks	Land governance, capital accessibility in secondary cities
West Africa	Telco-based fintech infrastructure, diaspora flows	Mentor scarcity, regional license duplication

8. Toward a framework of entrepreneurial adaptability

8.1. Key Dimensions of Entrepreneurial Adaptability

This study identifies three interrelated dimensions of entrepreneurial adaptability that enable cross-border startups to succeed in institutionally constrained environments: strategic flexibility, institutional navigation, and resource recombination. These dimensions cut across geographies and sectors and are evident in both operational tactics and mindset orientation [27].

Strategic flexibility refers to the capacity to pivot in response to volatile policies, customer demands, or infrastructural breakdowns. Startups like DropLink and MedSafi adjusted their distribution models on short notice when regulatory enforcement shifted or supply chains faltered. Flexibility was operationalized through lean decision-making, decentralized management, and modular business models that allowed for iterative redesign without systemic disruption [28].

Institutional navigation involves the ability to engage with both formal and informal systems. Entrepreneurs in the study often blended legal compliance with informal negotiation—whether through partnerships with traditional authorities, tactical delays in registration, or strategic silence in regulatory grey zones. AgroNova's community liaisons and VidaHealth's alignment with NGOs exemplify this dual-channel navigation, which enhanced legitimacy while reducing friction [29].

Resource recombination is the entrepreneurial capability to reassemble existing assets—technological, human, or social—into new configurations that address institutional gaps. This includes frugal innovation, infrastructure

piggybacking, and digital enablement. MobiPay, for example, fused mobile infrastructure with agent networks and transaction analytics to deliver trust-based financial services where conventional banking was absent [30].

Together, these dimensions form a practical lens through which adaptability can be understood, benchmarked, and taught. Unlike static competencies, these are dynamic, iterative, and contextually shaped by institutional volatility and entrepreneurial learning cycles. Recognizing them as key enablers allows for more effective ecosystem design and founder support strategies.

8.2. A Proposed Model for Adaptive Cross-Border Startups

Drawing from the cross-case analysis, we propose a three-layered model for adaptive cross-border entrepreneurship in institutionally weak environments. This model incorporates foundational conditions, adaptive behaviors, and institutional leverage mechanisms as core components.

At the base layer are foundational conditions, such as founder mindset, prior exposure to complexity, and digital literacy. Entrepreneurs with experience in dynamic or resource-poor environments were more likely to tolerate ambiguity and iterate quickly. For instance, founders with migrant backgrounds or prior work in informal economies displayed higher comfort levels with incomplete rule sets and uncertain feedback loops [31].

The middle layer includes adaptive behaviors—the day-to-day practices that enable navigation, learning, and recalibration. These behaviors include scenario mapping, parallel experimentation, multi-stakeholder engagement, and use of alternative data for decision-making. In MedSafi's case, dual import channels allowed for real-time adjustments, while in EduBridge's experience, WhatsApp-based micro-pilots allowed fast product-market fit tests without regulatory exposure [32].

The top layer represents institutional leverage mechanisms—tactics used to turn voids into entry points. These include reputational arbitrage (using foreign validation to gain local legitimacy), informal ecosystem mapping, and multi-channel governance engagement. VidaHealth's relationships with development agencies and AgroNova's hybrid knowledge networks illustrate how startups transform institutional constraints into strategic footholds [33].

This model reflects fluid boundary management, where startups are not rigidly embedded in either formal or informal spheres but operate across them to co-create value. It also emphasizes that adaptability is not reactive improvisation but a patterned response system based on sensing, interpreting, and aligning with complex institutional signals.

8.3. Implications for Practice and Future Research

The findings offer several practical implications. For entrepreneurs, the study reinforces the importance of building capabilities beyond product innovation—particularly in institutional learning, partnership design, and scenario-based strategy development. Training programs should incorporate institutional complexity as a core module, using case-based simulations to build reflexes for ambiguity tolerance and adaptive reasoning [34].

For ecosystem builders and policymakers, the study highlights the need to develop meso-level supports—such as regulatory navigation services, diaspora accelerators, and frugal innovation labs—that align with the lived realities of entrepreneurs in high-void environments. Blanket reforms or top-down programs risk bypassing the micro-strategies that enable entrepreneurial survival and success [51].

Future research should extend this inquiry by quantifying the relationship between adaptability dimensions and firm performance across longitudinal datasets. Comparative studies could further examine how adaptability manifests differently based on founder identity, sector, or digital readiness. Importantly, researchers should explore the trade-offs of adaptability—such as burnout, mission drift, or entrenchment in informal systems—often overlooked in celebratory narratives of resilience [36].

Ultimately, this work contributes a grounded, empirically tested model that reframes entrepreneurship under constraint not as deviation from the norm but as a distinct logic of action, worthy of institutional recognition and academic theorization.

9. Conclusion

9.1. Summary of Findings

This study examined how cross-border startups operating in institutionally constrained environments navigate challenges through strategic adaptability. Drawing from six case studies across Africa, Southeast Asia, and Latin America, the research found that successful entrepreneurs do not merely survive institutional voids—they actively reinterpret and leverage them through creative, context-specific strategies.

The findings reveal three dominant themes: first, entrepreneurs deploy hybrid regulatory strategies that combine formal compliance with informal negotiation, enabling them to function within ambiguous or overlapping governance systems. Second, in the absence of enforceable contracts or reliable intermediaries, trust-based mechanisms such as community liaisons, reputation systems, and social capital networks serve as functional substitutes. Third, startups invest in digital tools—ranging from mobile platforms to blockchain and predictive analytics—to bypass infrastructural, financial, and logistical bottlenecks.

In addition to these behavioral insights, the study identifies three core dimensions of adaptability: strategic flexibility, institutional navigation, and resource recombination. These capabilities are not one-off tactics but sustained competencies that evolve over time and are shaped by the founder's background, learning processes, and ecosystem dynamics.

Startups that succeeded demonstrated an ability to reconfigure business models in real time, engage fluidly with informal actors, and extract value from underutilized assets. Together, these adaptive behaviors formed a coherent operational logic that allowed entrepreneurs to scale despite limited institutional support, weak enforcement mechanisms, and fragmented infrastructure.

9.2. Theoretical and Practical Contributions

Theoretically, this study contributes to the literature on entrepreneurship in emerging markets by shifting focus from the absence of institutions to the presence of adaptability. Rather than treating institutional voids solely as constraints, it conceptualizes them as dynamic arenas where strategic action can emerge. By introducing a multi-layered framework that includes foundational conditions, adaptive behaviors, and institutional leverage mechanisms, the research offers a new vocabulary for understanding entrepreneurial action in weak-rule environments.

Practically, the study provides actionable insights for startup founders, investors, and ecosystem builders. It emphasizes the importance of non-market strategies, such as trust cultivation, social legitimacy building, and informal governance engagement, as equally critical to growth as product development or marketing. Moreover, it offers a diagnostic lens that entrepreneurs can use to assess their readiness for operating in complex environments.

For policymakers and incubators, the findings underscore the need to support hybrid navigation capabilities, enable localized advisory services, and design programs that acknowledge rather than bypass the informal economies and fragmented institutions in which many startups operate.

9.3. Limitations and Avenues for Future Research

While this study provides rich, context-specific insights, it is not without limitations. The case study approach, while offering depth and nuance, limits generalizability. The selected startups, though diverse in region and sector, may not fully capture the experiences of entrepreneurs in highly repressive political systems, conflict zones, or ultra-rural settings. Additionally, most founders had at least moderate digital literacy and access to transnational networks, which may not be the case for all cross-border entrepreneurs.

Future research could expand on this work by incorporating longitudinal studies that track startups over time, examining how adaptability evolves through growth stages, leadership transitions, or ecosystem maturation. Quantitative studies could also test the proposed adaptability model across larger datasets, allowing for correlation with funding outcomes, market performance, or exit trajectories.

Another promising avenue involves investigating the psychological toll of persistent adaptability—whether constant institutional negotiation leads to fatigue, burnout, or ethical compromise. Finally, comparative studies between domestic and foreign entrepreneurs in the same constrained environments could offer further insights into the role of outsider status in shaping adaptive capacity.

Overall, this study opens new lines of inquiry and offers a practical, grounded perspective on entrepreneurship in the face of institutional complexity.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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