

Startup Scalability in Constrained Ecosystems: Evidence from Algerian Scale-Up Archetypes

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Received: 14/05/2026

Accepted: 11/06/2026

Published: 30/06/2026

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Citation:

Keddari, N., Boughaleb, S. el A., Benkhider, N., Berrached Berbar, W., Kherbachi, S., & Abedou, A. (2026). Startup Scalability in Constrained Ecosystems: Evidence from Algerian Scale-Up Archetypes. *Dirassat Journal Economic Issue*, 17(2), 83-96. <https://doi.org/10.34118/djei.v17i2.4668>



Abstract

This study examines how Algerian startups configure and adapt their scaling strategies within a constrained entrepreneurial ecosystem. It addresses the extent to which scalability is constrained by institutional, financial, and infrastructural limitations in an emerging-economy context. Using a qualitative abductive design, the research combines interviews, documentary analysis, and digital trace data from 17 startups across multiple sectors. The analysis draws on Piaskowska's scale-up archetypes and Jansen's scalability dimensions to interpret heterogeneous growth trajectories. Findings identify four scaling archetypes: Network Growers, Organic Innovators, Focused Scalars, and Constricted Scalars. Results show that scalability is driven less by growth ambition than by adaptive strategies shaped by ecosystem constraints. Sequential scaling, trust-building, and hybrid revenue models emerge as key enablers of growth. The study extends existing scalability frameworks to a constrained, emerging-economy setting by highlighting the importance of context-sensitive, rather than universal, scaling models.

Keywords: Startup scalability; entrepreneurial ecosystems; Algeria; scaling strategies; emerging economies

JEL classification codes : L26 ; O31 ; O55 ; R11

قابلية التوسع في الشركات الناشئة داخل النظم البيئية المقيدة: أدلة مستخلصة من أنماط التوسع في السياق الجزائري

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استلم في: 2026/05/14

قبل في: 2026/06/11

نشر في: 2026/06/30

الملخص:

تبحث هذه الدراسة في كيفية تكيف الشركات الناشئة الجزائرية مع استراتيجيات التوسع داخل منظومة ريادية مقيدة مؤسسيًا وماليًا وبنويًا. واعتمدت الدراسة على منهج نوعي استنباطي شمل مقابلات وتحليل وثائق وبيانات رقمية لـ 17 شركة ناشئة من قطاعات مختلفة. واستند التحليل إلى أنماط التوسع لدى Piaskowska وأبعاد قابلية التوسع لدى Jansen لفهم مسارات النمو المختلفة. أظهرت النتائج أربعة أنماط رئيسية للتوسع: الشركات المعتمدة على الشبكات، والمبتكرون العضويين، والمتوسعون المتخصصون، والمتوسعون المقيدون. كما بينت الدراسة أن قابلية التوسع ترتبط أساسًا بالاستراتيجيات التكيفية أكثر من ارتباطها بطموح النمو. وبرز التوسع التدريجي، وبناء الثقة، ونماذج الإيرادات الهجينة كعوامل رئيسية داعمة للنمو. وتؤكد الدراسة أهمية اعتماد نماذج توسع حساسة للسياق المحلي بدلاً من النماذج العالمية الموحدة، بما يعزز فهم قابلية التوسع في الاقتصادات الناشئة.

الكلمات المفتاحية: قابلية التوسع؛ منظومة ريادة الأعمال؛ الجزائر؛ استراتيجيات التوسع؛ الاقتصادات الناشئة

تصنيف JEL: R1؛ O55؛ O31؛ L26

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كيفية الإحالة:

Keddari, N., Boughaleb, S. el A., Benkhider, N., Berrached Berbar, W., Kherbachi, S., & Abedou, A. (2026). Startup Scalability in Constrained Ecosystems: Evidence from Algerian Scale-Up Archetypes. *Dirassat Journal Economic Issue*, 17(2), 83-96. <https://doi.org/10.34118/djei.v17i2.4668>



Introduction

Startups are increasingly recognized as key drivers of innovation, digital transformation, and economic diversification, particularly in emerging economies seeking to reduce dependence on traditional sectors. In this context, scalability has become a central concern for entrepreneurs, policymakers, and researchers, as the long-term impact of startups depends not only on their creation but also on their ability to sustain and expand their activities over time (Audretsch & Belitski, 2021). Scalability generally refers to a firm's capacity to grow efficiently by increasing revenues, market reach, and value creation without proportionally increasing operational costs (Xiao, 2025).

While the literature on startup growth and scaling has expanded considerably, most existing studies are largely grounded in developed entrepreneurial ecosystems characterized by mature financial markets, advanced digital infrastructures, and strong institutional support. Consequently, dominant scaling models often emphasize rapid expansion and venture capital financing (Benlefkı, Bouchetara, & Saba, 2024). However, these assumptions may not adequately reflect the realities of startups operating in constrained ecosystems marked by institutional fragility, regulatory complexity, limited financing opportunities, and infrastructural gaps (Crick, Crick, & Chaudhry, 2023).

The Algerian entrepreneurial ecosystem offers a particularly relevant context for exploring these dynamics. In recent years, Algeria has undertaken significant initiatives to promote innovation and startup development as part of its broader economic diversification strategy. Despite these efforts, startups continue to face significant structural constraints in access to capital, administrative procedures, digital infrastructure, and market maturity (Bertucci Ramos & Pedroso, 2022). These conditions raise important questions about how startups adapt their scaling strategies to survive and grow in a constrained environment.

Existing research on entrepreneurship in Algeria has primarily focused on ecosystem development, innovation policies, or

entrepreneurial intentions (Souiki, 2023; Boughaleb, et al., 2025), while paying limited attention to the concrete mechanisms and configurations through which startups scale their activities. Moreover, the literature rarely examines how scaling trajectories differ across business models, technological orientations, and institutional conditions in emerging ecosystems. This constitutes an important research gap, as scalability does not follow universal patterns across contexts.

Building on recent work by Boughaleb et al. (2025), which emphasizes the adaptive and context-sensitive nature of startup scalability in constrained environments, this study seeks to deepen the understanding of scaling processes in the Algerian startup ecosystem. The paper adopts a multidimensional perspective by combining scale-up archetypes with strategic dimensions of scalability in order to analyze how startups configure their growth trajectories under ecosystem constraints. Accordingly, the study addresses the following research question: *How do Algerian startups configure and adapt their scaling strategies within a constrained entrepreneurial ecosystem?*

To answer this question, the study explores the different scaling archetypes adopted by Algerian startups, the strategic dimensions that structure their growth trajectories, and the major constraints that influence scalability processes.

The study is based on the postulate that startup scalability in constrained ecosystems is not determined solely by growth ambition or technological capability, but by firms' ability to strategically adapt to institutional, financial, and infrastructural limitations. From this perspective, scalability is understood as a multidimensional, context-dependent process shaped by the interaction between internal organizational capabilities and external ecosystem conditions.

This research contributes to the literature in three main ways. First, it enriches scalability research by providing empirical evidence from an underexplored emerging ecosystem. Second, it extends existing scalability frameworks by demonstrating how scaling archetypes and strategic dimensions interact under constraints.

Third, it highlights the central role of adaptation, trust-building, and sequential growth strategies in sustaining entrepreneurial expansion in emerging economies.

Overall, the paper contributes to a more nuanced understanding of startup scalability by moving beyond universal growth assumptions and emphasizing the contextual realities shaping entrepreneurial development in constrained ecosystems.

The structure of this paper is as follows. The first section reviews the literature on startup scalability and emerging ecosystem constraints, highlighting theoretical frameworks and existing gaps. The second section presents the methodological design, including data collection, sampling strategy, and analytical procedures. The third section reports the empirical results, focusing on scaling archetypes, strategic dimensions, and key constraints. The final section discusses the findings in relation to existing literature and concludes with theoretical and practical implications.

Literature Review

Startup scalability has emerged as a central concept in entrepreneurship and innovation research (Gressler Teixeira, Moura, Marconatto, & Fischmann, 2021; Ghezzi & Cavallo, 2020; Stampfl, Prügl, & Osterloh, 2013), particularly in emerging economies where firms operate under institutional and resource constraints. Scalability generally refers to a startup's ability to expand its operations, customer base, and capacity to create value without proportionally increasing costs. Existing studies argue that scalable startups are characterized by replicable business models, technological leverage, adaptive capabilities, and supportive ecosystems (Xiao, 2025).

Research on scalability further emphasizes that growth trajectories are not uniform but depend on organizational resources, ecosystem maturity, and institutional conditions (Hanifzadeh, Talebi, & Jafari-Sadeghi, 2024). In emerging economies, startups frequently encounter structural barriers such as limited access to financing, regulatory complexity, infrastructural deficiencies, and shortages of

qualified talent, all of which shape scaling trajectories (Audretsch & Belitski, 2021; Lee & Kim, 2024). In the Algerian context, previous studies underline the persistence of ecosystem fragmentation and institutional limitations despite increasing governmental support for entrepreneurship and digital innovation (Coviello, Autio, Nambisan, Patzelt, & Thomas, 2024).

Several theoretical frameworks have attempted to conceptualize startup scaling processes. Piaskowska's scale-up modes highlight the diversity of growth configurations according to how firms mobilize innovation, networks, and organizational resources. Similarly, Jansen's scalability dimensions framework conceptualizes scaling as an interconnected set of dimensions: scope, mode, dynamics, value capture, and unit locus (Piaskowska, Tippmann, & Monaghan, 2021; Picken, 2017). These approaches suggest that scalability is multidimensional and strongly influenced by the interaction between internal capabilities and external ecosystem conditions.

The literature also identifies digital and platform-based business models as highly scalable because they benefit from network effects and low marginal expansion costs (Dorantes Gonzalez, 2017). At the same time, innovation-driven startups often experience slower, more gradual growth because continuous R&D requires sustained investment and specialized expertise. Consequently, startups operating in constrained ecosystems tend to adopt adaptive and sequential scaling strategies rather than rapid "blitzscaling" models commonly associated with mature entrepreneurial ecosystems (Crick, Crick, & Chaudhry, 2023).

The Algerian entrepreneurial ecosystem provides a particularly relevant setting for examining these dynamics. Algeria has increasingly promoted startups as instruments of economic diversification and technological modernization. However, studies indicate that entrepreneurial development remains constrained by regulatory rigidities, financing difficulties, weak innovation support systems, and limited market maturity (Souiki, 2023).

The study by Boughaleb et al. (2025) reinforces this perspective by showing that scalability in emerging ecosystems should be understood as a context-sensitive and adaptive process. Their findings demonstrate that startups in constrained environments rely on hybrid growth strategies, trust-building mechanisms, and gradual scaling pathways to navigate institutional uncertainty and resource scarcity. The authors further argue that scalability is not determined solely by growth speed but by startups' capacity to strategically adapt to the ecosystem's limitations.

Overall, the literature suggests that startup scalability in emerging economies cannot be fully explained through traditional growth models developed in mature ecosystems. Instead, scalability appears as a multidimensional, adaptive, and ecosystem-embedded process shaped by institutional realities, market conditions, and organizational resilience. This perspective provides the conceptual foundation for analyzing the scaling trajectories of Algerian startups.

Research Methodology

Research Design

This study adopted a qualitative and abductive research design to explore how Algerian startups develop and implement scaling strategies within a constrained entrepreneurial ecosystem. The methodological approach combined semi-structured interviews, documentary analysis, and theory-driven coding to generate a multidimensional understanding of startup scalability. The research design was informed by prior exploratory work on Algerian startups and grounded in the scalability frameworks developed by Piaskowska et al. and Jansen et al.

The methodological strategy unfolded in two complementary phases. First, startups were classified according to the four scale-up archetypes proposed by Piaskowska et al. (Piaskowska, Tippmann, & Monaghan, 2021): Network Growers, Organic Innovators, Focused Scalars, and Constricted Scalars. Second, the strategic dimensions of scalability were

examined using Jansen et al.'s five-dimensional framework (Picken, 2017), which includes scope, mode, unit locus, dynamics, and value capture. This dual analytical lens enabled both typological classification and multidimensional interpretation of scaling trajectories.

Research Context

The study was conducted within the Algerian entrepreneurial ecosystem, a context characterized by institutional fragmentation, limited venture capital availability, infrastructural gaps, and evolving regulatory frameworks for startups. Algeria represents a constrained entrepreneurial environment where scaling processes differ significantly from the rapid-growth models commonly associated with developed ecosystems. In this context, startups frequently rely on adaptive growth mechanisms, informal networks, and sequential scaling strategies to navigate uncertainty.

Sampling Strategy and Participant Selection

A purposive sampling strategy was employed to identify startups actively engaged in scaling activities. Purposive sampling was selected because it enables the recruitment of information-rich participants who can provide detailed insights into complex entrepreneurial processes.

The final sample consisted of 17 startup founders operating across multiple sectors, including fintech, artificial intelligence, cybersecurity, agritech, logistics, human resource technologies, e-commerce, and digital platforms. Sectoral diversity was intentionally sought to capture heterogeneous scaling trajectories and strategic configurations.

Participants were recruited during three entrepreneurship and innovation events organized in Algeria between 2024 and 2025: ACF-Expo Annaba, Algeria Fintech & E-commerce Summit, and African Startups Conference.

These events provided direct access to founders actively involved in growth-oriented

entrepreneurial initiatives and facilitated the identification of startups experiencing different stages of scalability. The inclusion criteria required participants to:

- Hold a founder or co-founder role;
- Operate an active startup venture;
- Demonstrate engagement in scaling-related activities such as market expansion, technological development, strategic partnerships, or platform growth.

Data Collection Procedures

Semi-Structured Interviews

Primary data were collected through semi-structured, non-directive interviews with startup founders. This interview format was selected to encourage open discussion while ensuring coverage of key scalability themes. Interviews lasted approximately 15 minutes on average and explored several thematic areas, including:

- Startup growth strategies;
- Perceived scalability enablers;
- Financial and institutional constraints;
- Market expansion objectives;
- Innovation and technological adaptation;
- Revenue generation mechanisms;
- Strategic partnerships and operational challenges.

The interviews were conducted primarily in Algerian dialectal Arabic mixed with French, reflecting the linguistic realities of the entrepreneurial ecosystem. Audio recordings were obtained with participant consent to ensure transcription accuracy and analytical reliability.

Documentary and Digital Trace Analysis

To strengthen triangulation and contextual interpretation, the study incorporated documentary analysis by examining startups' digital footprints. Publicly available online materials were analyzed, including: Official startup websites, LinkedIn pages, Facebook pages, and Promotional and institutional content. The documentary analysis focused on three analytical dimensions:

- Growth indicators: evidence of scaling activities such as partnerships, product diversification, international outreach, funding announcements, or customer expansion;
- Customer engagement strategies: branding efforts, community engagement, digital communication patterns, and trust-building mechanisms;
- Operational consistency: alignment between interview narratives and digital representations to identify convergences or discrepancies.

This complementary data source enhanced methodological rigor by enabling cross-validation between founder discourse and observable organizational practices.

Transcription and Data Preparation

Interview recordings were transcribed into French to preserve linguistic nuance while facilitating systematic qualitative analysis. Because interviews involved multilingual exchanges combining Arabic and French, transcription required contextual interpretation rather than literal translation. The transcription protocol emphasized:

- Fidelity to participant meaning;
- Preservation of contextual nuance;
- Identification of hesitations and conversational dynamics;
- Separation of speakers;
- Maintenance of technical startup terminology.

Data Analysis

Abductive Analytical Strategy

The analysis followed an abductive strategy integrating empirical coding with theoretical interpretation. Data analysis proceeded iteratively through several stages, allowing emerging themes to be continuously compared with existing scalability frameworks.

In the first analytical phase, startups were classified according to Piaskowska et al.'s scale-up modes framework. Each startup was coded based on dominant scaling characteristics, including:

- Growth logic;
- Resource configuration;
- Innovation intensity;
- Network dependency;
- Market specialization;
- Structural constraints.

This stage produced four principal scaling archetypes:

- Network Growers;
- Organic Innovators;
- Focused Scalers;
- Constricted Scalers.

Comparative coding enabled the identification of similarities and divergences among startup trajectories while preserving contextual specificity.

The second analytical phase examined scaling strategies through Jansen et al.'s five strategic dimensions of scalability:

- Scope scaling;
- Mode scaling;
- Unit locus scaling;
- Dynamics scaling;
- Value capture scaling.

Each interview transcript and documentary source was coded according to these dimensions. Axial coding techniques were employed to identify relationships between categories and uncover recurring strategic patterns across cases.

Triangulation Procedures

Data Triangulation

Methodological triangulation was achieved through the integration of: interview data,

documentary analysis, digital trace analysis, and computational text mining. This combination reduced reliance on a single data source and improved interpretive validity.

Theoretical Triangulation

The use of two complementary theoretical frameworks, Piaskowska's scale-up modes and Jansen's scalability dimensions, strengthened conceptual robustness by enabling multiple interpretive perspectives on the same empirical material.

Results and Discussion

Analytical Approach

Data were analyzed using an abductive approach, iteratively linking empirical insights with established scalability frameworks. Interview data were first coded according to scale-up archetypes and subsequently examined across key strategic dimensions of scalability. This dual-layered analysis enabled the identification of dominant scaling configurations while preserving sensitivity to the contextual constraints that shape entrepreneurial decision-making.

Scaling Archetypes in Algerian Startups

The analysis reveals four distinct scaling archetypes, reflecting heterogeneous growth logics shaped by both strategic intent and ecosystem constraints, as presented in Table 1.

Table N°1

Consolidated results from Piaskowska's scale-up modes analysis

Startup Name	Assigned Scale-Up Mode	Justification for Classification
Shabakett	Network Growers	Pharmacy inventory exchange platform leveraging network effects through user participation.
Yinvesti	Network Growers	Investor-entrepreneur matching platform scaling through intermediary network value
Spotlight	Network Growers	The content creator-brand connection platform is growing as a result of the digital marketing ecosystem.
Guidini	Network Growers	Event management platform scaling via venue-organizer-attendee network synergies

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Q-Vision	Organic Innovators	AI video analytics requires continuous R&D in edge computing architecture
Cybeats	Organic Innovators	Cybersecurity service evolution through adaptive threat intelligence development
BK Fire	Organic Innovators	Fire safety equipment innovation through sustained R&D investments
Qareeb	Organic Innovators	AI vision systems development demands ongoing technical upgrades
G-rest	Organic Innovators	Agri-tech IoT solutions requiring sensor technology iterations
Ecomanager	Focused Scalers	Specialized e-commerce optimization tools for delivery logistics
Pointili	Focused Scalers	HR digitization concentrated on geolocation-based workforce management
Alpay	Focused Scalers	Payment processing niche focusing on Algerian merchant verification
Moustachir	Focused Scalers	Business development services targeting entrepreneurial support ecosystems
Smart-CheckId	Focused Scalers	Compliance-focused digital identity verification solutions
Dalti Solutions	Constricted Scalers	Transport app constrained by fragmented infrastructure integration costs
Think Touch Solution	Constricted Scalers	Custom enterprise software is limited by client-specific development economics.
3S Pay	Constricted Scalers	Regulatory approvals and gaps in financial infrastructure hinder the adoption of digital payments.

Source: adapted from Piaskowska et al., 2021, based on empirical evidence from Algerian startups.

Network Growers emerge as the most prominent high-scaling configuration. These startups leverage platform-based models and network effects to accelerate user acquisition and value creation. Their scalability is driven by digitization and low marginal costs, enabling rapid expansion once critical mass is achieved. For instance, digital platforms that facilitate transactions or interactions among user groups exhibit self-reinforcing growth dynamics, in which increased participation enhances the platform's value.

Organic Innovators follow a technology-driven scaling trajectory grounded in continuous R&D and iterative product development. While highly innovative, their growth remains comparatively gradual due to resource intensity and the need for ongoing technical refinement. These firms prioritize technological robustness and adaptability, often tailoring solutions to infrastructural constraints, which positions them for long-term competitiveness rather than rapid expansion.

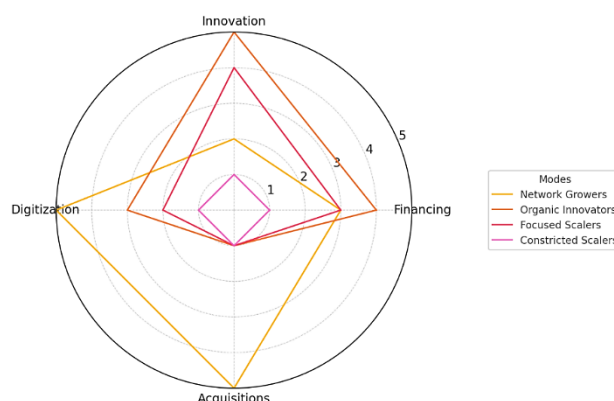
Focused Scalers adopt a niche-oriented strategy, targeting specific market segments with specialized solutions. Their growth is driven by precision and domain expertise rather than by breadth of scale. By focusing on clearly defined customer needs, these startups achieve efficient market penetration, although their scalability is constrained by segment size and competitive pressures.

Constricted Scalers reflect firms operating under significant structural constraints, including limited access to capital, fragmented markets, and infrastructural gaps. Their growth is incremental and adaptive, shaped more by external limitations than strategic choice. Rather than pursuing aggressive expansion, these startups prioritize survival and gradual development.

To further examine scalability patterns across business models, a radar chart, illustrated in Figure 1, compares four modes, Network Growers, Organic Innovators, Focused Scalers, and Constricted Scalers, across key dimensions: innovation, financing, acquisitions, and

digitization. This analysis highlights how capacity and identifies the most effective levers differing strategic emphases influence scaling for each growth archetype.

Figure N° 1
Radar Mapping of Scaling Archetypes in Algerian Startups



Source: Authors’ elaboration based on empirical findings and qualitative analysis.

Across these archetypes, scalability emerges as a heterogeneous and context-dependent process, shaped not only by business model design but by the interaction between firm capabilities and ecosystem conditions. Algerian startups adopt diverse scaling strategies, driven by their technological strengths and market positioning, with network effects and niche specialization serving as key growth levers. However, structural constraints, ranging from regulatory bottlenecks to limited market

readiness, significantly shape these trajectories, requiring startups to continually adapt their strategies to navigate a constrained environment.

Strategic Dimensions of Scaling

To further unpack these patterns, scaling strategies were analyzed across five interrelated dimensions: scope, mode, unit locus, dynamics, and value capture, as shown in Table 2. Rather than operating independently, these dimensions combine to form coherent scaling configurations.

Table N°2
Consolidated results from Jansen’s scalability dimensions analysis

Startup Name	Scope	Mode	Unit Locus	Dynamics	Value Capture
Shabakett	Domestic network expansion	Platform adoption	Full business model	Gradual market readiness pacing	Network effect monetization
Yinvesti	Domestic validation	Organic + partnerships	Full business model	Steady intermediary growth	Transaction fees
Spotlight	Pan-African digital	Platform partnerships	Full business model	Creator ecosystem cultivation	Premium analytics + fees
Guidini	National event clusters	Cross-promotion networks	Platform infrastructure	Seasonal demand adaptation	Commission + sponsorship revenue
Q-Vision	International tech clients	R&D reinvestment	Edge computing systems	Tech upgrade cycles	Custom AI contracts
Cybear	Global cybersecurity	Service evolution	Threat modules	Rapid threat response scaling	Custom solutions
BK Fire	MENA/USA expansion	Self-funded R&D	Full business model	Equipment innovation pace	Premium safety tech

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Qareeb	International contracts	Continuous R&D	Vision systems	Client-driven upgrades	Licensing fees
G-rest	Agricultural corridors	Farm collaborations	Sensor networks	Crop cycle alignment	IoT subscriptions + data
Ecomanager	Domestic base + International vision	Organic + partnerships	Logistics components	Market-paced expansion	SaaS subscriptions
Pointili	Domestic HR focus	Specialized solutions	Time tracking	Gradual adoption	Geolocation-based pricing
Alpay	Regulatory-dependent	Verification focus	Payment gateways	Profitability-constrained	Transaction percentages
Moustachir	Expertise export	Strategic alliances	HR components	Phased service growth	Consulting + subscriptions
Smart-CheckId	Compliance markets	Govt partnerships	Verification modules	Regulation-driven	Per-check licensing
Dalti Solutions	Fragmented transport	Limited partnerships	Integration components	Slow infrastructure scaling	Flexible pricing
Think Touch Solution	Enterprise verticals	Custom development	Project-specific	Client-dependent	Milestone payments
3S Pay	Domestic fintech	Regulatory compliance	Payment APIs	Infrastructure-dependent	Transaction fees

Source: Adapted from Picken, 2017, based on empirical evidence from Algerian startups.

Scope: Local Anchoring with Global Orientation. A dual-scope strategy dominates. Startups initially prioritize consolidating their presence in the domestic market, leveraging contextual knowledge and regulatory familiarity to establish early traction. At the same time, many articulate clear international ambitions, either through client acquisition or strategic positioning. This reflects a pragmatic sequencing of scaling efforts, where local validation precedes broader expansion.

Mode: Sequential Growth Pathways. Organic growth represents the prevailing scaling mode, driven largely by constrained access to external financing and a preference for maintaining control. However, this is not static. Many startups adopt a sequential approach, beginning with self-financed growth before gradually incorporating partnerships or external investment to accelerate expansion. This staged transition highlights the formation of adaptive strategies under resource constraints.

Unit Locus: From Component to Model Scaling. Scaling efforts typically begin at the component level, with startups refining core technologies or services through iterative

development. As capabilities mature, firms transition toward scaling the broader business model. This phased progression reflects a risk-mitigating strategy in which product viability is established before operational replication.

Dynamics: Incremental and Adaptive Growth. Scaling dynamics are predominantly gradual rather than exponential. Growth trajectories are shaped by market absorption capacity and ecosystem maturity, requiring continuous adjustment. This measured approach enables startups to align expansion with evolving demand conditions while minimizing operational risk.

Value Capture: Hybrid and Trust-Centered Models. Revenue models are diverse but converge on subscription-based and hybrid approaches that combine recurring and transactional income streams. A notable feature is the integration of trust-building mechanisms into value propositions, particularly in sectors characterized by institutional uncertainty. Verification processes, credibility signals, and user assurance mechanisms are central to sustaining customer engagement and enabling scalable monetization.

Cross-Cutting Scaling Patterns

Beyond individual dimensions, three cross-cutting patterns define the scalability logic of Algerian startups.

First, sequential scaling emerges as a dominant strategy. Rather than pursuing rapid expansion, startups prioritize staged growth, moving from validation to gradual scaling. This reflects a rational adaptation to uncertainty and resource constraints.

Second, trust as a scaling enabler plays a critical role. In the absence of strong institutional support, startups internalize trust-building

functions, embedding them within their products and processes. This compensates for systemic deficiencies and facilitates user adoption.

Third, constraint-driven adaptation shapes strategic choices. Scaling strategies are continuously adjusted in response to regulatory, financial, and infrastructural limitations, highlighting the co-evolution of firms and their environments.

Scalability Challenges

The analysis identifies five primary categories of constraints that shape scaling trajectories (Table 3).

**Table N°3
Integrated challenge matrix**

Challenge Category	Most Affected Startups	Operational Impact
Regulatory Hurdles	Alpay, 3S Pay, Smart-CheckId	Delayed market entry (Avg 14-month approval timelines for fintech)
Market Immaturity	Ecomanager, G-rest, Guidini	Reduced TAM potential (40% below projected SaaS adoption rates)
Capital Intensity	Think Touch, Cybears, Qareeb	Extended breakeven periods (Median 3.2 years vs 1.8 global avg)
Technical Talent	Q-Vision, Cybears, BK Fire	68% report difficulty hiring specialists (ex., AI/ML)
Infrastructure Gaps	Dalti, Qareeb, G-rest	55% higher integration costs vs developed markets

Source: Authors' elaboration based on empirical findings and qualitative analysis.

Regulatory barriers significantly delay market entry, particularly in highly regulated sectors such as fintech. Compliance requirements and approval processes impose time and resource costs, slowing expansion.

Market immaturity limits adoption rates, particularly for technology-intensive solutions. Startups often must invest in market education before scaling, which extends the time required to achieve traction.

Financial constraints restrict access to growth capital, reinforcing reliance on self-financing and constraining expansion speed. This contributes to the prevalence of organic growth strategies.

Talent shortages hinder the development of advanced technological solutions, particularly in specialized fields such as artificial intelligence and cybersecurity.

Infrastructure gaps increase operational complexity and costs, requiring startups to adapt products and deployment models to local conditions.

These constraints do not merely limit growth; they actively shape the form and sequence of scaling strategies, reinforcing the prevalence of incremental and adaptive approaches.

Taken together, the results reveal that scalability in the Algerian context is a multidimensional and context-contingent process. Startups do not follow uniform growth trajectories; instead, they adopt differentiated strategies aligned with both their internal capabilities and external constraints.

While network-based models exhibit the highest scaling potential, their success remains

contingent on trust-building and market readiness. Innovation-driven and niche-focused strategies provide viable alternatives but operate within narrower scaling boundaries. Across all configurations, growth is characterized by sequencing, adaptation, and alignment with ecosystem conditions.

The findings show that scalability in Algerian startups is a context-dependent and adaptive process shaped by both internal capabilities and ecosystem constraints. The four identified archetypes, Network Growers, Organic Innovators, Focused Scalers, and Constricted Scalers, reflect different growth logics influenced by market conditions, technological orientation, and institutional limitations.

Network Growers demonstrate the strongest scaling potential through digital platforms and network effects, although their expansion depends heavily on trust-building and market readiness. Organic Innovators rely on continuous R&D and gradual technological development, while Focused Scalers achieve growth through niche specialization. In contrast, Constricted Scalers illustrate how regulatory, financial, and infrastructural barriers can limit opportunities for expansion.

The results also highlight the predominance of sequential and incremental scaling strategies. Most startups prioritize domestic validation before broader expansion and rely mainly on organic growth and partnerships due to limited access to external financing. Trust emerges as a central scaling mechanism, particularly in environments characterized by institutional uncertainty.

Overall, the study suggests that scalability in constrained ecosystems is not defined by rapid growth alone, but by startups' ability to adapt strategically to ecosystem realities while building sustainable, resilient growth pathways.

Conclusion

This study set out to examine how Algerian startups configure and adapt their scaling strategies within a constrained entrepreneurial ecosystem. Reframed, the central question

addressed how scalability unfolds when startups operate under conditions of institutional fragility, limited financing, and infrastructural constraints, rather than within mature and resource-rich environments.

The findings demonstrate that startup scalability in Algeria is not a linear or uniform process but a multidimensional and adaptive phenomenon. Four scaling archetypes were identified, Network Growers, Organic Innovators, Focused Scalers, and Constricted Scalers, each reflecting distinct growth logics shaped by ecosystem conditions and internal capabilities. Across these configurations, scaling is predominantly sequential, with startups prioritizing validation, gradual expansion, and strategic adaptation rather than rapid growth. Trust-building mechanisms, hybrid revenue models, and platform-based dynamics further emerge as critical enablers of scalability in constrained environments.

The significance of these findings lies in their contribution to a more context-sensitive understanding of scalability. Rather than relying on universal growth models derived from developed ecosystems, this study demonstrates that scaling is fundamentally shaped by the interaction between organizational strategies and external institutional realities. In this sense, the results extend existing theoretical frameworks by showing that adaptation, sequencing, and ecosystem alignment are not secondary considerations but central determinants of startup scalability in emerging economies. This provides valuable insights for entrepreneurs seeking to design realistic growth strategies and for policymakers aiming to strengthen ecosystem conditions that support sustainable startup development.

Despite these contributions, the study has certain limitations. The relatively small sample size of 17 startups may limit generalizability, even though the qualitative design was

appropriate for in-depth exploration. Additionally, the focus on Algeria provides rich contextual insights but may not fully capture variations across other emerging economies with different institutional configurations. Future research could address these limitations by adopting comparative cross-country designs, longitudinal studies of scaling trajectories, or mixed-methods approaches that integrate quantitative performance indicators with qualitative insights.

Ultimately, this study underscores that startup scalability in constrained ecosystems is not defined by speed alone, but by the capacity to strategically navigate limitations while progressively building sustainable growth pathways. This calls for a rethinking of dominant scaling paradigms and a stronger emphasis on context, adaptation, and resilience as foundational elements of entrepreneurial success.

References:

Audretsch, D. B., & Belitski, M. (2021). Entrepreneurial ecosystems in cities: The role of institutions. *Small Business Economics*, *56*(3), 1-22. doi:DOI: 10.1371/journal.pone.0247609

Benlefkki, S., Bouchetara, M., & Saba, A. (2024). Financing practices of labeled start-ups. *Financial Markets, Institutions and Risks*, *8*(2), 119-140. doi:https://doi.org/10.61093/fmir.8(2).119-140.2024

Bertucci Ramos, P. H., & Pedroso, M. C. (2022). Main elements involved in the start-up scalability process: A study on Brazilian agtechs. *Revista de Gestão*, *29*(3), 220–237. doi:https://doi.org/10.1108/REGE-04-2021-0070

Boughaleb, S. E., Benkhider, N., Kherbachi, S., Keddari, N., Berrached Berbar, W., & Abedou, A. (2025). Startups' scalability: a qualitative

study of challenges, enablers, and strategic perspectives. *South Florida Journal of Development*, *6*(6), 1-21. doi:https://doi.org/10.46932/sfjdv6n6-017

Coviello, N., Autio, E., Nambisan, S., Patzelt, H., & Thomas, L. D. (2024). Organizational scaling, scalability, and scale-up: Definitional harmonization and a research agenda. *Journal of Business Venturing*, *39*(5), 1-27. doi:https://doi.org/10.1016/j.jbusvent.2024.106419

Crick, J. M., Crick, D., & Chaudhry, S. (2023). Governance considerations and non-linear international scale-up behaviour among INVs. *International Small Business Journal Researching Entrepreneurship*, *41*(6), 647-681. doi:DOI: 10.1177/02662426231175878

Deniz, N., Aral Noyan, & Öznur Gülen Ertosun. (2015). Linking person-job fit to job stress: The mediating effect of perceived person-organization fit. *Procedia - Social and Behavioral Sciences*, *207*, 369-376.

Dorantes Gonzalez, D. J. (2017). A novel business model frame for innovative startups. *Journal of Business, Economics and Finance*, *4*(2), 126–137. doi:https://doi.org/10.17261/Pressacademia.2017.467

Ghezzi, A., & Cavallo, A. (2020). Agile business model innovation in digital entrepreneurship: Lean startup approaches. *Journal of Business Research*, *110*, 519–537.

Gressler Teixeira, E., Moura, G. L., Marconatto, D. A., & Fischmann, A. A. (2021). The influence of dynamic capabilities on startup growth. *RAUSP Management Journal*, *56*(1), 88-108.

Hanifzadeh, F., Talebi, K., & Jafari-Sadeghi, V. (2024). Scalability of start-ups: The impact of entrepreneurial teams. *Journal of Global Entrepreneurship Research*, *14*(1). doi:https://doi.org/10.1007/s40497-024-00383-7

- Lee, S., & Kim, J. D. (2024). When do start-ups scale? Large-scale evidence from job postings. *Strategic Management Journal*, 45(9), 1633–1669. doi: <https://doi.org/10.1002/smj.3596>
- Piaskowska, D., Tippmann, E., & Monaghan, S. (2021). Scale-up modes: Profiling activity configurations in scaling strategies. *Long Range Planning*, 54(6), 1-17. doi:<https://doi.org/10.1016/j.lrp.2021.102101>
- Picken, J. C. (2017). From startup to scalable enterprise: Laying the foundation. *Business Horizons*, 60(5), 587-595. doi:<https://doi.org/10.1016/j.bushor.2017.05.002>
- Souiki, H. (2023). Startups in Algeria - Towards the promotion of the economic development movement as an alternative to wealth creation without depending on economic rents. *Indonesian Journal of Social Science Research*, 4(1), 50-58. doi:<https://doi.org/10.11594/ijssr.04.01.05>
- Stampfl, G., Prügl, R., & Osterloh, V. (2013). An explorative model of business model scalability. *International Journal of Product Development*, 18(3/4), 226-248.
- Xiao, Y. (2025). Pathways to scaling up in emerging economies: A configurational analysis of organizational capabilities in social enterprises. *Journal of Business Research*, 189, 1-15. doi:<https://doi.org/10.1016/j.jbusres.2024.115091>