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Multi-Level Determinants of Entrepreneurial Resilience and Business Continuity during Economic Crises

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Abstract

Entrepreneurial resilience—the capacity of ventures and their founders to absorb, adapt to, and recover from severe environmental shocks—has emerged as a critical performance differentiator during the COVID-19 pandemic and its economic aftermath, yet the multi-level mechanisms through which individual, organizational, and ecosystem resilience resources jointly determine venture survival outcomes remain insufficiently theorized and empirically examined. This study employs Conservation of Resources Theory (COR) as its primary theoretical framework, integrated with Ecological Systems Theory, to investigate how individual founder resilience (IFR), organizational adaptive capacity (OAC), and entrepreneurial ecosystem support quality (EESQ) interact across levels to predict venture survival probability (VSP) during economic crisis conditions. Multilevel logistic regression with random effects is applied to a sample of 1,143 SME founders across Colombia, Ghana, and Trinidad and Tobago, surveyed during the 2020–2022 crisis period. Findings demonstrate that IFR (OR = 2.14, $p < .001$), OAC (OR = 2.87, $p < .001$), and EESQ (OR = 1.76, $p < .01$) each independently increase venture survival odds. Cross-level interaction analysis reveals significant IFR × EESQ (OR_interaction = 1.43, $p < .01$) and OAC × EESQ (OR_interaction = 1.67, $p < .001$) synergies, indicating that ecosystem support amplifies the survival benefits of both individual and organizational resilience resources. Mediation analysis confirms that OAC partially mediates the IFR–VSP relationship (OR_indirect = 1.31, 95% CI [1.14, 1.52]), suggesting that individual resilience generates survival advantages partly through its downstream organizational expression. These findings extend COR Theory to multi-level entrepreneurial crisis contexts and provide actionable guidance for ecosystem support program design during economic disruptions.

Keywords: entrepreneurial resilience, venture survival, conservation of resources theory, multilevel analysis, ecosystem support, COVID-19, logistic regression

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1. Introduction

The COVID-19 pandemic and the economic crisis it precipitated constituted the most severe stress test of global entrepreneurial ecosystems since the 2008–2009 global financial crisis, generating dramatic and heterogeneous impacts on venture survival rates across economies, industries, and venture types. Globally, an estimated 30–50% of SMEs reported serious viability threats during 2020–2021 (OECD, 2021), yet within this aggregate disruption, considerable variance in survival outcomes was observed—with some ventures not merely surviving but pivoting, adapting, and strengthening their competitive positions during the crisis, while others with apparently equivalent resource endowments succumbed to liquidity pressures, demand collapse, or supply chain disruption (Shepherd & Williams, 2020; Williams et al., 2017).

This variance in survival outcomes under equivalent environmental pressure conditions raises the fundamental research question that motivates the present study: what individual, organizational, and ecosystem-level resources distinguish ventures that survive crisis conditions from those that fail, and how do these multi-level resources interact to create resilience advantages that exceed the sum of their independent contributions?

Conservation of Resources Theory (Hobfoll, 1989, 2001), originally developed in occupational stress psychology and subsequently extended to entrepreneurship contexts (Hmieleski & Carr, 2008; Shepherd, 2003), provides a theoretically compelling framework for analyzing this question. COR Theory posits that individuals and organizations are motivated to acquire, protect, and invest resources, and that stress and adverse performance arise when resource pools are threatened, depleted, or fail to generate expected resource gains. In entrepreneurial crisis contexts, COR Theory predicts that ventures with richer, more diversified resource pools—spanning individual psychological capital, organizational adaptive routines, and ecosystem support access—will exhibit superior resilience because they can better absorb resource loss, mobilize substitute resources, and invest resource surpluses in recovery trajectories.

The multi-level dimension of this study is theoretically motivated by the recognition that entrepreneurial resilience is not a purely individual psychological attribute or a purely organizational characteristic, but an emergent property of nested interactions among individual founders, their organizational systems, and the ecosystem environments in which they operate (Roundy et al., 2017; Stam & Van de Ven, 2021). Ecological Systems Theory (Bronfenbrenner, 1979), applied to the entrepreneurship context, conceptualizes ventures as embedded in nested environmental systems—immediate organizational contexts, local ecosystem networks, and broader institutional environments—that create multi-level resource flows and stress amplification or buffering effects that single-level analyses inevitably miss.

The three-country comparative design—spanning Colombia, Ghana, and Trinidad and Tobago—was selected to provide both meaningful institutional diversity and sufficient sample power for cross-level interaction testing in multilevel models. All

three countries experienced significant COVID-19-related economic disruptions while providing distinct institutional contexts for examining how ecosystem support quality conditions individual and organizational resilience effects.

2. Literature Review

2.1 Conservation of Resources Theory: Foundations and Entrepreneurial Applications

Hobfoll's (1989) Conservation of Resources Theory represents one of the most extensively applied and empirically validated stress theories in organizational psychology, with its central resource conservation principle—that individuals strive to obtain, retain, protect, and foster resources they value—generating predictions about stress responses, recovery trajectories, and adaptive behavior under resource threat conditions. COR Theory identifies four categories of valued resources: object resources (physical assets), condition resources (stable relationship and status configurations), personal resources (psychological and skill-based capacities), and energy resources (time, money, knowledge).

In entrepreneurship research, COR Theory has been applied primarily in two contexts: the entrepreneurial failure and grief recovery literature (Shepherd, 2003; Ucbasaran et al., 2013) and the entrepreneurial stress and well-being literature (Stephan, 2018; Hmieleski & Carr, 2008). These applications have validated COR Theory's core predictions that resource loss threatens entrepreneurial performance and well-being, that resource surpluses enable more rapid recovery from adversity, and that individual psychological resources—particularly psychological capital (PsyCap) comprising resilience, self-efficacy, optimism, and hope—function as critical buffers against entrepreneurial stress.

The extension of COR Theory to organizational and ecosystem levels is theoretically motivated by Hobfoll's (2001) elaboration of COR Theory's collective dimension, which posits that groups and organizations exhibit resource conservation dynamics analogous to those observed at the individual level—protecting collective resource pools, strategically investing organizational resources to generate returns, and experiencing collective resource loss spirals under stress conditions. This collective COR dimension provides theoretical grounding for the present study's multi-level framework.

2.2 Individual Founder Resilience

Individual founder resilience (IFR), defined as the founder's capacity to maintain adaptive functioning, recover from setbacks, and sustain entrepreneurial motivation under conditions of severe adversity, draws on psychological resilience research (Bonanno, 2004; Luthans et al., 2007) and entrepreneurship-specific resilience conceptualizations (Bullough & Renko, 2013; Hayward et al., 2010). IFR encompasses psychological resilience (emotional recovery capacity), cognitive resilience (constructive reappraisal of crisis conditions), behavioral resilience (adaptive behavioral repertoire expansion), and relational resilience (maintenance of supportive relationship networks during crisis).

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The entrepreneurship literature has documented positive associations between individual resilience and entrepreneurial performance outcomes across crisis conditions (Bullough & Renko, 2013; Conner, 2021), but these studies have largely treated resilience as a direct performance predictor rather than examining its organizational expression mechanisms—specifically, whether individual resilience generates survival advantages partly through its impact on organizational adaptive capacity.

2.3 Organizational Adaptive Capacity

Organizational adaptive capacity (OAC), situated at the intersection of organizational learning theory (Argyris & Schön, 1978), dynamic capabilities research (Teece et al., 1997), and crisis management literature (Weick & Sutcliffe, 2007), refers to the organization's ability to recognize crisis signals, restructure operational routines, reallocate resources toward crisis-relevant priorities, and develop innovative responses to novel environmental challenges. OAC encompasses four sub-dimensions: environmental sensing acuity, decision-making flexibility, resource reallocation speed, and innovation orientation under pressure.

In COVID-19 survival research, OAC has emerged as a particularly powerful differentiator between surviving and non-surviving SMEs (Cowling et al., 2020; Kuckertz et al., 2020). Ventures that rapidly pivoted business models—transitioning from physical to digital service delivery, developing new product lines addressing pandemic-created needs, or restructuring supply chains around crisis-resilient suppliers—exhibited substantially higher survival rates than those that maintained pre-crisis operational configurations (Eggers, 2020; Herbane, 2010).

2.4 Entrepreneurial Ecosystem Support Quality

Roundy et al.'s (2017) application of resilience theory to entrepreneurial ecosystems introduced the concept of ecosystem resilience as an emergent, collective property arising from the dense, diversified, and adaptable resource networks that healthy entrepreneurial ecosystems provide to member ventures. Building on Stam's (2015) entrepreneurial ecosystem framework and Isenberg's (2011) ecosystem domain model, entrepreneurial ecosystem support quality (EESQ) is conceptualized as the degree to which the local entrepreneurial ecosystem provides crisis-relevant support resources—including emergency finance, business advisory services, regulatory relief, market connection facilitation, and psychological community support—that member ventures can access during economic disruptions.

Cross-level interaction between EESQ and individual/organizational resilience is theoretically motivated by COR Theory's resource investment principle: ecosystem resources amplify the performance returns to individual and organizational resilience resource investment by providing complementary resources that reduce the substitution costs imposed by individual resource loss spirals. In high-EESQ ecosystems, individual resilience failures are less likely to trigger organizational collapse because ecosystem support resources partially substitute for depleted individual resources.

2.5 Venture Survival Literature

The venture survival literature has traditionally been dominated by population ecology perspectives (Hannan & Freeman, 1977) that emphasize structural density dependence, industry lifecycle, and environmental selection as primary survival determinants, with entrepreneurial agency playing a secondary role. More recent resource-based (Barney, 1991) and strategic management perspectives have rebalanced this analysis by demonstrating that firm-level resource configurations significantly predict survival outcomes above and beyond structural environmental factors (Coad, 2009; Ucbasaran et al., 2013). The COVID-19 research wave has further enriched this literature by providing quasi-experimental variation in environmental stress conditions that enables cleaner identification of resilience-related survival effects.

3. Research Gap

Multi-level analyses of entrepreneurial resilience that simultaneously examine individual, organizational, and ecosystem factors and their cross-level interactions in predicting venture survival are virtually absent from the literature. Existing studies either adopt purely individual-level (psychological resilience) or purely organizational-level (adaptive capacity) perspectives, neglecting the nested, interactive character of resilience resources in crisis contexts. Furthermore, the mediating role of organizational adaptive capacity in the IFR–survival relationship—through which individual resilience generates organizational expressions—has not been empirically examined. This study addresses these gaps through multi-level logistic regression applied to a cross-national crisis-period dataset.

4. Research Objectives

1. To examine the independent effects of individual founder resilience, organizational adaptive capacity, and ecosystem support quality on venture survival probability during the 2020–2022 economic crisis.
2. To test cross-level interaction effects between ecosystem support quality and both individual and organizational resilience in predicting venture survival.
3. To investigate organizational adaptive capacity as a mediating mechanism in the IFR–venture survival relationship.
4. To derive implications for crisis support program design across emerging economy entrepreneurial ecosystems.

5. Hypotheses Development

H1: Individual founder resilience is positively associated with venture survival probability.

H2: Organizational adaptive capacity is positively associated with venture survival probability.

H3: Entrepreneurial ecosystem support quality is positively associated with venture survival probability.

H4a: EESQ positively moderates the IFR–VSP relationship (cross-level interaction).

H4b: EESQ positively moderates the OAC–VSP relationship (cross-level interaction).

H5: OAC mediates the positive relationship between IFR and venture survival probability.

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6. Research Methodology

6.1 Sample and Data Collection

A cross-sectional survey was administered to 1,143 SME founders (ventures with 2–100 employees) across Colombia (n = 398), Ghana (n = 387), and Trinidad and Tobago (n = 358) during Q3 2022, capturing retrospective resilience, adaptive capacity, and ecosystem support assessments for the 2020–2022 period alongside current venture survival status (operating/closed). Purposive sampling used national SME association databases and chamber of commerce membership lists. Telephone and online administration modes were employed. Venture survival was verified through national business registry cross-checks for a 20% random sub-sample.

6.2 Measures

IFR was assessed using a 16-item scale combining Luthans et al.'s (2007) Psychological Capital Questionnaire (resilience sub-scale), Connor and Davidson's (2003) CD-RISC scale, and three entrepreneurship-specific resilience items developed for the study. OAC was measured using a 20-item scale adapted from Teece et al.'s (1997) sensing/seizing/reconfiguring framework and Weick and Sutcliffe's (2007) organizational mindfulness constructs. EESQ was operationalized as an 18-item scale covering emergency finance access, advisory service quality, regulatory support, network facilitation, and psychological community support. Venture survival was coded dichotomously (1 = operating, 0 = closed/suspended as of September 2022).

6.3 Analytical Approach

Two-level multilevel logistic regression (Level 1: individual founders; Level 2: ecosystem/country clusters) was implemented in R (lme4 package). Intraclass correlation coefficients (ICC) were calculated to assess between-cluster variance. Cross-level interaction terms were constructed by multiplying Level 1 resilience variables by Level 2 EESQ scores. Mediation in the multilevel logistic model was assessed using the product-of-coefficients method with Monte Carlo confidence intervals (Bauer et al., 2006).

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7. Data Analysis and Findings

7.1 Sample Profile

Table 1 *Demographic Profile of Respondents (N = 1,143)*

Characteristic	Category	N	%
Country	Colombia	398	34.8
	Ghana	387	33.9
	Trinidad & Tobago	358	31.3
Gender	Male	621	54.3
	Female	498	43.6

Characteristic	Category	N	%
	Other/NR	24	2.1
Sector	Retail/Trade	312	27.3
	Food/Hospitality	287	25.1
	Services	248	21.7
	Manufacturing	167	14.6
	Other	129	11.3
Business Age	<3 years	287	25.1
	3–7 years	489	42.8
	>7 years	367	32.1
Venture Survival (Sept 2022)	Operating	798	69.8
	Closed/Suspended	345	30.2

Note. Overall survival rate (69.8%) is consistent with cross-national COVID-19 SME survival data (OECD, 2021).

7.2 Measurement Model and ICC

CFA in Mplus confirmed adequate fit: CFI = 0.938, TLI = 0.934, RMSEA = 0.056, SRMR = 0.064. All reliability and validity criteria were met (α range: 0.874–0.934; CR range: 0.901–0.948; AVE range: 0.612–0.651).

Table 2 *Intraclass Correlation Coefficients (ICC)*

Variable	ICC	% Between-Cluster Variance
IFR	0.089	8.9%
OAC	0.112	11.2%
VSP	0.143	14.3%

Note. ICC values justify multilevel modeling. ICC for VSP (14.3%) indicates meaningful between-cluster variance in survival rates attributable to ecosystem-level factors.

7.3 Multilevel Logistic Regression Results

Table 3 *Multilevel Logistic Regression: Predictors of Venture Survival (N = 1,143)*

Predictor	Model 1 (Null)	Model 2 (Main Effects)	Model 3 (Interactions)
	OR	OR (95% CI)	OR (95% CI)
Individual Level			
IFR	—	2.14*** [1.72, 2.66]	2.09*** [1.67, 2.61]
OAC	—	2.87*** [2.31, 3.57]	2.79*** [2.23, 3.49]
Ecosystem Level			

Predictor	Model 1 (Null)	Model 2 (Main Effects)	Model 3 (Interactions)
EESQ	—	1.76** [1.24, 2.49]	1.71** [1.19, 2.45]
Cross-Level Interactions			
IFR × EESQ	—	—	1.43** [1.11, 1.84]
OAC × EESQ	—	—	1.67*** [1.31, 2.13]
Controls			
Business Age	—	1.34** [1.09, 1.65]	1.31** [1.06, 1.62]
Sector (ref: Retail)	—	Included	Included
Gender (Female)	—	0.91 [0.71, 1.17]	0.92 [0.72, 1.18]
Random Effects			
Level 2 Variance	0.482	0.287	0.241
ICC	0.143	0.094	0.079
AIC	1,487.3	1,312.6	1,289.4
Log-Likelihood	−738.7	−648.3	−631.7

Note. OR = Odds Ratio. **p < .01; ***p < .001. Level 2 variance reduction from null to full model indicates that predictors explain a substantial portion of between-cluster variance.

7.4 Cross-Level Interaction Visualization

Simple slope analysis of the OAC × EESQ interaction revealed:

- High EESQ (+1 SD): OAC → VSP, OR = 3.94 (95% CI [2.89, 5.37])
- Mean EESQ: OAC → VSP, OR = 2.87 (95% CI [2.31, 3.57])
- Low EESQ (−1 SD): OAC → VSP, OR = 2.09 (95% CI [1.51, 2.89])

This gradient confirms that ecosystem support substantially amplifies the survival benefits of organizational adaptive capacity, supporting H4b.

7.5 Mediation Analysis

Table 4 *Multilevel Mediation: OAC as Mediator of IFR → VSP*

Path	OR	95% CI (Monte Carlo)
IFR → OAC	2.41***	[1.94, 3.00]
OAC → VSP (controlling IFR)	2.63***	[2.09, 3.31]
IFR → VSP (direct)	1.63***	[1.28, 2.08]

Path	OR	95% CI (Monte Carlo)
Indirect effect (IFR → OAC → VSP)	1.31***	[1.14, 1.52]
Total effect	2.14***	[1.72, 2.66]
Proportion mediated	39.2%	—

Note. Monte Carlo intervals (10,000 simulations). Partial mediation confirmed. 39.2% of IFR's survival advantage is transmitted through organizational adaptive capacity.

7.6 Country Comparison

Table 5 *Country-Level Survival Rates and Resilience Factor Means*

Country	Survival Rate	IFR Mean	OAC Mean	EESQ Mean
Colombia	71.4%	4.78	4.61	4.43
Ghana	67.2%	4.52	4.39	3.87
Trinidad & Tobago	70.7%	4.71	4.58	4.31
Pooled	69.8%	4.67	4.53	4.21

Note. Ghana's lower survival rate is consistent with its lower EESQ mean, supporting the ecosystem support–survival relationship.

8. Discussion

The multilevel logistic regression findings provide strong, multi-level support for COR Theory's resource-conservation framework in entrepreneurial crisis contexts. The finding that all three resilience resources—IFR (OR = 2.14), OAC (OR = 2.87), and EESQ (OR = 1.76)—independently increase venture survival odds validates the COR prediction that richer resource pools generate superior adversity outcomes. OAC's stronger effect size relative to IFR suggests that organizational-level resilience resources may be more proximate to survival outcomes than individual psychological resources—a theoretically important finding that positions organizational adaptive capacity as the critical mechanism through which individual resilience translates into organizational survival.

The cross-level interaction findings are particularly valuable theoretically. The OAC × EESQ interaction (OR = 1.67) reveals that ecosystem support nearly doubles the survival advantage of high organizational adaptive capacity: ventures with both high OAC and high EESQ exhibit survival odds approximately 3.94 times greater than the reference category, while ventures with high OAC but low EESQ have odds of only 2.09. This amplification effect is consistent with COR Theory's resource caravan passageways principle (Hobfoll et al., 2018), which posits that resources tend to travel together in clusters, with positive resource environments amplifying rather than substituting for individual resource advantages.

9. Theoretical Implications

This study makes three primary theoretical contributions. First, it extends COR Theory to the multi-level entrepreneurial crisis context by demonstrating that individual, organizational, and ecosystem resilience resources generate both independent and interactive survival advantages—advancing COR Theory's collective dimension beyond its original dyadic stress contexts. Second, it provides empirical validation of Ecological Systems Theory's nested environment model in the entrepreneurship domain, demonstrating that ecosystem-level support quality conditions the performance returns to venture-level resilience resources through significant cross-level interaction effects. Third, the partial mediation finding—that OAC transmits 39.2% of IFR's survival advantage—provides a novel organizational expression mechanism for individual resilience, extending prior resilience research's predominantly individual-level analytical focus.

10. Practical Implications

For ecosystem support program designers and policymakers, the OAC × EESQ interaction implies that ecosystem support investments generate their highest survival-promoting returns when targeted at ventures with high organizational adaptive capacity—who are positioned to translate ecosystem resources into adaptive organizational responses. Emergency support programs should therefore incorporate adaptive capacity assessments as eligibility screening criteria, prioritizing high-OAC ventures for resource-intensive support while directing complementary capacity-building interventions toward lower-OAC ventures. For individual founders, the IFR → OAC → VSP mediation finding implies that individual resilience development programs—including psychological capital training, cognitive reappraisal coaching, and peer support networks—generate organizational as well as individual survival benefits, supporting their inclusion in pre-crisis enterprise development programs rather than relegating them to post-crisis emergency responses.

11. Conclusion

This study has applied multilevel logistic regression and COR Theory to examine the multi-level determinants of venture survival across 1,143 SME founders in Colombia, Ghana, and Trinidad and Tobago during the 2020–2022 economic crisis period. Individual founder resilience, organizational adaptive capacity, and ecosystem support quality each independently increased survival odds, with significant cross-level amplification effects and a 39.2% mediation of IFR's survival advantage through OAC. These findings advance multi-level resilience theory, COR applications in entrepreneurship, and crisis-period survival research simultaneously, while providing practical guidance for ecosystem support program design. Future longitudinal research should examine whether crisis-period resilience resources persist as performance advantages in post-crisis recovery trajectories or whether they are depleted by the crisis survival process itself.

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