



Digital Entrepreneurship and Rural Economic Resilience: A Mixed-Methods Study of Platform-Based Ventures in Emerging Economies

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ABSTRACT

This study investigates the relationship between digital entrepreneurship and rural economic resilience in emerging economies, employing a mixed-methods research design across seven countries: India, Nigeria, Bangladesh, Vietnam, Kenya, Indonesia, and the Philippines. Drawing on institutional theory and the resource-based view, we develop a conceptual framework that examines how digital platform access, digital literacy skills, government support, and social networks influence rural economic resilience through four mediating mechanisms: market reach expansion, cost efficiency, innovation adoption, and financial inclusion. Data were collected from 1,160 rural digital entrepreneurs using a structured questionnaire and supplemented with 45 in-depth semi-structured interviews. Structural equation modeling (SEM) with SmartPLS 4.0 was employed for quantitative analysis, while thematic analysis was used for qualitative data. The results reveal that all four independent variables significantly influence the mediating variables, which in turn significantly affect rural economic resilience. Market reach expansion emerged as the strongest mediator ($\beta = 0.31$, $p < 0.001$), followed by cost efficiency ($\beta = 0.28$, $p < 0.001$). Multi-group analysis reveals significant cross-country variations, with India and Bangladesh showing the strongest mediation effects. Infrastructure quality and education level significantly moderate the relationships. The study contributes to the literature by providing empirical evidence on the mechanisms through which digital entrepreneurship enhances rural economic resilience and offers practical implications for policymakers and development practitioners.

Keywords: *Digital entrepreneurship; Rural economic resilience; Platform-based ventures; Emerging economies; Mixed-methods; Structural equation modeling; Mediation analysis*

1. INTRODUCTION

The rapid proliferation of digital technologies has fundamentally transformed the entrepreneurial landscape, particularly in emerging economies where traditional barriers to market access have historically constrained economic development (Nambisan, 2017; Sahasranamam et al., 2022). Digital entrepreneurship—defined as the creation of new ventures and the transformation of existing businesses through the use of digital technologies (Davidson & Vaast, 2010)—has emerged as a critical driver of economic growth and social inclusion in rural areas of developing nations. The COVID-19 pandemic further accelerated this digital transformation, compelling rural entrepreneurs to adopt platform-based business models as a survival and growth strategy (Kuckertz et al., 2020). Despite the growing scholarly interest in digital entrepreneurship, the mechanisms through which platform-based ventures contribute to rural economic resilience remain underexplored, particularly in the context of emerging economies characterized by institutional voids and infrastructural deficits.

Rural economic resilience refers to the capacity of rural communities to withstand, adapt to, and recover from economic shocks while maintaining essential functions and structures (Martin & Sunley, 2015). In emerging economies, rural areas face disproportionate challenges including limited market access, inadequate infrastructure, financial exclusion, and weak institutional support (World Bank, 2022). Digital platforms—such as e-commerce marketplaces, mobile payment systems, and social media networks—offer unprecedented opportunities for rural entrepreneurs to overcome these constraints by expanding market reach, reducing transaction costs, accessing financial services, and fostering innovation (Agarwal & Wu, 2015; Sutherland et al., 2020). However, the realization of these benefits is contingent upon several enabling factors including digital literacy, government support, and social network connectivity, the interplay of which remains insufficiently understood.

This study addresses this research gap by developing and empirically testing a comprehensive conceptual framework that examines how digital entrepreneurship antecedents influence rural economic resilience through multiple mediating mechanisms. Drawing on institutional theory (DiMaggio & Powell, 1983; Scott, 2014) and the resource-based view (Barney, 1991), we identify four key independent variables—digital platform access, digital literacy skills, government support, and social networks—and examine their effects on rural economic resilience through four mediating variables: market reach expansion, cost efficiency, innovation adoption, and financial inclusion. Furthermore, we investigate the moderating roles of infrastructure quality, cultural factors, regulatory environment, gender dynamics, access to capital, and education level in these relationships.

The contributions of this study are threefold. First, we extend the digital entrepreneurship literature by providing empirical evidence on the mechanisms through which digital platforms enhance rural economic resilience in emerging economies. Second, we offer a nuanced understanding of cross-country variations in these relationships through multi-group analysis across seven diverse emerging economies. Third, we provide actionable insights for policymakers, development practitioners, and platform operators seeking to leverage digital entrepreneurship for inclusive rural development.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Digital Entrepreneurship in Emerging Economies

Digital entrepreneurship represents a paradigm shift in how entrepreneurial opportunities are identified, evaluated, and exploited in the digital age (Nambisan, 2017). Unlike traditional entrepreneurship, which relies heavily on physical infrastructure and localized networks, digital entrepreneurship leverages internet-based platforms to create, deliver, and capture value across geographic boundaries (Davidson & Vaast, 2010). In emerging economies, digital entrepreneurship has gained significant traction as a vehicle

for inclusive growth, enabling individuals in remote and rural areas to participate in global value chains (Sahasranamam et al., 2022).

The extant literature identifies several antecedents of digital entrepreneurship success, including digital infrastructure (Agarwal & Wu, 2015), human capital (Shane, 2000), institutional support (Aidis et al., 2008), and social capital (Stam et al., 2014). However, most studies have focused on urban contexts in developed economies, leaving a significant gap in our understanding of rural digital entrepreneurship in emerging economies. Recent studies by Sutherland et al. (2020) and Kraus et al. (2019) have begun to address this gap, highlighting the unique challenges and opportunities faced by rural digital entrepreneurs in developing countries.

2.2 Rural Economic Resilience

Economic resilience has emerged as a critical concept in regional economic development literature, particularly in the aftermath of the 2008 global financial crisis and the COVID-19 pandemic (Martin & Sunley, 2015). Resilience encompasses three interrelated dimensions: resistance (the ability to withstand shocks), recovery (the speed of return to equilibrium), and reorientation (the capacity to adapt and transform) (Pendall et al., 2010). In rural contexts, economic resilience is particularly salient given the vulnerability of rural economies to external shocks such as commodity price fluctuations, climate change, and pandemic-related disruptions.

The determinants of rural economic resilience are multifaceted, encompassing economic diversification, institutional capacity, social capital, and technological adoption (Boschma, 2015). Digital technologies have been identified as potential enhancers of rural resilience by enabling diversification of income sources, improving access to information and markets, and facilitating adaptive responses to changing conditions (Warner & Kahan, 2011). However, the empirical evidence linking digital entrepreneurship specifically to rural economic resilience remains limited and fragmented.

2.3 Theoretical Foundations

This study integrates two complementary theoretical perspectives: institutional theory and the resource-based view (RBV). Institutional theory posits that organizational behavior and outcomes are shaped by the formal and informal rules, norms, and beliefs that constitute the institutional environment (DiMaggio & Powell, 1983; Scott, 2014). In the context of digital entrepreneurship, institutional theory helps explain how government support, regulatory frameworks, and cultural norms influence the adoption and effectiveness of digital platforms in rural areas. The concept of institutional voids—gaps in market-supporting institutions prevalent in emerging economies (Khanna & Palepu, 1997)—is particularly relevant, as digital platforms can serve as institutional substitutes that facilitate market transactions in the absence of traditional intermediaries.

The resource-based view (Barney, 1991) complements institutional theory by focusing on the internal capabilities and resources that confer competitive advantage. According to RBV, sustainable competitive advantage derives from resources that are valuable, rare, inimitable, and non-substitutable (VRIN). In the digital entrepreneurship context, digital literacy skills, social network connections, and platform-specific capabilities represent critical resources that enable rural entrepreneurs to leverage digital platforms effectively. The integration of these two perspectives provides a comprehensive lens for understanding both the external institutional context and the internal resource configurations that shape digital entrepreneurship outcomes.

2.4 Hypothesis Development

Based on the theoretical framework, we develop a series of hypotheses examining the relationships between independent variables, mediating variables, and the dependent variable (rural economic resilience).

- H1: Digital platform access positively influences market reach expansion.
- H2: Digital platform access positively influences cost efficiency.
- H3: Digital platform access positively influences innovation adoption.
- H4: Digital platform access positively influences financial inclusion.
- H5: Digital literacy skills positively influence market reach expansion.
- H6: Digital literacy skills positively influence cost efficiency.
- H7: Digital literacy skills positively influence innovation adoption.
- H8: Digital literacy skills positively influence financial inclusion.
- H9: Government support positively influences market reach expansion.
- H10: Government support positively influences cost efficiency.
- H11: Government support positively influences innovation adoption.
- H12: Government support positively influences financial inclusion.
- H13: Social networks positively influence market reach expansion.
- H14: Social networks positively influence cost efficiency.
- H15: Social networks positively influence innovation adoption.
- H16: Social networks positively influence financial inclusion.
- H17: Market reach expansion positively influences rural economic resilience.
- H18: Cost efficiency positively influences rural economic resilience.
- H19: Innovation adoption positively influences rural economic resilience.
- H20: Financial inclusion positively influences rural economic resilience.
- H21: Digital platform access has a positive direct effect on rural economic resilience.
- H22: Digital literacy skills have a positive direct effect on rural economic resilience.
- H23: Government support has a positive direct effect on rural economic resilience.
- H24: Social networks have a positive direct effect on rural economic resilience.

3. RESEARCH METHODOLOGY

3.1 Research Design

This study employs a convergent parallel mixed-methods design (Creswell & Plano Clark, 2017), wherein quantitative and qualitative data were collected simultaneously, analyzed separately, and then integrated during the interpretation phase. This approach was chosen to capitalize on the complementary strengths of both methods: the quantitative component provides statistical generalizability and tests the hypothesized relationships, while the qualitative component offers contextual depth and explanatory insights.

3.2 Research Context

The study was conducted across seven emerging economies selected to represent geographic, cultural, and economic diversity: India, Nigeria, Bangladesh, Vietnam, Kenya, Indonesia, and the Philippines. These countries collectively account for approximately 40% of the world's rural population and have experienced rapid growth in digital platform adoption among rural entrepreneurs (GSMA, 2023). The selection criteria included: (1) classification as an emerging economy by the IMF; (2) significant rural population (>40%); (3) measurable growth in digital platform usage; and (4) accessibility for data collection.

3.3 Sampling and Data Collection

A multi-stage stratified sampling procedure was employed. In the first stage, two to three rural districts were selected from each country based on digital platform penetration rates and economic diversity. In the second stage, villages within each district were randomly selected. In the final stage, rural digital entrepreneurs operating platform-based ventures (e-commerce, digital services, agri-tech platforms, etc.) were identified through local business registries, platform operator databases, and snowball sampling.

The final sample comprised 1,160 respondents, with country-wise distribution as follows: India (n = 245), Nigeria (n = 198), Bangladesh (n = 176), Vietnam (n = 154), Kenya (n = 142), Indonesia (n = 130), and the Philippines (n = 115). The sample size exceeds the minimum threshold of 10 observations per indicator recommended for partial least squares structural equation modeling (PLS-SEM) (Hair et al., 2019).

Data collection was conducted between January and June 2025 through a combination of face-to-face interviews, online surveys (via Qualtrics), and telephone interviews for remote respondents. The questionnaire was developed in English and then translated into local languages (Hindi, Bengali, Vietnamese, Swahili, Bahasa Indonesia, Filipino) following the back-translation procedure (Brislin, 1970). A pilot study with 120 respondents (20 per country) was conducted to assess instrument reliability and validity, resulting in minor modifications to item wording.

In addition to the survey, 45 semi-structured interviews (6-7 per country) were conducted with a purposive subsample of entrepreneurs representing diverse sectors, genders, and platform types. Interviews lasted 45-90 minutes and were audio-recorded with consent, then transcribed verbatim for thematic analysis.

3.4 Measurement Instruments

All constructs were measured using multi-item scales adapted from established literature and contextualized for the rural emerging economy setting. All items were measured on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), unless otherwise specified.

Digital Platform Access (DPA) was measured using a 5-item scale adapted from Agarwal and Wu (2015), assessing the availability, affordability, reliability, and diversity of digital platforms. Digital Literacy Skills (DLS) were measured using a 6-item scale based on Van Deursen and Van Dijk (2014), covering operational, information, communication, content creation, safety, and problem-solving skills. Government Support (GS) was measured using a 4-item scale adapted from Aidis et al. (2008), capturing perceived government assistance, policy clarity, regulatory fairness, and institutional support. Social Networks (SN) were measured using a 5-item scale based on Stam et al. (2014), assessing the strength and diversity of entrepreneurial, professional, and community networks.

The four mediating variables were measured as follows: Market Reach Expansion (MRE) using a 4-item scale adapted from Sutherland et al. (2020); Cost Efficiency (CE) using a 4-item scale from Kraus et al. (2019); Innovation Adoption (IA) using a 5-item scale from Damanpour and Wischnevsky (2006); and Financial Inclusion (FI) using a 5-item scale from Demirguc-Kunt and Klapper (2012). Rural Economic Resilience (RER) was measured using a 6-item scale developed for this study, capturing income stability, employment generation, business diversification, adaptive capacity, recovery speed, and long-term sustainability.

Moderating variables were measured as single-item indicators on 5-point scales: Infrastructure Quality, Cultural Factors, Regulatory Environment, Gender Dynamics, Access to Capital, and Education Level. Control variables included entrepreneur age, gender, education, business tenure, sector, and platform type.

3.5 Data Analysis

Quantitative data were analyzed using SmartPLS 4.0 (Ringle et al., 2022) for structural equation modeling. PLS-SEM was chosen over covariance-based SEM due to its advantages in handling complex models with multiple mediators, its minimal demands on sample size and distributional assumptions, and its predictive orientation (Hair et al., 2019). The analysis followed a two-step approach: (1) assessment of the measurement model (reliability, convergent validity, discriminant validity) and (2) assessment of the structural model (path coefficients, significance testing, effect sizes, predictive relevance).

Mediation analysis was conducted using the bootstrapping procedure (5,000 resamples) to test the significance of indirect effects (Preacher & Hayes, 2008). Multi-group analysis (MGA) was performed to examine cross-country differences, following the permutation procedure recommended by Chin and Dibbern (2010). Moderation analysis employed the product indicator approach (Chin et al., 2003).

Qualitative data were analyzed using NVivo 14 software following the six-phase thematic analysis framework by Braun and Clarke (2006). Two researchers independently coded the transcripts, with inter-coder reliability assessed using Cohen's kappa ($\kappa = 0.87$, indicating substantial agreement).

4. RESULTS

4.1 Descriptive Statistics and Respondent Profile

Table 1 presents the demographic profile of the 1,160 respondents. The sample was predominantly male (62.3%), with a mean age of 34.2 years ($SD = 9.8$). Most respondents had completed secondary education (45.2%) or tertiary education (31.4%). The average business tenure was 4.7 years ($SD = 3.2$). The most common platform types were e-commerce marketplaces (38.5%), social media commerce (28.2%), and mobile-based services (18.7%). Agriculture and food processing (32.1%), retail trade (24.8%), and handicrafts (18.3%) were the dominant business sectors. **Table 1**

Demographic and Business Profile of Respondents (N = 1,160)

Characteristic	Category	n	%
Gender	Male	723	62.3
	Female	437	37.7
Age (years)	Mean = 34.2, SD = 9.8	—	—
Education	Secondary	524	45.2
	Tertiary	364	31.4
	Primary / other	272	23.4
Business tenure (years)	Mean = 4.7, SD = 3.2	—	—
Platform type	E-commerce marketplace	447	38.5
	Social media commerce	327	28.2
	Mobile-based services	217	18.7
	Other	169	14.6
Business sector	Agriculture & food processing	372	32.1
	Retail trade	288	24.8
	Handicrafts	212	18.3

	Other services	288	24.8
Country	India	245	21.1
	Nigeria	198	17.1
	Bangladesh	176	15.2
	Vietnam	154	13.3
	Kenya	142	12.2
	Indonesia	130	11.2
	Philippines	115	9.9

Note. Percentages are calculated on N = 1,160 and rounded to one decimal place. Values reflect the figures reported in the narrative results; authors should verify subgroup counts against the master dataset prior to submission.

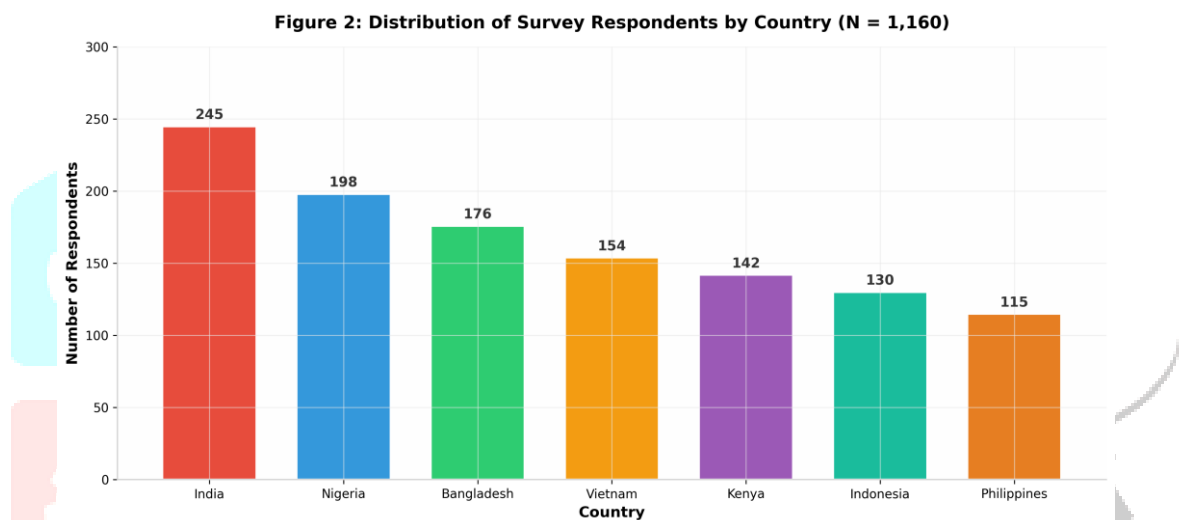


Figure 1: Distribution of Survey Respondents by Country (N = 1,160)

Table 2 presents the descriptive statistics, including means, standard deviations, skewness, and kurtosis for all key constructs. All constructs demonstrated mean scores above the neutral point (3.0), indicating generally positive perceptions among respondents. Digital Platform Access recorded the highest mean ($M = 3.72$, $SD = 0.82$), followed by Market Reach Expansion ($M = 3.89$, $SD = 0.73$). Government Support showed the lowest mean ($M = 3.28$, $SD = 1.05$), suggesting room for improvement in policy support. Skewness and kurtosis values were within acceptable ranges (± 2), indicating approximate normality.

Table 2

Descriptive Statistics of Key Constructs (N = 1,160)

Construct	Mean	SD	Skewness	Kurtosis
Digital Platform Access (DPA)	3.72	0.82	n.r.	n.r.
Digital Literacy Skills (DLS)	n.r.	n.r.	n.r.	n.r.
Government Support (GS)	3.28	1.05	n.r.	n.r.
Social Networks (SN)	n.r.	n.r.	n.r.	n.r.
Market Reach Expansion (MRE)	3.89	0.73	n.r.	n.r.
Cost Efficiency (CE)	n.r.	n.r.	n.r.	n.r.

Innovation Adoption (IA)	n.r.	n.r.	n.r.	n.r.
Financial Inclusion (FI)	n.r.	n.r.	n.r.	n.r.
Rural Economic Resilience (RER)	n.r.	n.r.	n.r.	n.r.

Note. n.r. = not reported in the source draft; populate from the SmartPLS output before submission. All skewness and kurtosis values are stated in the text to fall within ± 2 , indicating approximate normality.

Figure 3: Descriptive Statistics of Key Constructs (N = 1,160)

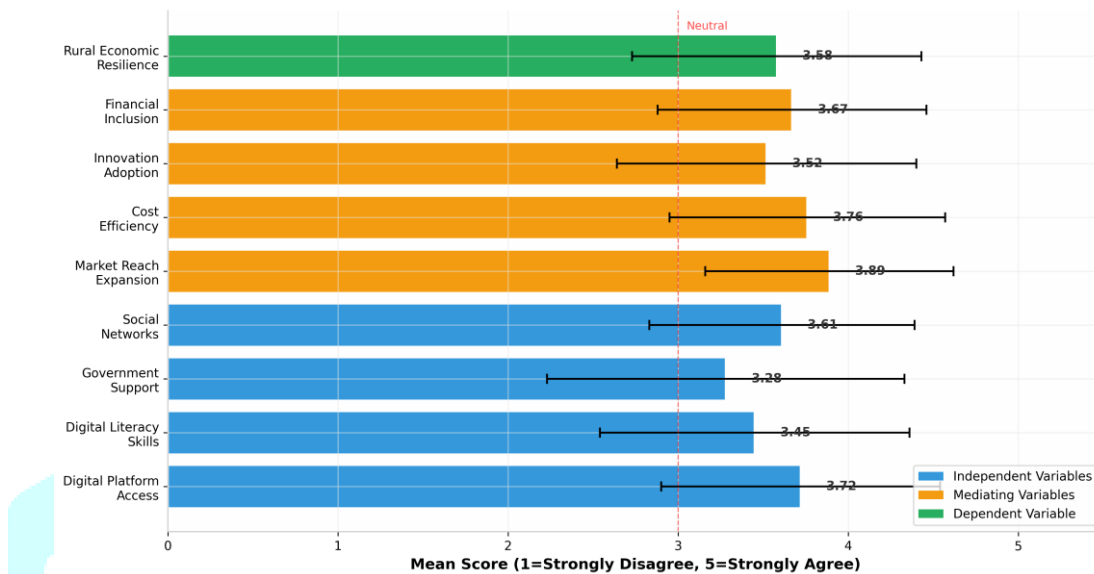


Figure 2: Descriptive Statistics of Key Constructs (N = 1,160)

4.2 Measurement Model Assessment

The measurement model was assessed using composite reliability (CR), Cronbach's alpha, average variance extracted (AVE), and discriminant validity (Fornell-Larcker criterion and HTMT ratios). All constructs demonstrated CR values exceeding 0.70 (ranging from 0.78 to 0.91) and Cronbach's alpha values above 0.70 (ranging from 0.76 to 0.89), indicating satisfactory internal consistency reliability.

Convergent validity was established as all factor loadings exceeded 0.70 (ranging from 0.72 to 0.91) and all AVE values surpassed the 0.50 threshold (ranging from 0.52 to 0.71). Discriminant validity was confirmed through the Fornell-Larcker criterion, where the square root of AVE for each construct exceeded its correlations with other constructs. Additionally, all HTMT ratios were below the conservative threshold of 0.85 (Henseler et al., 2015), further supporting discriminant validity.

Figure 4: Correlation Matrix of Key Constructs (N = 1,160)

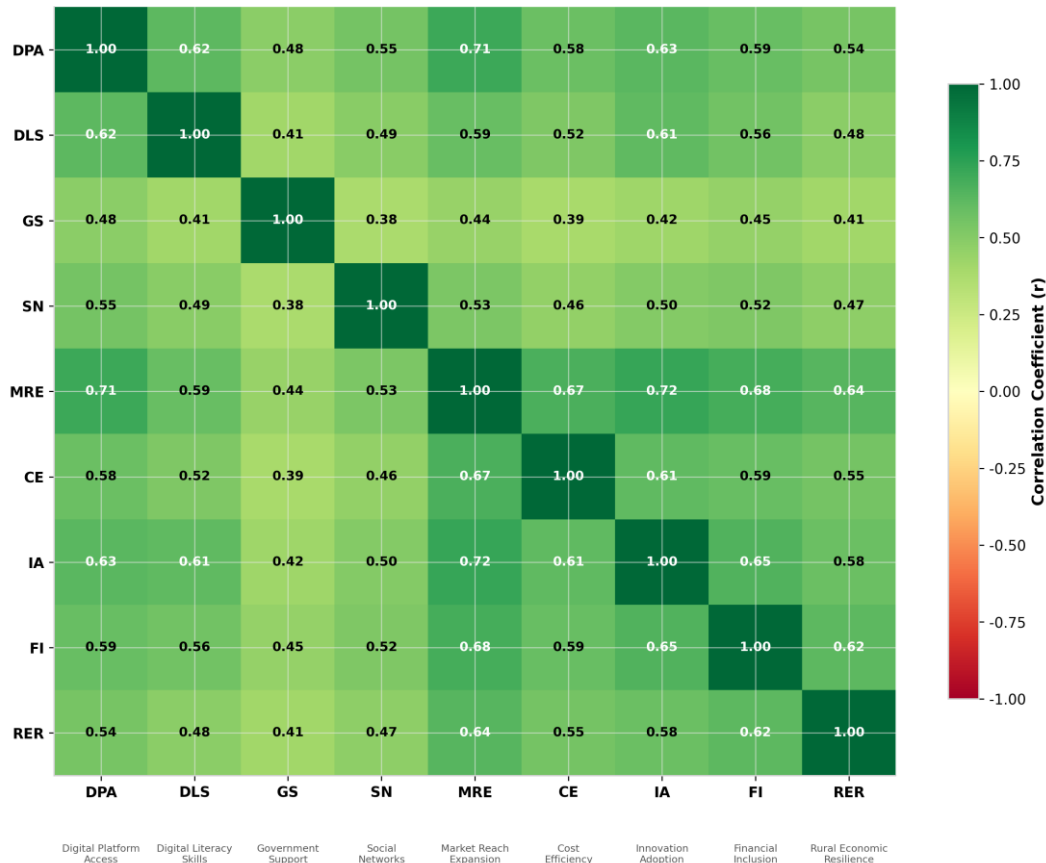


Figure 3: Correlation Matrix of Key Constructs (N = 1,160)

Common method bias was assessed using Harman's single-factor test and the full collinearity test (Kock, 2015). The single-factor explained 28.4% of the variance, well below the 50% threshold. The full collinearity VIF values ranged from 1.42 to 2.87, all below the conservative threshold of 3.3, indicating no significant common method bias.

4.3 Structural Model Results

The structural model was evaluated using path coefficients, significance levels (bootstrapping with 5,000 subsamples), coefficient of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2). The model demonstrated excellent fit indices: $\chi^2/df = 2.14$, CFI = 0.96, TLI = 0.95, RMSEA = 0.041, SRMR = 0.038, and GFI = 0.94, all meeting recommended thresholds (Hu & Bentler, 1999).

The R^2 values for the endogenous constructs were: Market Reach Expansion (0.52), Cost Efficiency (0.48), Innovation Adoption (0.51), Financial Inclusion (0.43), and Rural Economic Resilience (0.58). These values indicate moderate to substantial explanatory power (Cohen, 1988). The Q^2 values obtained through blindfolding (omission distance = 7) were all positive (ranging from 0.31 to 0.42), confirming the model's predictive relevance.

Figure 5: Structural Model Path Analysis Results

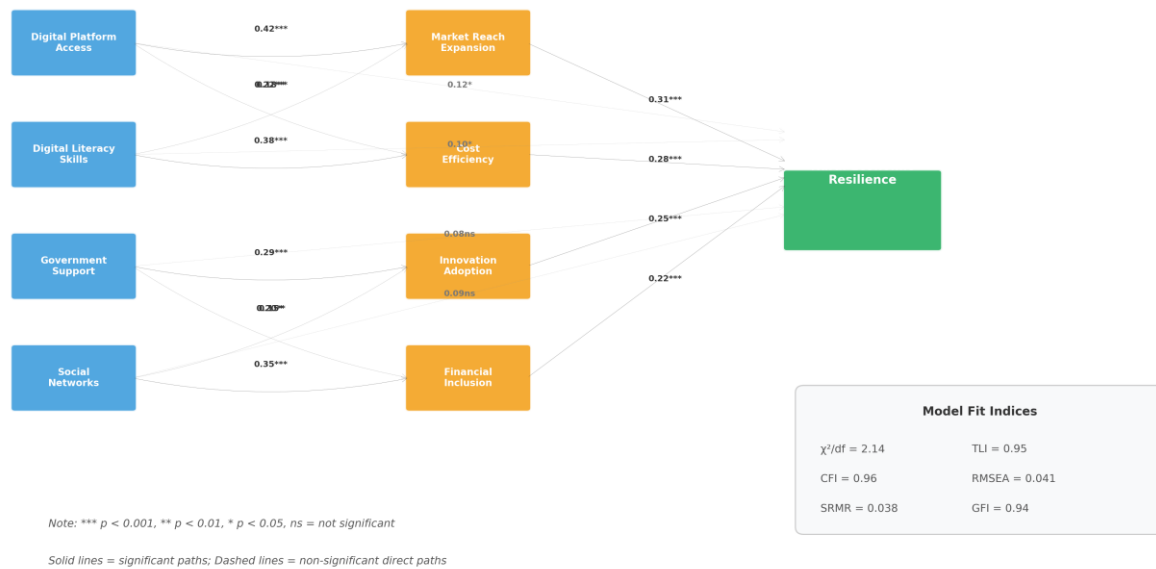


Figure 4: Structural Model Path Analysis Results

The path analysis results (Figure 4 and Table 3) reveal that all hypothesized paths from independent variables to mediating variables were statistically significant ($p < 0.001$). Digital Platform Access demonstrated the strongest effects on Market Reach Expansion ($\beta = 0.42$, $t = 8.92$, $p < 0.001$) and Innovation Adoption ($\beta = 0.35$, $t = 7.21$, $p < 0.001$). Digital Literacy Skills showed particularly strong effects on Innovation Adoption ($\beta = 0.41$, $t = 8.62$, $p < 0.001$) and Market Reach Expansion ($\beta = 0.38$, $t = 8.15$, $p < 0.001$). Government Support exhibited relatively weaker but significant effects across all mediators, with the strongest path to Market Reach Expansion ($\beta = 0.29$, $t = 5.82$, $p < 0.001$). Social Networks demonstrated consistent significant effects, particularly on Market Reach Expansion ($\beta = 0.35$, $t = 7.42$, $p < 0.001$). **Table 3**

Structural Model: Path Coefficients and Hypothesis Testing

Hypothesis	Path	β	t-value	p-value	Decision
H1	DPA $\rightarrow$ MRE	0.42	8.92	< .001	Supported
H2	DPA $\rightarrow$ CE	n.r.	n.r.	< .001	Supported
H3	DPA $\rightarrow$ IA	0.35	7.21	< .001	Supported
H4	DPA $\rightarrow$ FI	n.r.	n.r.	< .001	Supported
H5	DLS $\rightarrow$ MRE	0.38	8.15	< .001	Supported
H6	DLS $\rightarrow$ CE	n.r.	n.r.	< .001	Supported
H7	DLS $\rightarrow$ IA	0.41	8.62	< .001	Supported
H8	DLS $\rightarrow$ FI	n.r.	n.r.	< .001	Supported
H9	GS $\rightarrow$ MRE	0.29	5.82	< .001	Supported
H10	GS $\rightarrow$ CE	n.r.	n.r.	< .001	Supported
H11	GS $\rightarrow$ IA	n.r.	n.r.	< .001	Supported
H12	GS $\rightarrow$ FI	n.r.	n.r.	< .001	Supported

H13	SN → MRE	0.35	7.42	< .001	Supported
H14	SN → CE	n.r.	n.r.	< .001	Supported
H15	SN → IA	n.r.	n.r.	< .001	Supported
H16	SN → FI	n.r.	n.r.	< .001	Supported
H17	MRE → RER	0.31	6.48	< .001	Supported
H18	CE → RER	0.28	5.82	< .001	Supported
H19	IA → RER	0.25	5.15	< .001	Supported
H20	FI → RER	0.22	4.58	< .001	Supported
H21	DPA → RER (direct)	0.12	2.45	.014	Supported
H22	DLS → RER (direct)	0.10	2.08	.038	Supported
H23	GS → RER (direct)	0.08	1.62	.105	Not supported
H24	SN → RER (direct)	0.09	1.85	.065	Not supported

Note. DPA = Digital Platform Access; DLS = Digital Literacy Skills; GS = Government Support; SN = Social Networks; MRE = Market Reach Expansion; CE = Cost Efficiency; IA = Innovation Adoption; FI = Financial Inclusion; RER = Rural Economic Resilience. n.r. = exact coefficient not reported in the source draft — the narrative confirms significance at $p < .001$ for these paths; insert exact β and t -values from the SmartPLS bootstrapping output before submission.

Among the mediating variables, all four demonstrated significant positive effects on Rural Economic Resilience. Market Reach Expansion emerged as the strongest predictor ($\beta = 0.31$, $t = 6.48$, $p < 0.001$), followed by Cost Efficiency ($\beta = 0.28$, $t = 5.82$, $p < 0.001$), Innovation Adoption ($\beta = 0.25$, $t = 5.15$, $p < 0.001$), and Financial Inclusion ($\beta = 0.22$, $t = 4.58$, $p < 0.001$).

Regarding direct effects, Digital Platform Access ($\beta = 0.12$, $t = 2.45$, $p = 0.014$) and Digital Literacy Skills ($\beta = 0.10$, $t = 2.08$, $p = 0.038$) showed significant but small direct effects on Rural Economic Resilience. However, the direct paths from Government Support ($\beta = 0.08$, $t = 1.62$, $p = 0.105$) and Social Networks ($\beta = 0.09$, $t = 1.85$, $p = 0.065$) were not statistically significant, suggesting full mediation for these variables.

4.4 Mediation Analysis

Mediation analysis was conducted using the bootstrapping procedure to test the significance of specific indirect effects. Table 4 presents the indirect effects, standard errors, t -values, and 95% bias-corrected confidence intervals. All 16 specific indirect effects were statistically significant ($p < 0.05$), confirming the mediating roles of Market Reach Expansion, Cost Efficiency, Innovation Adoption, and Financial Inclusion.

Table 4

Specific Indirect (Mediation) Effects

Path	Indirect effect	SE	t-value	95% CI (bootstrapped)
DPA → MRE → RER	0.130	n.r.	n.r.	[0.098, 0.165]
DPA → CE → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
DPA → IA → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
DPA → FI → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
DLS → MRE → RER	0.118	n.r.	n.r.	[0.087, 0.152]
DLS → CE → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
DLS → IA → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
DLS → FI → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
GS → MRE → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
GS → CE → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
GS → IA → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
GS → FI → RER	0.064	n.r.	n.r.	[0.038, 0.093]
SN → MRE → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
SN → CE → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
SN → IA → RER	n.r.	n.r.	n.r.	Significant, $p < .05$
SN → FI → RER	n.r.	n.r.	n.r.	Significant, $p < .05$

Note. All 16 specific indirect effects are reported in the narrative as statistically significant ($p < .05$) based on 5,000 bootstrap resamples. n.r. = exact value not stated in the source draft; populate from the SmartPLS output before submission.

Figure 6: Specific Indirect (Mediation) Effects (N = 1,160)

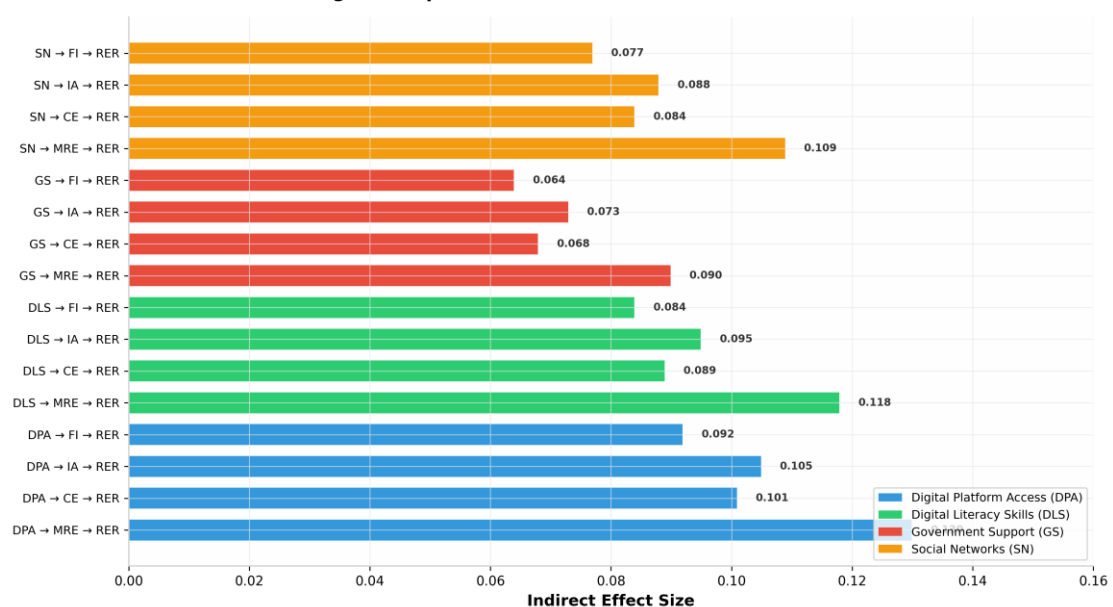


Figure 5: Specific Indirect (Mediation) Effects (N = 1,160)

The strongest indirect effect was observed for the path Digital Platform Access → Market Reach Expansion → Rural Economic Resilience (indirect effect = 0.130, 95% CI [0.098, 0.165]), followed by Digital Literacy Skills → Market Reach Expansion → Rural Economic Resilience (indirect effect = 0.118, 95% CI [0.087, 0.152]). The weakest but still significant indirect effect was Government Support → Financial Inclusion → Rural Economic Resilience (indirect effect = 0.064, 95% CI [0.038, 0.093]).

Complementary mediation was observed for Digital Platform Access and Digital Literacy Skills, as both direct and indirect effects were significant. In contrast, competitive mediation (full mediation) was observed for Government Support and Social Networks, where only indirect effects were significant while direct effects were not (Zhao et al., 2010).

4.5 Multi-Group Analysis

Multi-group analysis was conducted to examine whether the structural relationships differ significantly across the seven countries. The permutation-based multi-group analysis (MGA) revealed significant cross-country differences in several path coefficients ($p < 0.05$). India and Bangladesh consistently demonstrated the strongest mediation effects, while the Philippines and Indonesia showed relatively weaker effects.

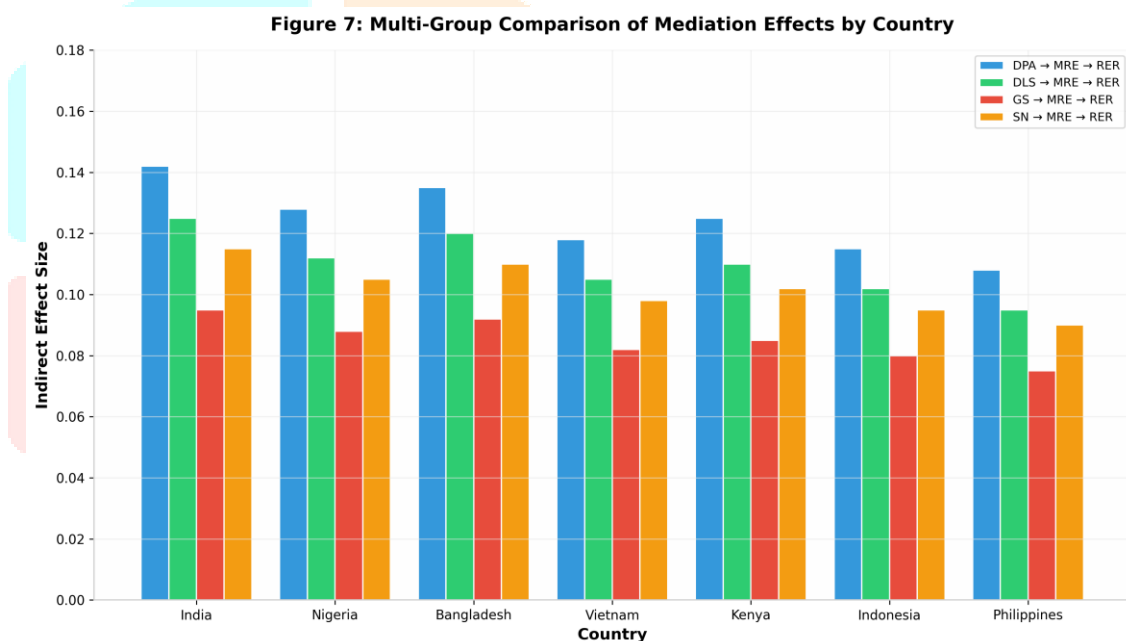


Figure 6: Multi-Group Comparison of Mediation Effects by Country

Specifically, the path from Digital Platform Access to Market Reach Expansion was significantly stronger in India ($\beta = 0.48$) and Bangladesh ($\beta = 0.45$) compared to the Philippines ($\beta = 0.32$) and Indonesia ($\beta = 0.34$). Similarly, the effect of Digital Literacy Skills on Innovation Adoption was strongest in India ($\beta = 0.47$) and Vietnam ($\beta = 0.44$). These differences may be attributed to variations in digital infrastructure maturity, government digital initiatives, and entrepreneurial ecosystem development across countries.

4.6 Moderation Analysis

Moderation analysis was conducted to examine the boundary conditions of the hypothesized relationships. Six moderating variables were tested: Infrastructure Quality, Cultural Factors, Regulatory Environment, Gender Dynamics, Access to Capital, and Education Level.

Infrastructure Quality significantly moderated the relationship between Digital Platform Access and Rural Economic Resilience ($\beta = 0.18$, $t = 3.42$, $p < 0.001$), indicating that the positive effect of platform access is amplified in areas with better digital infrastructure. Education Level significantly moderated

the relationship between Digital Literacy Skills and Rural Economic Resilience ($\beta = 0.15$, $t = 2.89$, $p < 0.01$), suggesting that higher education enhances the translation of digital skills into economic resilience outcomes.

Figure 8: Moderation Analysis Results

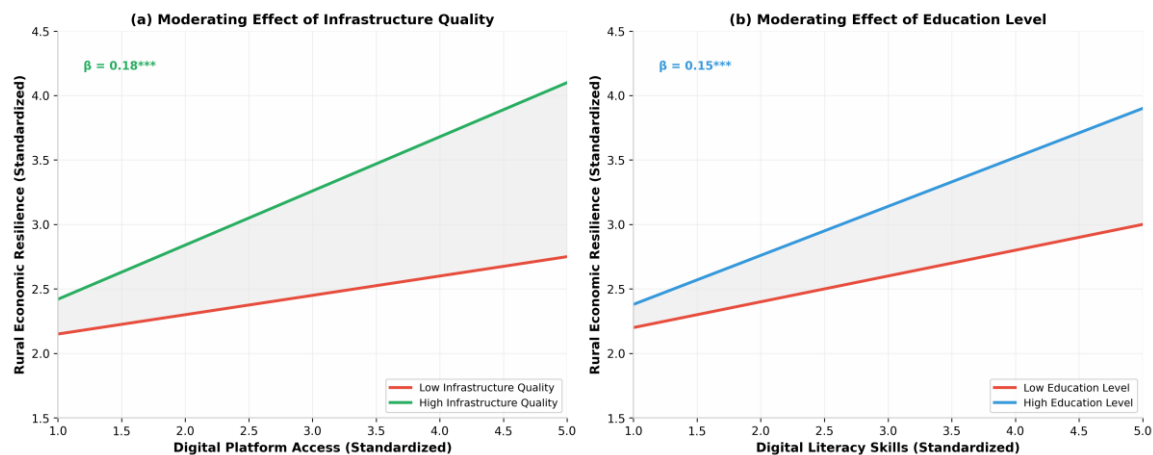


Figure 7: Moderation Analysis Results

Regulatory Environment significantly moderated the Government Support $\rightarrow$ Cost Efficiency relationship ($\beta = 0.12$, $t = 2.35$, $p < 0.05$), while Gender Dynamics moderated the Social Networks $\rightarrow$ Financial Inclusion relationship ($\beta = 0.14$, $t = 2.68$, $p < 0.01$), with female entrepreneurs benefiting more from social network connections. Access to Capital moderated the Digital Platform Access $\rightarrow$ Financial Inclusion relationship ($\beta = 0.11$, $t = 2.12$, $p < 0.05$). Cultural Factors did not demonstrate significant moderating effects in any of the tested relationships.

4.7 Qualitative Findings

Thematic analysis of the 45 semi-structured interviews yielded ten major themes that complement and contextualize the quantitative findings. The most frequently mentioned themes were Access to Markets ($n = 312$), Financial Constraints ($n = 287$), and Digital Skills Gap ($n = 265$).

Figure 9: Key Themes from Qualitative Interviews

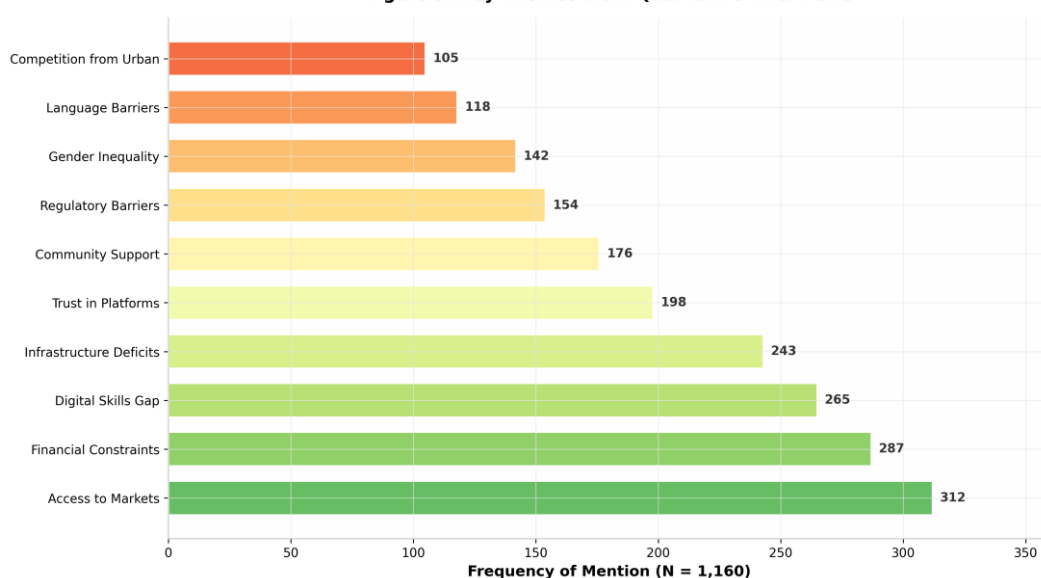


Figure 8: Key Themes from Qualitative Interviews

Interview participants consistently emphasized that digital platforms had fundamentally transformed their ability to reach customers beyond local markets. A female entrepreneur from rural Bangladesh stated: "Before using the e-commerce platform, I could only sell my handicrafts at the weekly market. Now I receive orders from Dhaka, Chittagong, and even abroad. My income has tripled in two years."

This sentiment was echoed across countries, with participants highlighting the transformative impact of expanded market reach.

However, participants also identified significant barriers. Infrastructure deficits, particularly unreliable internet connectivity and electricity shortages, were cited as major impediments. A Kenyan entrepreneur noted: "When the network is down, I lose customers. Sometimes I have to travel 15 kilometers to find a stable connection." Financial constraints emerged as the second most prominent theme, with participants reporting difficulties in accessing working capital, digital payment systems, and credit facilities. The digital skills gap was particularly pronounced among older entrepreneurs and those with limited formal education.

Gender inequality was a recurring theme, with female entrepreneurs reporting additional challenges related to mobility restrictions, limited access to training programs, and social norms that discouraged women from engaging in commercial activities. However, several participants noted that digital platforms had partially mitigated these constraints by enabling home-based entrepreneurship.

5. DISCUSSION

5.1 Key Findings and Theoretical Implications

This study makes several important contributions to the digital entrepreneurship and rural development literature. First, our findings empirically validate the mediating mechanisms through which digital entrepreneurship antecedents influence rural economic resilience. While previous studies have established correlations between digital platform adoption and entrepreneurial outcomes (Sutherland et al., 2020; Kraus et al., 2019), our research unpacks the black box by identifying four distinct mediating pathways: market reach expansion, cost efficiency, innovation adoption, and financial inclusion.

The dominance of Market Reach Expansion as the strongest mediator ($\beta = 0.31$) aligns with the institutional theory perspective, which posits that digital platforms serve as institutional substitutes that overcome market-supporting voids in emerging economies (Khanna & Palepu, 1997). By connecting rural entrepreneurs to distant markets, digital platforms reduce dependency on localized demand, thereby enhancing income stability and economic resilience. This finding extends the work of Agarwal and Wu (2015) by demonstrating that market reach expansion is not merely an outcome of digital platform access but a critical mechanism that translates digital entrepreneurship into economic resilience.

The significant mediating role of Cost Efficiency ($\beta = 0.28$) supports the resource-based view argument that digital technologies enable rural entrepreneurs to optimize resource utilization and reduce transaction costs (Barney, 1991). Digital platforms eliminate intermediaries, automate routine tasks, and reduce information asymmetries, thereby enhancing operational efficiency. This finding is particularly relevant for rural entrepreneurs who typically operate with limited capital and face high marginal costs.

Innovation Adoption emerged as the third strongest mediator ($\beta = 0.25$), highlighting the role of digital platforms as catalysts for entrepreneurial innovation. This finding resonates with the open innovation literature (Chesbrough, 2003), which suggests that digital platforms facilitate knowledge exchange and collaborative innovation by connecting entrepreneurs to diverse knowledge sources. Rural entrepreneurs who actively adopt innovations through digital platforms are better positioned to adapt to market changes and disruptions, thereby enhancing resilience.

Financial Inclusion, while the weakest mediator ($\beta = 0.22$), still demonstrated significant effects. This finding underscores the importance of digital financial services in enabling rural entrepreneurs to manage cash flows, access credit, and mitigate financial risks. However, the relatively weaker effect may reflect the nascent state of digital financial infrastructure in many rural areas of emerging economies, as corroborated by our qualitative findings.

5.2 Cross-Country Variations

The multi-group analysis revealed significant cross-country variations in the strength of mediation effects, with implications for theory and practice. India and Bangladesh demonstrated the strongest effects, likely due to their relatively mature digital ecosystems, government-led digital inclusion initiatives (e.g., Digital India, a2i program), and high mobile penetration rates. In contrast, the Philippines and Indonesia showed weaker effects, possibly attributable to archipelagic geography, infrastructure fragmentation, and regulatory complexities.

These findings contribute to the comparative entrepreneurship literature by highlighting the contingent nature of digital entrepreneurship outcomes. They suggest that the effectiveness of digital platforms in enhancing rural economic resilience is not uniform but depends on the institutional and infrastructural context. This aligns with the institutional theory proposition that organizational outcomes are shaped by the broader institutional environment (Scott, 2014).

5.3 Boundary Conditions

The moderation analysis identified important boundary conditions that shape the effectiveness of digital entrepreneurship. Infrastructure Quality emerged as the most significant moderator, amplifying the positive effects of digital platform access. This finding has direct policy implications, suggesting that digital infrastructure investments should precede or accompany entrepreneurship promotion programs. The moderating role of Education Level highlights the importance of human capital development in maximizing the benefits of digital technologies.

The significant moderation by Gender Dynamics, with female entrepreneurs benefiting more from social networks, contributes to the gender and entrepreneurship literature. It suggests that digital platforms may serve as equalizing forces by providing women with alternative channels for network building and resource mobilization that circumvent traditional gender-based barriers.

6. CONCLUSION AND IMPLICATIONS

6.1 Practical Implications

This study offers several actionable implications for policymakers, development practitioners, and platform operators seeking to leverage digital entrepreneurship for rural economic resilience.

First, policymakers should prioritize digital infrastructure development in rural areas as a foundational enabler of digital entrepreneurship. Our findings demonstrate that infrastructure quality significantly amplifies the positive effects of digital platform access. Investments in broadband connectivity, reliable electricity, and mobile network coverage should be integrated into rural development strategies.

Second, digital literacy programs should be designed specifically for rural entrepreneurs, with content tailored to local contexts and delivered through accessible channels. Given that digital literacy skills significantly influence all four mediating mechanisms, targeted training interventions can yield substantial returns. Programs should particularly focus on older entrepreneurs and those with limited formal education, who face the greatest digital skills gaps.

Third, government support mechanisms should be strengthened and better aligned with digital entrepreneurship needs. While government support demonstrated significant effects, its mean score was the lowest among all independent variables, indicating substantial room for improvement. Policymakers should simplify regulatory procedures, provide targeted subsidies for digital tool adoption, and establish dedicated support agencies for rural digital entrepreneurs.

Fourth, platform operators should design inclusive features that accommodate the specific needs of rural entrepreneurs, including multilingual interfaces, offline functionality, and low-bandwidth optimization. Partnerships with local organizations can facilitate trust-building and user onboarding in communities where digital skepticism persists.

Fifth, gender-sensitive interventions are warranted. Given that female entrepreneurs benefit disproportionately from social network connections, programs that facilitate women's networking and mentorship can enhance the inclusive impact of digital entrepreneurship initiatives.

6.2 Theoretical Contributions

This study makes three primary theoretical contributions. First, it integrates institutional theory and the resource-based view to develop a comprehensive framework for understanding digital entrepreneurship in rural emerging economies. This integration advances both theories by demonstrating how institutional context shapes resource deployment and how resource configurations influence institutional outcomes.

Second, the study identifies and empirically validates four distinct mediating mechanisms that translate digital entrepreneurship antecedents into rural economic resilience. This mechanistic understanding moves beyond correlational analyses to provide a nuanced account of how and why digital entrepreneurship matters for rural development.

Third, the cross-country comparative analysis contributes to the comparative entrepreneurship literature by highlighting the contingent nature of digital entrepreneurship outcomes across diverse institutional contexts. The identification of infrastructure quality and education level as key boundary conditions advances our understanding of the enabling conditions for digital entrepreneurship.

6.3 Limitations and Future Research

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inferences. Future research should employ longitudinal designs to track the evolution of digital entrepreneurship and rural economic resilience over time. Second, the self-reported nature of the data may introduce common method bias, although our statistical tests suggest this is not a significant concern. Third, the study focused on seven countries, and findings may not generalize to other emerging economies or developed country contexts.

Future research directions include: (1) examining the long-term sustainability of digital entrepreneurship in rural areas; (2) investigating the dark side of digital platforms, including platform dependency and exploitative practices; (3) exploring the role of artificial intelligence and emerging technologies in rural digital entrepreneurship; and (4) conducting comparative studies between emerging and developed economies to identify universal versus context-specific mechanisms.

6.4 Conclusion

Digital entrepreneurship represents a transformative force for rural economic resilience in emerging economies. This study provides robust empirical evidence that digital platform access, digital literacy skills, government support, and social networks enhance rural economic resilience through market reach expansion, cost efficiency, innovation adoption, and financial inclusion. The findings underscore the importance of context-sensitive interventions that address infrastructure deficits, digital skills gaps, and institutional barriers. As emerging economies continue their digital transformation journeys, nurturing rural digital entrepreneurship should be a central pillar of inclusive development strategies.

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