

## **Bridging the Digital Divide: Understanding the Awareness-Capability Paradox in Rural Enterprise Digital Transformation**

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### **Abstract**

Digital transformation promises rural economic development through expanded market access and enhanced efficiency, yet adoption rates remain disappointingly low despite widespread awareness. Why does awareness of digital importance fail to translate into capability in rural enterprises? Through qualitative investigation of 10 village-owned enterprises (BUMDES) in Indonesia using semi-structured interviews (n=20) and focus group discussions (n=24), we identify five interconnected barriers preventing awareness-to-action conversion: (1) resource scarcity trap - digital investments compete with survival needs, (2) knowledge-action gap - managers lack operational know-how despite recognizing importance, (3) ecosystem deficits - inadequate infrastructure and support constrain capability building, (4) capability-confidence mismatch - low self-efficacy inhibits experimentation, and (5) institutional inertia - routines and norms resist change. These mechanisms create self-reinforcing cycles sustaining persistent awareness-capability gaps despite strong digital aspirations. Findings challenge linear technology adoption assumptions, extend Resource-Based View and organizational learning theory to resource-constrained contexts, and inform intervention design emphasizing integrated support packages addressing multiple barriers simultaneously rather than isolated awareness campaigns or standalone training programs.

**Keywords:** Digital transformation barriers; awareness-capability gap; rural enterprises; resource constraints; organizational learning; BUMDES.

### **INTRODUCTION**

Digital transformation promises rural economic development through expanded market access and enhanced efficiency, yet adoption rates remain disappointingly low despite widespread awareness (OECD, 2021). This awareness-capability paradox - where strategic recognition fails to translate into operational capability - poses fundamental challenges for digital inclusion efforts (Ferrari et al., 2022; Rani et al., 2022). Recent assessment of 100 Indonesian village-owned enterprises (BUMDES) revealed striking patterns: 67.4% demonstrated high digital awareness, yet only 34.2% possessed adequate skills and 31.8% allocated sufficient budgets. This 33-percentage-point gap persists despite government campaigns, infrastructure improvements, and success story exposure.

Existing digital transformation literature offers limited explanation. Dominant frameworks - Technology Acceptance Model (Davis, 1989), Diffusion of Innovations (Rogers, 2003), Technology-Organization-Environment model (Tornatzky & Fleischer, 1990) - emphasize awareness and perceived benefits as primary drivers, implicitly assuming smooth progression from recognition to implementation. However, rural enterprise experiences suggest this assumption breaks down in resource-constrained contexts characterized by competing priorities, limited support ecosystems, and institutional barriers (Thonipara et al., 2022).

This study addresses these gaps by asking: What mechanisms prevent awareness from translating into capability? How do resource constraints, institutional factors, and

organizational processes interact to sustain persistent awareness-capability gaps? Drawing on Resource-Based View (Barney, 1991), Organizational Learning Theory (Levitt & March, 1988), and Institutional Theory (Scott, 2008), we develop an integrative framework through qualitative investigation of 10 BUMDES revealing five interconnected barriers creating self-reinforcing cycles.

The awareness-capability paradox describes organizational situations where strategic recognition of imperative changes coexists with persistent inability to develop corresponding operational capabilities (Leonard-Barton, 1992). Unlike implementation delays, the paradox represents sustained disconnection maintained through self-reinforcing mechanisms. High awareness-low capability differs fundamentally from low awareness - it creates aspiration-frustration cycles, resource misallocation, and strategic drift.

Classical technology adoption models inadequately address situations where awareness exists but capability development fails (FakhrHosseini et al., 2024). They treat capability as outcome (dependent on awareness) rather than examining mechanisms preventing capability development despite awareness. The paradox suggests need for theoretical elaboration addressing why awareness does not automatically translate to capability and what barriers prevent this translation in specific contexts (Pym, 2023).

We synthesize three theoretical perspectives: Resource-Based View emphasizes resources and capabilities as competitive advantage sources (Barney, 1991). The paradox emerges when organizations possess cognitive resources (awareness) but lack tangible resources (budget, infrastructure), human resources (skills), or organizational processes necessary for capability development. Resource scarcity creates zero-sum allocation dilemmas forcing choices between digital capability building and immediate survival needs (Eller et al., 2020). Organizational Learning Theory examines knowledge acquisition and institutionalization (Chandler & Hwang, 2015). The paradox manifests when organizations possess declarative knowledge (digital importance) without procedural knowledge (implementation know-how) (Pfister & Lehmann, 2023). Learning depends on absorptive capacity (Cohen & Levinthal, 1990) which may be limited in rural enterprises with low baseline digital literacy. Institutional Theory highlights how regulatory, normative, and cognitive institutions shape behavior (Scott, 2008). Awareness may arise from institutional pressures (government campaigns, peer success stories) without corresponding capability development when environments emphasize traditional practices, risk aversion, or face-saving conflicting with digital transformation imperatives.

The urgency of this research stems from three converging pressures. First, post-pandemic economic recovery requires rural enterprises to access digital markets for survival. Second, government digitalization budgets are being allocated without evidence-based understanding of implementation barriers, risking wasted resources. Third, without intervention, the awareness-capability gap may widen as digital technologies advance, further marginalizing rural enterprises. Delaying investigation means perpetuating a cycle where training and awareness campaigns raise expectations without enabling achievement, potentially discrediting digital transformation as a development strategy.

The novelty of this research lies in four distinct contributions. First, it shifts focus from adoption barriers to the awareness-to-action translation process itself. Second, it identifies specific mechanisms rather than general obstacles. Third, it develops an integrative framework

combining Resource-Based View, Organizational Learning Theory, and Institutional Theory to explain the paradox. Fourth, it provides empirical evidence from BUMDES, an understudied organizational form critical to rural economies across Southeast Asia. Unlike previous studies that treated awareness and capability as correlated outcomes, this research conceptualizes their disconnection as a distinct phenomenon requiring theoretical explanation.

Synthesizing these perspectives, we propose five interconnected mechanisms sustaining awareness-capability gaps: (1) Resource allocation dilemmas - scarce resources create zero-sum competition between digital investments and survival needs, (2) Knowledge-action gaps - awareness of strategic importance does not convey operational implementation knowledge, (3) Ecosystem deficits - capability development requires supportive external ecosystems providing training, technical assistance, infrastructure, (4) Capability-confidence mismatches - low confidence in organizational capacity inhibits experimentation crucial for learning, (5) Institutional inertia - established routines, community expectations, and normative pressures maintain status quo despite strategic awareness. These mechanisms interact rather than operate independently, creating self-reinforcing cycles requiring examination of interaction patterns rather than single root causes.

## **RESEARCH METHODS**

### **Research Design**

This study employs interpretive phenomenological approach to understand paradox mechanisms from participants' lived experiences (Smith & Osborn, 2015). We selected qualitative methodology because: (1) research questions ask 'how' and 'why' requiring explanatory depth, (2) existing theory inadequately explains the paradox necessitating exploratory investigation, (3) understanding mechanisms requires rich contextual data capturing organizational processes and institutional pressures.

### **Sampling and Participants**

We employed purposive sampling selecting information-rich cases demonstrating high awareness-low capability patterns (Patton, 2015). From 100 BUMDES assessed quantitatively, 43 met criteria (awareness  $\geq 60/100$ , skills and budget  $\leq 40/100$ ). We selected 10 BUMDES ensuring sectoral diversity (agriculture=3, tourism=3, trading=2, services=2) and scale variation (4-18 employees, Rp 80M-450M revenue). For each BUMDES, we interviewed managers (n=10) and staff (n=10). Additionally, three focus group discussions recruited BUMDES managers (n=8), government officials (n=6), and digital service providers (n=10). Total: 20 individual interviews plus 24 FGD participants.

### **Data Collection and Analysis**

Data collection (August-October 2024) included: semi-structured interviews (90-120 minutes) exploring digital awareness sources, implementation attempts, perceived barriers, resource allocation decisions; follow-up staff interviews (45-60 minutes) triangulating perspectives; focus group discussions (120-180 minutes) examining collective sensemaking; document analysis of business plans, financial statements, meeting minutes; field observations documenting infrastructure and operations. All interviews audio-recorded, transcribed verbatim (847 pages), then translated to English.

We employed thematic analysis following Braun and Clarke (2006): (1) familiarization through multiple readings, (2) systematic coding using NVivo 12 generating 287 initial codes, (3)

grouping codes into potential themes, (4) reviewing themes for internal homogeneity and external heterogeneity, (5) defining five final themes, (6) producing report with vivid examples. Analysis proceeded iteratively between data collection and interpretation. Trustworthiness established through triangulation, prolonged engagement, member checking with 6 participants, peer debriefing, audit trails, and reflexive journaling.

## **RESULTS AND DISCUSSION**

Thematic analysis identified five interconnected mechanisms sustaining the awareness-capability paradox. We present each theme with supporting evidence, then synthesize relationships.

### **Theme 1: The Resource Scarcity Trap**

All 10 BUMDES operated under severe resource constraints creating zero-sum competition between digital investments and immediate operational needs. Limited budgets forced immediate needs (inventory, equipment, debt) to consistently trump digital initiatives despite managers recognizing strategic importance.

We know social media can boost sales. But when you have 5 million rupiah and must choose: buy fertilizer for next harvest or pay for Facebook ads? No harvest means no business to market. Digital can wait but fertilizer cannot. (Manager, Agriculture)

Resource scarcity operated through three mechanisms: survival prioritization (immediate needs consistently won), compounding deficits (lack of digital capability reduced revenue reinforcing scarcity), and hidden cost revelation (free platforms required substantial operational costs for content creation, management, and staff time). One tourism BUMDES calculated Instagram management required 15-20 hours weekly - equivalent to one full-time staff member they couldn't afford (Affandi et al., 2024; Fizzanty, 2024)..

Free platform doesn't mean free operation! We need someone to manage it daily. We tried for two months - our marketing staff was overwhelmed, other work suffered. Not sustainable with our capacity. (Manager, Tourism)

### **Theme 2: The Knowledge-Action Gap**

High awareness did not convey operational knowledge for implementation. Managers possessed declarative knowledge (digital matters) but lacked procedural knowledge (how to implement). Training programs emphasized importance and success stories but provided insufficient actionable guidance for context-specific implementation.

Everyone says we need to go digital. We agree! But what exactly do we do tomorrow? Which platform? What content? Nobody teaches this specifically for coffee processing business in village context. The gap between you should digitalize and actual doing is huge. (Manager, Agriculture)

This gap manifested through: generic guidance vs. specific implementation needs, platform confusion amid digital ecosystem complexity, content creation paralysis without frameworks for engagement, and metrics blindness preventing learning from experiments (Benhayoun et al., 2020). Organizations couldn't distinguish normal learning curves from genuine mismatches, creating premature abandonment of potentially viable initiatives.

### **Theme 3: Ecosystem Deficits**

Capability development requires supportive external ecosystems. Rural locations featured significant deficits: infrastructure unreliability (frequent service disruptions despite nominal coverage), technical support scarcity (consultants priced for urban businesses), peer learning limitations (success story awareness without capability transfer mechanisms), and equipment access barriers (quality content requires cameras beyond BUMDES budgets) (Rosnan & Yusof, 2023).

We started online shop on Tokopedia. First week, three customers ordered. But our internet went down for two days - customers cancelled, left bad reviews. When internet returned, our shop rating dropped, orders stopped. How to build digital business with unreliable infrastructure? (Manager, Trading)

Infrastructure unreliability created multiple problems: customer service deteriorated during outages creating reputation damage, investment confidence eroded as unreliable infrastructure made digital commitments risky, and staff productivity dropped without backup activities during connectivity problems (Heeks & Ospina, 2023).

### **Theme 4: Capability-Confidence Mismatch**

Low confidence in organizational capacity inhibited experimentation crucial for learning despite high awareness. This operated through: social comparison anxiety (exposure to successful adopters created demoralizing comparisons rather than aspirational models), failure aversion (cultural norms emphasizing face-saving elevated public failure costs), and expertise underestimation (managers viewed digital as entirely separate domain rather than extension of existing capabilities) (Ismail et al., 2023; Alabdali et al., 2023).

We see other BUMDES with beautiful Instagram - thousands of followers. We can barely maintain simple Facebook. Why try Instagram when we'll embarrass ourselves with amateur content? Better to focus on what we can do well than fail publicly online. (Manager, Services)

### **Theme 5: Institutional Inertia**

Established routines, community expectations, and normative pressures maintained status quo despite strategic awareness. This manifested through: governance constraints (democratic structures created veto points where conservative stakeholders blocked digital initiatives), routine persistence (established practices resisted digital alternatives despite recognized inefficiencies), normative expectations (community norms emphasized traditional practices), and risk-reward asymmetries (visible digital failures generated substantial criticism while invisible inaction carried minimal penalties) (Xiao et al., 2024).

Our community is traditional - elders are suspicious of technology. When we proposed Instagram marketing budget, village council asked: why waste money on pictures when word-of-mouth worked for decades? Easier to maintain traditional approach than fight institutional resistance. (Manager, Agriculture)

### **Integrative Framework**

The five themes interact creating self-reinforcing cycles: High awareness creates aspiration but resource scarcity prevents investment. Without investment, knowledge-action gaps persist. Ecosystem deficits compound challenges transforming attempts into failures. Failures erode confidence feeding capability-confidence mismatches. Low confidence reinforces institutional resistance. Institutional pressures influence resource allocation

priorities. Failed initiatives validate non-investment reinforcing resource scarcity. Yet awareness remains high as success stories circulate, training continues, competitive pressures intensify - creating stable paradox sustained by interacting barriers. Breaking the cycle requires coordinated interventions addressing multiple mechanisms simultaneously rather than isolated solutions.

### **Theoretical Contributions**

This study extends technology adoption models by demonstrating awareness-to-action translation cannot be assumed in resource-constrained contexts. The paradox represents not cognitive failure but organizational response to structural constraints. We contribute to Resource-Based View by illuminating capability development barriers where strategic capabilities compete directly with survival needs, suggesting RBV requires elaboration for contexts lacking resource slack (Gomez-Trujillo & Gonzalez-Perez, 2022). We advance organizational learning theory by identifying mechanisms creating learning blockages despite high motivation: resource constraints preventing practice-based learning, ecosystem deficits eliminating support, knowledge-action gaps from generic training, institutional inertia resisting experimentation, and self-efficacy barriers inhibiting failure tolerance (Skare et al., 2023). Our multi-theoretical framework demonstrates how resource constraints, learning barriers, and normative pressures interact creating self-reinforcing cycles requiring causal complexity recognition rather than single-factor explanations.

### **Practical Implications**

Findings suggest six actionable implications: (1) Integrated support packages - awareness campaigns alone exacerbate paradox by raising aspirations without enablement; effective programs must combine procedural training, seed funding, technical assistance, infrastructure improvements, and stakeholder engagement. (2) Differentiated strategies - high awareness-low capability organizations need intensive capability building; moderate readiness cases require comprehensive multi-component programs; digital-ready enterprises benefit from advanced optimization guidance rather than basic training. (3) Procedural knowledge emphasis - training should restructure from declarative to procedural content providing actionable guidance on platform selection, content creation, metrics interpretation, and problem-solving rather than generic importance messaging. (4) Ecosystem building - infrastructure development and support system creation deserve equal priority with enterprise-level capability building through connectivity improvements, technical assistance networks, peer learning platforms, and equipment access programs. (5) Self-efficacy strengthening - interventions must address confidence barriers through realistic success models showcasing authentic learning pathways, small wins emphasis, and protected experimentation spaces reducing failure penalties. (6) Resource allocation flexibility - support programs must recognize digital capability development cannot proceed until survival needs are secured, requiring transitional support, phased implementation, patient capital, and demonstrated quick wins.

### **Limitations and Future Research**

Several limitations suggest future directions: Geographic scope limited to one Indonesian regency may constrain transferability - cross-national comparative studies could illuminate universal versus context-dependent mechanisms. Qualitative methodology enabled rich exploration but limits generalizability - mixed-method research combining qualitative insights with quantitative hypothesis testing could strengthen external validity. Focus on high

awareness-low capability cases excluded alternative patterns - comparative studies across readiness profiles could reveal multiple developmental pathways. Static snapshot approach limits understanding of paradox evolution - longitudinal research tracking organizations over time could illuminate emergence, resolution, and intervention timing effectiveness. Limited attention to technology heterogeneity - technology-specific investigations could refine understanding of varied paradox mechanisms. Intervention effectiveness remains untested - experimental studies comparing alternative support approaches could provide implementation evidence.

## CONCLUSION

This qualitative study illuminated mechanisms sustaining the awareness-capability paradox in rural enterprise digital transformation. Five interconnected barriers prevent awareness from translating into capability: resource scarcity traps creating survival-capability allocation dilemmas, knowledge-action gaps where strategic recognition exists without operational know-how, ecosystem deficits constraining capability building through infrastructure and support inadequacies, capability-confidence mismatches where low self-efficacy inhibits experimentation, and institutional inertia maintaining status quo through governance constraints and normative pressures. These mechanisms operate as self-reinforcing cycle creating persistent disconnection between digital aspirations and organizational capabilities.

Findings challenge linear technology adoption assumptions, demonstrating awareness does not smoothly translate to implementation in resource-constrained contexts characterized by systemic barriers. The paradox stems not from cognitive failures or insufficient awareness but from structural constraints: limited resources forcing survival-capability tradeoffs, inadequate support ecosystems constraining learning, institutional pressures resisting change, self-efficacy barriers inhibiting experimentation, and knowledge gaps preventing actionable implementation.

Breaking the paradox requires coordinated interventions addressing multiple mechanisms simultaneously: integrated support packages combining procedural knowledge, seed funding, technical assistance, ecosystem building, self-efficacy strengthening, and institutional engagement rather than isolated awareness campaigns or standalone training. Support strategies should differentiate across readiness profiles and recognize that digital capability development cannot proceed until survival needs are secured, requiring patient capital and transitional support.

As digital technologies reshape economic landscapes globally, understanding this paradox's mechanisms becomes essential for inclusive development. Future research should explore paradox mechanisms across diverse contexts, investigate evolution through longitudinal studies, test intervention effectiveness through experimental designs, examine technology-specific variations, and develop predictive models. Only through deepening understanding of how awareness-capability gaps emerge, persist, and potentially dissolve can we develop support systems genuinely enabling rural enterprise digital transformation rather than merely raising unfulfilled aspirations.

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