



Entrepreneurial Capabilities, Absorptive Capacity, and Innovative Behavior in Indonesian SMEs: A Qualitative Literature Review

Yohan Fitriadi^{1*}, Harif Amali Rivai², Laura Syahrul³, Hendra Lukito⁴

¹⁻⁴Universitas Andalas, Indonesia

Email: yohan.ftr@gmail.com¹, harifamali@gmail.com², Laurasyahrul@gmail.com³,
hendralukito@eb.unand.ac.id⁴

*Author correspondence: yohan.ftr@gmail.com

Abstract. Indonesian small and medium enterprises (SMEs) face digital disruption, volatile markets, and resource constraints that make innovation dependent on more than the possession of entrepreneurial or technological resources. This study qualitatively reviews how entrepreneurial capabilities, absorptive capacity, and innovative behavior are connected in SME research, with particular emphasis on Indonesia. A structured corpus of 27 peer-reviewed studies was coded by publication period, context, method, and focal construct. IBM SPSS Statistics was used only to summarize the coded corpus through descriptive frequencies and cross-tabulations, while the substantive analysis relied on qualitative thematic synthesis. The evidence converges on a three-stage process: entrepreneurial alertness/orientation, network capability, and digital capability expand opportunity sensing and access to external knowledge; absorptive capacity converts knowledge through acquisition, assimilation, transformation, and exploitation; and innovative behavior enacts converted knowledge through idea exploration, generation, championing, and implementation. Indonesian studies support the complementarity of absorptive, network, and digital capabilities, but inconsistent direct relationships indicate strong contextual dependence. The review proposes a sensing-absorption-enactment framework and distinguishes owner-manager innovative behavior from firm-level innovation capability. SME policy should therefore strengthen knowledge-conversion routines alongside digital and networking support.

Keywords: Absorptive Capacity; Entrepreneurial Capabilities; Indonesian SMEs; Innovative Behavior; Qualitative Literature Review.

1. INTRODUCTION

Small and medium enterprises (SMEs) occupy a strategic position in emerging economies because they combine local market knowledge, entrepreneurial discretion, and organizational flexibility. Yet those advantages coexist with familiar constraints: limited managerial depth, thin R&D resources, restricted access to specialized knowledge, and dependence on external partners. Under these conditions, innovation is rarely the product of a single resource. It emerges from the way owner-managers recognize opportunities, connect to external knowledge, use digital tools, learn from partners, and translate what they learn into new products, processes, services, or business models. A capability perspective is therefore more useful than a resource inventory because it directs attention to what SMEs can repeatedly sense, absorb, recombine, and enact (Barney, 1991; Teece et al., 1997; Teece, 2007).

Entrepreneurial capability is treated in this review as a family of opportunity-oriented and relational capacities rather than one homogeneous construct. Entrepreneurial alertness captures scanning and search, association and connection, and evaluation and judgment in the pursuit of opportunities (Tang et al., 2012). Entrepreneurial orientation emphasizes innovativeness, proactiveness, and risk taking at the firm level, while network capability

reflects the ability to initiate, coordinate, and use interorganizational relationships. Digital capability adds a contemporary layer by enabling SMEs to collect market signals, communicate with customers and partners, integrate information, and reconfigure processes. Meta-analytic evidence confirms that entrepreneurial alertness is positively associated with innovation, opportunity recognition, and performance, but the strength of these relationships varies across settings (Araujo et al., 2023).

The central problem is that opportunity sensing and knowledge access do not automatically produce innovation. Cohen and Levinthal (1990) introduced absorptive capacity as the ability to recognize the value of external knowledge, assimilate it, and apply it commercially. Zahra and George (2002) later differentiated potential absorptive capacity—acquisition and assimilation—from realized absorptive capacity—transformation and exploitation. This distinction is especially relevant to SMEs. Small firms may be highly exposed to information through customers, suppliers, digital platforms, business associations, universities, or government programs, but exposure creates value only when knowledge can be interpreted, connected with prior experience, and incorporated into decisions and routines. Evidence from manufacturing SMEs shows that potential and realized absorptive capacity can mediate the relationship between entrepreneurial orientation and radical innovation performance (Sarsah et al., 2020), while research on collaborative networks demonstrates that the deployment of absorptive capacity varies with partnership quality, network stage, and cognitive distance (Benhayoun et al., 2020, 2021).

A second conceptual problem concerns the innovation outcome itself. Much SME research uses innovation capability, innovation performance, business model innovation, or firm performance as the dependent variable. These organizational outcomes should not be treated as identical to innovative behavior. Innovative behavior is a behavioral enactment process through which individuals explore opportunities, generate ideas, champion them, and implement them (De Jong & Den Hartog, 2010). In owner-managed SMEs, the boundary between individual and organizational action is porous because the owner-manager may simultaneously recognize an opportunity, mobilize a network, allocate resources, and lead implementation. Even so, maintaining the level distinction is analytically important: absorptive capacity is primarily an organizational knowledge-processing capability, whereas innovative behavior describes how actors translate knowledge and ideas into action. Firm-level innovation capability and performance are downstream consequences rather than synonyms for individual behavior.

The Indonesian literature offers a valuable but fragmented setting for integrating these mechanisms. Recent evidence shows that entrepreneurial orientation dimensions do not always move in the same direction; a large multi-region Indonesian study found positive effects for innovativeness, risk taking, and strategic networking but a negative effect for proactiveness on SME performance (Adam et al., 2024). Research on tempe-chip SMEs in Malang found that entrepreneurial orientation was directly associated with innovation capability and networking capability, yet was not associated with absorptive capacity; networking, rather than absorptive capacity, carried the indirect relationship from entrepreneurial orientation to innovation capability (Rupianti et al., 2022). Other Indonesian studies show positive links from absorptive capacity to innovation capability and performance (Prakasa et al., 2022; Nuryakin & Qamari, 2026), from network capability to knowledge creation and product innovation (Sasono et al., 2023), and from digital capability to digital transformation and SME performance (Prakasa & Jumani, 2024). These findings imply complementarity, but not a universal linear chain.

Digitalization further complicates the relationship. Digital capability can widen the amount, speed, and variety of knowledge available to SMEs, but technology does not guarantee that information is understood or converted into innovations. International evidence links digital capability to digital business model innovation and competitiveness (Fang et al., 2024), while Indonesian research links digital and network capabilities to innovation and performance (Widiarti et al., 2025) and positions digital capability within a broader configuration of digital leadership, entrepreneurial orientation, innovation capability, and SME performance (Mudzakkir et al., 2026). The implication is that digital capability is best understood as knowledge infrastructure and reconfiguration capacity. Its innovative value depends on organizational learning and on the capacity to exploit what digital channels reveal.

Despite this expanding evidence base, three gaps remain. First, entrepreneurial, network, digital, absorptive, and innovative-behavior literatures are usually examined in separate models. Second, Indonesian studies remain predominantly quantitative and commonly emphasize firm-level performance, leaving the behavioral process through which owner-managers convert knowledge into innovation underexplored. Third, evidence of inconsistent direct effects suggests that a simple 'capability causes innovation' model is too coarse. A process framework is needed to explain how different capabilities occupy different positions in an innovation sequence and why a capability may be valuable in one configuration but weak in another.

This qualitative literature review addresses those gaps by asking three questions. First, how do entrepreneurial alertness/orientation, network capability, and digital capability

contribute to opportunity sensing and external knowledge access in SMEs? Second, how does absorptive capacity convert accessed knowledge into innovation-relevant understanding and action? Third, how can innovative behavior be positioned as the micro-level enactment mechanism linking organizational knowledge conversion with firm-level innovation capability? The study combines thematic synthesis with SPSS-assisted descriptive profiling of a coded literature corpus. Its contribution is an integrative sensing-absorption-enactment framework tailored to Indonesian SMEs and a set of propositions for future empirical and qualitative research.

2. METHOD

The study employed a structured qualitative literature review. The objective was not to estimate a pooled effect size or to claim exhaustive systematic coverage, but to develop a transparent, theory-informed synthesis of how entrepreneurial capabilities, absorptive capacity, and innovative behavior are connected in SME research. The review combined deductive coding derived from Resource-Based View, Dynamic Capability Theory, the absorptive-capacity literature, and innovative-work-behavior research with inductive attention to relationships repeatedly reported in Indonesian SME studies.

The search and screening process covered peer-reviewed journal research published primarily from 2010 to September 2026. Earlier seminal works were retained when required to define the theoretical constructs, including the Resource-Based View, dynamic capabilities, and absorptive capacity. Searches combined terms such as 'entrepreneurial alertness', 'entrepreneurial orientation', 'network capability', 'digital capability', 'absorptive capacity', 'innovative behavior', 'innovation capability', 'innovation performance', 'SME', 'MSME', and 'Indonesia'. Records were traced through publisher databases, DOI/Crossref metadata, Google Scholar, and Indonesian journal portals linked to Garuda/SINTA. Selection prioritized peer-reviewed articles with identifiable DOI metadata and a direct conceptual or empirical contribution to the capability-knowledge-innovation relationship.

Articles were included when they met at least one of three conditions: they examined entrepreneurial, networking, or digital capability as an antecedent of innovation-related outcomes; they examined absorptive capacity as a mechanism or predictor of innovation; or they provided a validated conceptual basis for innovative behavior. Studies not involving SMEs were retained only when they supplied foundational construct definitions or widely used measurement logic. Purely descriptive entrepreneurship papers without a capability or

innovation mechanism, non-peer-reviewed commentary, and papers whose bibliographic identity could not be verified were excluded from the analytical corpus.

The final analytical corpus contained 27 peer-reviewed studies. Each study was coded for publication year, geographic context, methodological design, and whether it substantively addressed entrepreneurial capability/alertness/orientation, network or collaborative capability, digital capability, absorptive capacity, and innovation outcomes. Coding was non-mutually exclusive because one paper could contribute to several themes. A second-stage thematic coding identified where each construct operated in the proposed process: sensing/access, knowledge conversion, innovation enactment, or firm-level outcomes. Particular attention was given to contradictory or boundary-condition evidence rather than only to statistically significant positive relationships.

IBM SPSS Statistics was used as a descriptive support tool for the coded literature matrix. Frequencies and cross-tabulations summarized the distribution of studies by period, geography, method, and focal construct. SPSS was not used for inferential hypothesis testing, meta-analysis, or effect-size aggregation because the corpus was purposively assembled and the included studies differ substantially in construct definitions, samples, methods, and outcome levels. The substantive findings therefore come from qualitative thematic synthesis; the descriptive statistics are used only to make the composition and imbalance of the evidence base visible.

To improve interpretive reliability, synthesis followed a constant-comparison logic. Claims were checked against the design and level of analysis of the cited study, and a distinction was maintained between evidence about individual innovative behavior and evidence about organizational innovation capability or performance. Indonesian studies were examined as contextual evidence rather than assumed to be homogeneous. The final framework was accepted only when it could accommodate both convergent findings and notable inconsistencies, particularly the uneven relationship between entrepreneurial orientation and absorptive capacity observed in Indonesian SME research.

Table 1. Review Protocol and Analytical Logic.

Element	Specification
Review design	Structured qualitative literature review with thematic synthesis and descriptive corpus profiling.
Primary period	2010-September 2026; seminal pre-2010 theory retained where conceptually necessary.
Core search concepts	Entrepreneurial alertness/orientation; network capability; digital capability; absorptive capacity; innovative behavior/capability; SME/MSME; Indonesia.
Evidence sources	Peer-reviewed journal/publisher records, DOI/Crossref metadata, Google Scholar, and Indonesian Garuda/SINTA-linked journal portals.

Element	Specification
Analytical corpus	27 peer-reviewed studies coded by period, geography, method, and focal construct.
Qualitative analysis	Deductive-inductive thematic synthesis organized around sensing/access, absorption/conversion, enactment, and innovation outcomes.
SPSS role	Descriptive frequencies and cross-tabulations of the coded corpus only; no inferential testing or meta-analysis.
Quality control	DOI verification, citation-reference alignment, level-of-analysis checks, and explicit treatment of contradictory findings.

3. RESULTS AND DISCUSSION

Descriptive Profile of the Reviewed Literature

The descriptive profile reveals a literature that is recent, quantitatively dominant, and increasingly attentive to Indonesia. Fourteen of the 27 core studies (51.9%) were conducted in Indonesia, while 13 (48.1%) were international or comparative. Twenty-three studies (85.2%) used quantitative designs; two (7.4%) used mixed methods; one (3.7%) used a primarily qualitative design; and one (3.7%) was a review/meta-analysis. Twenty-two studies (81.5%) were published from 2021 through 2026, indicating that the integrated capability-innovation conversation has accelerated alongside digitalization and post-pandemic adaptation.

The construct distribution is also uneven. Absorptive capacity appeared in 12 studies (44.4%), while entrepreneurial alertness/orientation and network/collaborative capability each appeared in eight (29.6%). Digital capability appeared in seven (25.9%). Innovation-related outcomes were present in all 27 studies by design, but their operationalization varied from innovative work behavior and product innovation to business model innovation, innovation capability, competitive advantage, and business performance. This heterogeneity justifies qualitative synthesis rather than pooled statistical aggregation.

Table 2. SPSS Descriptive Profile of the Analytical Corpus (n = 27).

Coding dimension	Category	Frequency	Percentage
Geographic context	Indonesia	14	51.9%
Geographic context	International/comparative	13	48.1%
Method	Quantitative	23	85.2%
Method	Mixed methods	2	7.4%
Method	Qualitative	1	3.7%
Method	Review/meta-analysis	1	3.7%
Publication period	2010-2019	3	11.1%
Publication period	2020-2022	9	33.3%
Publication period	2023-2024	8	29.6%
Publication period	2025-2026	7	25.9%

Coding dimension	Category	Frequency	Percentage
Focal construct	Entrepreneurial capability/alertness/orientation	8	29.6%
Focal construct	Network/collaborative capability	8	29.6%
Focal construct	Digital capability/transformation	7	25.9%
Focal construct	Absorptive capacity	12	44.4%
Focal construct	Innovation-related outcome	27	100.0%

Entrepreneurial Capabilities as Sensing Mechanisms

The first theme positions entrepreneurial capabilities primarily at the front end of the innovation process. Entrepreneurial alertness provides a cognitive mechanism for noticing changes, connecting previously unconnected information, and evaluating whether a pattern is worth pursuing. Tang et al. (2012) operationalized alertness through scanning and search, association and connection, and evaluation and judgment. The later meta-analysis by Araujo et al. (2023) strengthens the empirical basis for treating alertness as a consequential capability: across a large body of empirical research, alertness is positively associated with opportunity recognition, innovation, intentions, and performance. Yet the meta-analytic result does not imply that alertness alone produces implemented innovation; it identifies a sensing advantage that still requires organizational conversion and action.

Entrepreneurial orientation adds a strategic posture to this sensing process. In SMEs, innovativeness, risk taking, and proactiveness can motivate experimentation and resource commitment, but the components may operate differently under resource constraints. Adam et al. (2024), using 1,161 Indonesian MSMEs across four provinces, found positive effects of innovativeness, risk taking, and strategic networking on performance while proactiveness showed a negative relationship. This finding is theoretically important because it discourages treating entrepreneurial orientation as a universally beneficial bundle. Proactiveness can become costly if the firm lacks complementary knowledge, financing, execution capacity, or market legitimacy.

The literature therefore suggests that entrepreneurial capability should be interpreted as directional rather than sufficient. It helps the SME decide where to look, what changes deserve attention, and which opportunities are worth testing. Its innovation value increases when it is connected with mechanisms that provide external knowledge and with routines that allow that knowledge to be absorbed. The direct path from entrepreneurial orientation to innovation may be visible in some settings, but heterogeneous findings indicate that the more informative

question is how entrepreneurial capability activates or combines with network, digital, and absorptive capabilities.

Network Capability as External Knowledge Access

The second theme concerns access. SMEs rarely possess all the technological, market, design, regulatory, and managerial knowledge required for innovation. Network capability reduces this constraint by enabling the firm to establish and coordinate relationships with customers, suppliers, competitors, universities, government agencies, associations, and other ecosystem actors. Early work on SME innovation networks showed that facilitated networking can strengthen an SME's innovation capability by expanding interactions and collective learning (Konsti-Laakso et al., 2012). A dynamic-capability view further suggests that network capability is not merely the number of ties but the organizational ability to initiate, maintain, coordinate, and exploit relationships for entrepreneurial purposes (Parida et al., 2017; Sarwar et al., 2021).

Indonesian evidence is consistent with this knowledge-access interpretation. Sasono et al. (2023) found that network capability was positively associated with both marketing performance and knowledge creation among MSME owners in Semarang, while knowledge creation supported product innovation. Rupianti et al. (2022) similarly found that entrepreneurial orientation was positively related to networking capability and that networking capability was positively related to innovation capability among tempe-chip SMEs in Malang. Importantly, their model did not find a significant entrepreneurial-orientation-to-absorptive-capacity relationship, but networking capability carried an indirect relationship from entrepreneurial orientation to innovation capability. This pattern implies that external relationships can be a necessary bridge when internal learning routines are not automatically activated by an entrepreneurial posture.

Network access, however, can also create information overload, coordination costs, and knowledge that is too distant from existing routines to be useful. Benhayoun et al. (2020) show that absorptive practices in collaborative innovation networks vary with context, including cognitive distance and the SME's role in the network. Their subsequent work demonstrates that partnership quality conditions the contribution of absorptive capacity to innovation performance (Benhayoun et al., 2021). Network capability therefore increases the opportunity set, but absorptive capacity determines how much of that opportunity becomes usable organizational knowledge.

Digital Capability as Knowledge Infrastructure

Digital capability is the third sensing and access mechanism, but it differs from networking because it alters both the volume of available information and the speed at which it can be processed. Digital technologies allow SMEs to observe customer behavior, coordinate

across platforms, reach new markets, automate routines, and integrate data that were previously fragmented. Dynamic-capability research describes digital transformation as an ongoing strategic-renewal process rather than the adoption of isolated technologies (Warner & Wäger, 2019). For SMEs, this distinction matters: purchasing software does not create a capability unless the firm can embed digital tools in decisions, workflows, learning, and business-model change.

Recent SME evidence reinforces this mechanism. Fang et al. (2024) found that digital capability positively affects multiple elements of digital business model innovation, several of which in turn strengthen competitiveness. In East Java, Prakasa and Jumaní (2024) found that digital capability was associated with digital business transformation and small-business performance, with transformation acting as a mediator. Widiarti et al. (2025) similarly link digital and network capabilities with innovation and SME performance in Indonesia. Mudzakkir et al. (2026) place digital capability within a broader model involving digital leadership, entrepreneurial orientation, innovation capability, and performance. Together, these studies imply that digital capability creates informational reach and reconfiguration possibilities, but its benefits materialize through transformation and innovation processes.

The qualitative synthesis therefore treats digital capability as knowledge infrastructure rather than an innovation outcome. Digital platforms can expose SMEs to trends, competitor moves, customer feedback, technical knowledge, and partnership opportunities. Yet a firm may collect data without interpreting it, adopt platforms without changing routines, or automate weak processes. The conversion problem remains. Digital capability increases what can be sensed and accessed; absorptive capacity influences whether the resulting information becomes meaningful and actionable.

Absorptive Capacity as the Knowledge-Conversion Mechanism

Absorptive capacity is the most consistent conversion mechanism in the reviewed literature. Cohen and Levinthal (1990) argue that prior related knowledge shapes a firm's ability to recognize, assimilate, and exploit external knowledge, while Zahra and George (2002) separate potential absorptive capacity from realized absorptive capacity. This distinction provides a process explanation for why similar exposure to networks or digital information can produce different innovation outcomes. Acquisition and assimilation make external knowledge cognitively available; transformation and exploitation recombine it with existing routines and use it commercially.

SME evidence repeatedly supports this mediating or enabling role. Sarsah et al. (2020) found that both potential and realized absorptive capacities mediated the relationship between

entrepreneurial orientation and radical innovation performance among manufacturing SMEs. Miroshnychenko et al. (2021) show that potential and realized absorptive capacities relate differently to strategic flexibility and business model innovation, with the value of realized absorptive capacity depending on environmental uncertainty. In collaborative networks, absorptive capacity is similarly embedded in context and partnership quality rather than functioning as a fixed stock (Benhayoun et al., 2020, 2021). These studies point to a dynamic mechanism whose value depends on both internal routines and external conditions.

Indonesian research provides convergent evidence but also clarifies the boundary conditions. Prakasa et al. (2022) reported positive relationships from absorptive capacity to innovation capability and SME performance in Malang. Nugraha and Hartono (2022) linked knowledge sharing and absorptive capacity to innovation performance, emphasizing that access to knowledge must be accompanied by the ability to internalize it. Arifin and Hartono (2025) position absorptive capacity alongside innovation strategy and open innovation in explaining Indonesian SME performance. Nuryakin and Qamari (2026) show that absorptive capacity supports both innovation capability and technological capability among globally oriented SMEs in Central Java and Yogyakarta, and those capabilities subsequently support business performance. Faiz et al. (2026) add evidence from service SMEs by examining absorptive capacity together with innovation capability and collaborative networks.

The inconsistency reported by Rupianti et al. (2022) remains important: entrepreneurial orientation did not significantly predict absorptive capacity in their sample. This result prevents a simplistic assumption that opportunity-oriented firms automatically learn better. Absorptive capacity requires routines, prior knowledge, cross-boundary communication, reflection, and opportunities to apply what is learned. In micro and small firms these routines may be informal, person-dependent, and constrained by time. Thus, entrepreneurial energy may increase search activity without strengthening assimilation or exploitation. The review consequently places absorptive capacity as a distinct conversion capability that can be enabled by, but should not be collapsed into, entrepreneurial orientation.

Innovative Behavior as the Enactment Layer

The final theme addresses enactment. De Jong and Den Hartog (2010) conceptualize innovative work behavior around idea exploration, idea generation, idea championing, and idea implementation. This sequence offers a useful microfoundation for SME innovation because it describes what owner-managers and employees actually do after knowledge has been sensed and interpreted. An SME may possess absorptive capacity at the organizational level, but

innovation is realized only when actors formulate an idea, build support, allocate attention and resources, experiment, and put the idea into practice.

This behavioral distinction helps reconcile the literature's mixed outcome measures. Studies frequently report innovation capability or innovation performance as firm-level outcomes. Those outcomes are legitimate, but they skip the behavioral link between knowledge conversion and organizational results. In owner-managed SMEs, innovative behavior may be especially consequential because the owner-manager has both cognitive and allocative authority. Opportunity recognition, learning, championing, and implementation may occur in the same individual, creating speed but also dependency. If knowledge remains concentrated in the owner, absorptive capacity can be fragile; if it becomes shared through routines, documentation, digital tools, and team interaction, innovative behavior becomes more reproducible.

The synthesis therefore proposes innovative behavior as the enactment layer between absorptive capacity and firm-level innovation capability. The relationship is not assumed to be purely individual. Instead, behavior is viewed as the micro-level mechanism through which organizational knowledge becomes action. This framing invites future Indonesian research to measure both levels rather than substituting one for the other. Qualitative studies could examine how owner-managers move from recognizing an external insight to persuading employees, adapting routines, testing a prototype, and institutionalizing the resulting change.

An Integrative Sensing-Absorption-Enactment Framework

Across the reviewed evidence, a coherent process can be reconstructed. Stage one is sensing and access. Entrepreneurial alertness/orientation directs attention toward emerging possibilities; network capability opens relational channels to external resources and knowledge; digital capability expands informational reach and accelerates observation. Stage two is absorption and conversion. Potential absorptive capacity acquires and assimilates knowledge, while realized absorptive capacity transforms and exploits it. Stage three is enactment. Innovative behavior converts interpreted knowledge into ideas, mobilizes support, and implements change, which can then accumulate into organizational innovation capability and performance.

The framework is intentionally sequential but not mechanically linear. Feedback loops are expected. Innovation implementation generates new experience that changes the firm's prior knowledge and therefore its future absorptive capacity. Digital tools can be adopted as a result of innovation and then expand future sensing. Networks can deepen after successful collaboration, while failed projects may reduce trust. Environmental dynamism, partnership

quality, digital maturity, sector regulation, and government/ecosystem support can strengthen or weaken links between stages. This dynamic interpretation is consistent with the broader logic of dynamic capabilities, which emphasizes sensing, seizing, and transforming rather than static possession of resources (Teece, 2007).

For Indonesian SMEs, the framework is particularly useful because it accommodates heterogeneity in firm size, formalization, digital maturity, and owner-manager dominance. The evidence does not justify a single universal pathway. Instead, it suggests that SMEs need complementary capability bundles. A highly alert entrepreneur with weak learning routines may detect opportunities but fail to operationalize them. A digitally capable SME may possess abundant data yet lack a process for interpretation. A well-networked SME may access knowledge but fail to assimilate it. Conversely, absorptive capacity without sensing and access can become internally efficient but strategically narrow. Innovation emerges when the stages are connected.

Table 3. Thematic Synthesis of the Capability-Knowledge-Innovation Process.

Process stage	Core capability	Primary function	Typical SME risk when weak	Representative evidence
Sensing/access	Entrepreneurial alertness/orientation	Scan, connect, evaluate, and prioritize opportunities.	Reactive decisions; missed or poorly evaluated opportunities.	Tang et al. (2012); Araujo et al. (2023); Adam et al. (2024)
Sensing/access	Network capability	Access partners, market knowledge, resources, and collaborative learning.	Knowledge isolation; dependence on internal experience.	Konsti-Laakso et al. (2012); Sasono et al. (2023); Rupianti et al. (2022)
Sensing/access	Digital capability	Increase informational reach, speed, integration, and reconfiguration.	Technology adoption without organizational learning or business change.	Warner & Wäger (2019); Fang et al. (2024); Prakasa & Jumani (2024)
Absorption/conversion	Potential absorptive capacity	Acquire and assimilate relevant external knowledge.	Information is collected but not understood or connected to prior knowledge.	Zahra & George (2002); Benhayoun et al. (2020)
Absorption/conversion	Realized absorptive capacity	Transform and exploit knowledge in routines and offerings.	Learning remains conceptual and does not change operations.	Sarsah et al. (2020); Miroshnychenko et al. (2021); Nuryakin & Qamari (2026)
Enactment	Innovative behavior	Explore, generate, champion, and implement ideas.	Knowledge fails to become observable innovation.	De Jong & Den Hartog (2010)

Process stage	Core capability	Primary function	Typical SME risk when weak	Representative evidence
Outcome	Innovation capability/performance	Institutionalize repeated innovation and capture value.	One-off experimentation without sustained organizational capability.	Prakasa et al. (2022); Widiarti et al. (2025); Faiz et al. (2026)

Indonesian SME Evidence and Contextual Interpretation

The Indonesian subset of the corpus provides more than a localization check; it reveals why capability relationships should be interpreted contextually. Many studies are based on owner-managers and relatively small firms where decision authority is concentrated. This organizational form can accelerate action because sensing and resource allocation are close together, but it can also restrict absorptive capacity when knowledge is not codified or shared. Informal learning, reliance on trusted networks, and uneven digital sophistication mean that capabilities may substitute for one another in some firms and complement one another in others.

The Indonesian evidence also suggests that innovation policy should move beyond technology access. Digital adoption programs are valuable, but the review indicates that technology, networking, and entrepreneurship produce stronger outcomes when SMEs have routines for interpreting and exploiting knowledge. Similarly, business-network programs should not be evaluated only by the number of connections created. Their value depends on whether firms can identify useful knowledge, integrate it with existing practices, and convert it into implemented changes. Training in experimentation, reflection, data interpretation, product testing, documentation, and cross-functional problem solving can therefore be viewed as absorptive-capacity development rather than generic capacity building.

A further implication concerns the role of external institutions. Indonesian SMEs often obtain knowledge through government programs, universities, associations, marketplaces, suppliers, and platform ecosystems. The effectiveness of such knowledge transfer depends on cognitive proximity, relationship quality, and the recipient firm's readiness to learn. This places responsibility on both sides of the ecosystem: SMEs need internal routines for assimilation and exploitation, while support institutions need to provide knowledge in forms that are actionable, contextualized, and connected to follow-up implementation.

Table 4. Representative Indonesian SME Evidence Used in the Synthesis.

Study	Context / method	Capability relationship	Interpretive contribution
Rupianti et al. (2022)	89 tempe-chip SME owners, Malang; PLS	EO -> innovation positive; EO -> ACAP nonsignificant; networking carries an indirect effect.	Entrepreneurial posture does not automatically create absorptive capacity; networking can be a bridge.
Prakasa et al. (2022)	189 creative SME owners, Malang; PLS	ACAP -> innovation capability and performance positive.	Knowledge conversion is directly relevant to innovation and SME outcomes.
Sasono et al. (2023)	250 MSME owners, Semarang; PLS-SEM	Network capability -> knowledge creation; knowledge creation -> product innovation.	External relations contribute to innovation through a knowledge process.
Adam et al. (2024)	1,161 MSMEs across four Indonesian provinces; PLS-SEM	Innovativeness, risk taking, strategic networking positive; proactiveness negative for performance.	Entrepreneurial capability dimensions are context dependent rather than uniformly beneficial.
Prakasa & Jumani (2024)	330 small businesses, East Java; SEM	Digital capability -> digital transformation and performance; transformation mediates.	Digital resources create value through organizational transformation.
Arifin & Hartono (2025)	200 SMEs, Yogyakarta; PLS-SEM	ACAP and innovation strategy linked with performance through open innovation.	ACAP connects internal learning with openness and performance.
Manalu et al. (2025)	Indonesian SMEs; quantitative	Entrepreneurial and learning orientation linked to innovation performance with organizational learning mediation.	Learning is a process mechanism between strategic orientation and innovation.
Widiarti et al. (2025)	278 Indonesian SMEs; PLS-SEM	Digital and network capabilities linked with innovation and performance.	Digital and relational capabilities form complementary pathways.
Nuryakin & Qamari (2026)	321 globally oriented SMEs, Central Java and Yogyakarta; SEM	ACAP -> innovation and technological capability -> business performance.	ACAP supports multiple downstream capabilities in internationally oriented SMEs.
Mudzakkir et al. (2026)	East Java SMEs; survey	Digital capability interacts with leadership, EO, innovation capability, and performance.	Digital capability is embedded in a broader organizational capability configuration.

Research Agenda and Propositions

The review identifies a clear methodological imbalance: the Indonesian evidence base is dominated by cross-sectional quantitative models. These studies are valuable for establishing

associations, but they provide limited insight into the temporal and behavioral mechanisms that connect opportunity sensing, knowledge conversion, and innovation enactment. Future qualitative research should therefore follow concrete innovation episodes inside SMEs. Interviews, process tracing, diaries, digital-trace data, and comparative case studies can reveal when external knowledge enters the firm, who interprets it, how disagreements are resolved, and what enables an idea to survive the transition from discussion to implementation.

Future quantitative research can then test the integrated process more explicitly. Instead of treating entrepreneurial, network, digital, and absorptive capabilities as parallel predictors of performance, models can assign them theoretically distinct positions. Entrepreneurial alertness can represent opportunity sensing, network and digital capabilities can represent access channels, absorptive capacity can serve as the knowledge-conversion mechanism, and innovative behavior can represent enactment before innovation performance. This specification would reduce construct redundancy and clarify the causal story that empirical models seek to approximate.

Five propositions follow from the synthesis. Proposition 1: entrepreneurial sensing improves innovation outcomes when it directs attention toward relevant external knowledge rather than merely increasing search intensity. Proposition 2: network and digital capabilities broaden knowledge access, but their innovation value depends on the SME's absorptive capacity. Proposition 3: realized absorptive capacity is more proximal than potential absorptive capacity to innovative behavior because transformation and exploitation directly support implementation. Proposition 4: innovative behavior is a microfoundation that translates organizational absorptive capacity into firm-level innovation capability. Proposition 5: environmental dynamism, partnership quality, digital maturity, owner-manager centralization, and ecosystem support condition the strength of the sensing-absorption-enactment sequence.

The propositions also suggest a practical measurement agenda. Researchers should avoid using innovative behavior and innovation capability interchangeably; report whether capability measures are individual, team, or firm level; separate potential and realized absorptive capacity when theory requires it; and document whether digital capability represents infrastructure, skills, data integration, or transformation routines. Multi-wave designs are particularly important because capability development and innovation unfold over time. Objective indicators—new-product introductions, process changes, digital transaction data, time-to-market, or innovation revenue—can complement perception-based measures and reduce common-method concerns.

Table 5. Propositions for Future Research on Indonesian SMEs.

Proposition	Core statement	Recommended empirical test
P1	Entrepreneurial sensing contributes to innovation when search is selective and connected to relevant external knowledge.	Longitudinal owner-manager studies linking alertness episodes to knowledge search and realized innovations.
P2	Network and digital capabilities provide access; absorptive capacity determines conversion value.	Serial mediation: network/digital capability -> ACAP -> innovative behavior -> innovation performance.
P3	Realized ACAP is more proximal than potential ACAP to innovative behavior.	Separate PACAP and RACAP and compare their direct/indirect effects on idea implementation.
P4	Innovative behavior is a microfoundation linking organizational ACAP with firm innovation capability.	Multilevel or owner-manager/team designs distinguishing behavior from firm-level innovation capability.
P5	Context moderates the sequence.	Multi-group or comparative case research by digital maturity, sector, partnership quality, environmental dynamism, and ecosystem support.

4. CONCLUSION

This qualitative literature review shows that entrepreneurial capabilities, absorptive capacity, and innovative behavior are best understood as different stages of a connected innovation process rather than as interchangeable predictors. Entrepreneurial alertness/orientation supplies direction to opportunity sensing; network capability and digital capability expand access to knowledge and resources; absorptive capacity converts external knowledge into organizational understanding and usable routines; and innovative behavior enacts that knowledge through idea exploration, generation, championing, and implementation. Firm-level innovation capability and performance are downstream outcomes of this process.

The Indonesian evidence supports this integrative interpretation while cautioning against universal direct effects. Absorptive capacity is repeatedly associated with innovation, digital and network capabilities provide important access mechanisms, and entrepreneurial orientation matters, but specific paths vary across settings. The review's principal contribution is therefore the sensing-absorption-enactment framework, which explains why SMEs can possess entrepreneurial energy, digital tools, or rich networks without consistently innovating when knowledge-conversion routines are weak. It also restores a level-of-analysis distinction that is often blurred in SME research by positioning innovative behavior as the micro-level enactment mechanism rather than a synonym for organizational innovation capability.

For practice and policy, the implication is that SME development should combine entrepreneurship, networking, and digitalization programs with deliberate investments in

absorptive capacity: shared reflection, knowledge documentation, experimentation, cross-boundary learning, data interpretation, and routines for applying external knowledge. For research, the strongest opportunity lies in process-oriented qualitative and longitudinal studies that observe how Indonesian owner-managers move from sensing an opportunity to absorbing knowledge and implementing innovation. The review is intentionally qualitative and the SPSS analysis is descriptive; consequently, its propositions should be tested rather than treated as causal conclusions.

REFERENCES

- Adam, L., Ermawati, T., Nurjati, E., Edi, R. Y., Inayah, I., Mulyaningsih, Y., Thoha, M., Sarana, J., Soesilowati, E. S., Saptia, Y., Adityawati, S., & Darwin. (2024). Entrepreneurial orientation in Indonesian SMEs. *Cogent Business & Management*, 11(1), 2399750. <https://doi.org/10.1080/23311975.2024.2399750>
- Araujo, C. F., Karami, M., Tang, J., Roldan, L. B., & dos Santos, J. A. (2023). Entrepreneurial alertness: A meta-analysis and empirical review. *Journal of Business Venturing Insights*, 19, e00394. <https://doi.org/10.1016/j.jbvi.2023.e00394>
- Arifin, N. R., & Hartono, A. (2025). The effect of absorptive capacity and innovation strategy on Indonesian SMEs' performance with open innovation as the mediator. *International Review of Management and Marketing*, 15(3), 343-351. <https://doi.org/10.32479/irmm.18431>
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120. <https://doi.org/10.1177/014920639101700108>
- Benhayoun, L., Ayala, N. F., & Le Dain, M.-A. (2021). SMEs innovating in collaborative networks: How does absorptive capacity matter for innovation performance in times of good partnership quality? *Journal of Manufacturing Technology Management*, 32(8), 1578-1598. <https://doi.org/10.1108/JMTM-11-2020-0439>
- Benhayoun, L., Le Dain, M.-A., Dominguez-Péry, C., & Lyons, A. C. (2020). SMEs embedded in collaborative innovation networks: How to measure their absorptive capacity? *Technological Forecasting and Social Change*, 159, 120196. <https://doi.org/10.1016/j.techfore.2020.120196>
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128-152. <https://doi.org/10.2307/2393553>
- De Jong, J. P. J., & Den Hartog, D. N. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management*, 19(1), 23-36. <https://doi.org/10.1111/j.1467-8691.2010.00547.x>
- Faiz, R., Isfianadewi, D., & Sudrajat, Y. (2026). Innovation capability, absorptive capacity, and collaborative networks as determinants of competitive advantage in the SME laundry sector. *Jurnal EMT KITA*, 10(2), 577-587. <https://doi.org/10.35870/emt.v10i2.5622>

- Fang, T. M., Ahmad, N. H., Halim, H. A., Iqbal, Q., & Ramayah, T. (2024). Pathway towards SME competitiveness: Digital capability and digital business model innovation. *Technology in Society*, 79, 102728. <https://doi.org/10.1016/j.techsoc.2024.102728>
- Konsti-Laakso, S., Pihkala, T., & Kraus, S. (2012). Facilitating SME innovation capability through business networking. *Creativity and Innovation Management*, 21(1), 93-105. <https://doi.org/10.1111/j.1467-8691.2011.00623.x>
- Lew, Y. K., Zahoor, N., Donbesuur, F., & Khan, H. (2023). Entrepreneurial alertness and business model innovation in dynamic markets: International performance implications for SMEs. *R&D Management*, 53(2), 224-243. <https://doi.org/10.1111/radm.12558>
- Manalu, V. G., Santoso, A., & Sulaiman, E. (2025). The influence of entrepreneurial orientation and learning orientation on innovation performance of SMEs in Indonesia: Organizational learning as a mediator. *Problems and Perspectives in Management*, 23(2), 469-481. [https://doi.org/10.21511/ppm.23\(2\).2025.34](https://doi.org/10.21511/ppm.23(2).2025.34)
- Miroshnychenko, I., Strobl, A., Matzler, K., & De Massis, A. (2021). Absorptive capacity, strategic flexibility, and business model innovation: Empirical evidence from Italian SMEs. *Journal of Business Research*, 130, 670-682. <https://doi.org/10.1016/j.jbusres.2020.02.015>
- Mudzakkir, M. F., Pujianto, W. E., Al-Mekhlafi, A.-B. A., Fernandez, D., & Paraswati, A. D. (2026). Modelling digital capability as a game changer to enhance SME's performance. *BISMA (Bisnis dan Manajemen)*, 18(2), 252-281. <https://doi.org/10.26740/bisma.v18n2.p252-281>
- Nugraha, O. R., & Hartono, A. (2022). Peran knowledge sharing dan absorptive capacity dalam meningkatkan kinerja inovasi UKM. *EKOMBIS Review: Jurnal Ilmiah Ekonomi dan Bisnis*, 10(1), 106-115. <https://doi.org/10.37676/ekombis.v10i1.1844>
- Nuryakin, & Qamari, I. N. (2026). The mediating role of innovation capability and technological capability in the relationship between absorptive capacity and SMEs' business performance. *International Journal of Innovation Studies*, 10(1), 65-79. <https://doi.org/10.1016/j.ijis.2025.09.004>
- Parida, V., Pesämaa, O., Wincent, J., & Westerberg, M. (2017). Network capability, innovativeness, and performance: A multidimensional extension for entrepreneurship. *Entrepreneurship & Regional Development*, 29(1-2), 94-115. <https://doi.org/10.1080/08985626.2016.1255434>
- Prakasa, Y., & Jumani, Z. A. (2024). Linking digital capability to small business performance: The mediating role of digital business transformation. *Cogent Business & Management*, 11(1), 2342486. <https://doi.org/10.1080/23311975.2024.2342486>
- Prakasa, Y., Sujoko, A., Aziz, N. A., & Muttaqin, A. (2022). Absorptive capacity and innovation capability: Assessing the impact on SMEs performance in the new normal era. *Jurnal Ekonomi Bisnis dan Kewirausahaan*, 11(3), 325-344. <https://doi.org/10.26418/jebik.v11i3.57368>
- Rupianti, R., Hussein, A. S., & Firdaus, F. (2022). The influence of entrepreneurial orientation an innovation capability by absorptive and networking capability: A case study of tempe chips SMEs in Malang. *Journal of Social Science*, 3(5). <https://doi.org/10.46799/jss.v3i5.417>

- Sarsah, S. A., Tian, H., Dogbe, C. S. K., Bamfo, B. A., & Pomegbe, W. W. K. (2020). Effect of entrepreneurial orientation on radical innovation performance among manufacturing SMEs: The mediating role of absorptive capacity. *Journal of Strategy and Management*, 13(4), 551-570. <https://doi.org/10.1108/JSMA-03-2020-0053>
- Sarwar, Z., Khan, M. A., Yang, Z., Khan, A., Haseeb, M., & Sarwar, A. (2021). An investigation of entrepreneurial SMEs' network capability and social capital to accomplish innovativeness: A dynamic capability perspective. *SAGE Open*, 11(3). <https://doi.org/10.1177/21582440211036089>