Chapter

Perspective Chapter: Situated Innovation Readiness (SiR) in SMEs – A Multi-Level, Dynamic Capabilities Framework

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Abstract

Innovation readiness captures a firm's capacity to purposefully mobilize and reconfigure resources, capabilities, and relationships to generate, absorb, and exploit novel ideas. Although the concept is increasingly invoked in both scholarly and practitioner discourse, it remains theoretically fragmented and operationally underspecified, particularly for small and medium-sized enterprises (SMEs) operating under conditions of resource constraints and environmental turbulence. This chapter develops an integrative, multi-level conception of innovation readiness grounded in a systematic synthesis of the dynamic capabilities, absorptive capacity, corporate entrepreneurship, open innovation, and socio-technical systems literatures. Innovation readiness is conceptualized as a situated, evolving capability that emerges from the interaction of intra-firm organizational micro-foundations, inter-firm collaborative architectures, and extra-firm contextual conditions. Building on this synthesis, the chapter introduces the 3-Lens Situated Innovation Readiness (SiR) Framework as a diagnostic and strategic tool for SMEs. The framework enables firms to map their current readiness profile, identify critical misalignments and bottlenecks, and prioritize targeted tactical actions and strategic moves within a coherent, theory-informed structure. The chapter contributes to theory by integrating previously disconnected streams of research into a unified, dynamic account of readiness, and to practice by offering a disciplined, evidence-based approach to managing innovation capability in complex and shifting environments.

Keywords: innovation readiness, dynamic capabilities, absorptive capacity, SMEs, open innovation, ecosystems, socio-technical systems, ambidexterity

1. Introduction

Innovation remains a central driver of long-term competitiveness, productivity growth, and societal progress [1, 2]. Yet, firms display persistent and often pronounced differences in their capacity to recognize emerging opportunities, commit resources in a timely and coherent manner, and reconfigure their

organizational arrangements in response to technological and market changes. These heterogeneous capacities are increasingly captured under the rubric of innovation readiness [3]. Despite its growing prominence, however, the concept remains theoretically dispersed and only partially operationalized, particularly in the context of small and medium-sized enterprises (SMEs), where resource constraints and environmental volatility render the management of innovation capability especially challenging.

Three broad streams of research dominate the existing literature. One focuses on intra-firm micro-foundations, including leadership, organizational culture, structure, and learning routines, and examines how these internal conditions shape innovative performance [4–5]. A second emphasizes inter-firm collaboration, open innovation, and ecosystems, highlighting the role of alliances, networks, and complementary assets in extending the firm's innovative reach [6, 7]. A third addresses extra-firm institutional, regulatory, and technological conditions, drawing attention to the ways in which national innovation systems, policy regimes, and socio-technical transitions structure firms' opportunity sets and strategic choices [8, 9]. Each of these perspectives has generated valuable insights. Taken in isolation, however, they offer only partial accounts of why some firms appear systematically better prepared than others to innovate in the face of uncertainty and change.

This chapter proceeds from the premise that innovation readiness is not reducible to any single organizational attribute, managerial practice, or environmental condition. Rather, it is best understood as a situated and dynamic capability that emerges from the alignment – and frequent misalignment – between internal organizational arrangements, external relational architectures, and broader contextual forces. Building on a systematic, multi-level synthesis of the literature reported by De Villiers and Dennett (forthcoming), the chapter advances an integrative framework grounded in dynamic capabilities theory and informed by a socio-technical systems perspective. From this vantage point, innovation readiness is conceived not as a static state to be achieved, but as an evolving configuration of capabilities that must be continually recalibrated as technologies, markets, and institutions shift.

A central objective of the chapter is to translate this integrative perspective into a form that is both analytically robust and practically meaningful for SMEs. To this end, the chapter introduces the 3-Lens Innovation Readiness Framework, which distinguishes between intra-firm, inter-firm, and extra-firm dimensions of readiness and organizes each into a set of empirically grounded sub-constructs. The framework is not presented as a prescriptive method or a checklist of best practices. Rather, it is intended as a diagnostic and sensemaking architecture that enables firms to reflect systematically on their current configuration of capabilities, identify critical bottlenecks and misalignments, and prioritize targeted tactical actions and strategic moves within a coherent, theory-informed structure.

The chapter is organized as follows. Section 2 clarifies the concept of innovation readiness and outlines the knowledge base and synthesis logic underpinning the framework. Section 3 reviews the principal theoretical perspectives that inform the integrative model, namely dynamic capabilities, absorptive capacity, corporate entrepreneurship and ambidexterity, as well as institutional and socio-technical systems theory. Subsequent sections examine, in turn, the intra-firm, inter-firm, and extra-firm conditions that shape innovation readiness, before bringing these strands

together in the 3-Lens Innovation Readiness Framework and considering its implications for management and future research.

2. Defining innovation readiness and methodological foundations

2.1 Conceptual definition

In this chapter, innovation readiness is defined as the organizational propensity and capability to recognize, assimilate, influence, and exploit knowledge for value-creating novelty. This definition is deliberately integrative. It draws, first, on the concept of absorptive capacity, understood as the ability to recognize the value of external knowledge, to assimilate it, and to apply it for commercial ends [10, 11]. It incorporates, second, the dynamic capabilities perspective, which locates sustained competitive advantage in the firm's capacity to sense opportunities, to seize them through timely and coherent investment, and to transform its resource base and organizational arrangements accordingly [1, 12]. It resonates, third, with the corporate entrepreneurship tradition, which emphasizes intentional organizational renewal, strategic experimentation, and intrapreneurial initiative within established firms [13].

A defining feature of this conception is its explicitly multi-level character. At the intra-firm level, innovation readiness encompasses leadership orientations, organizational culture, structural arrangements, learning routines, and the renewal of digital and human capital. At the inter-firm level, it includes alliance portfolios, relational governance mechanisms, ecosystem positioning, and knowledge integration processes. At the extra-firm level, it incorporates institutional quality, regulatory regimes, technological infrastructures, standards, and broader socio-technical transition pressures [8, 14]. Innovation readiness, in this sense, does not reside in any single domain. It reflects the degree of alignment between strategy, organization, networks, and context, as well as the firm's capacity to re-establish that alignment as conditions evolve.

This view also implies that innovation readiness is inherently dynamic. Firms do not simply accumulate readiness as a stock of resources or routines. Rather, they enact it through ongoing processes of interpretation, investment, coordination, and reconfiguration. From a socio-technical systems perspective, these processes are embedded in, and constrained by, broader patterns of technological development, institutional change, and societal expectations. Innovation readiness is therefore best understood as a situated capability: one that is always relative to a particular configuration of markets, technologies, and institutions, and that must be continually reworked rather than definitively attained.

2.2 Knowledge base and synthesis logic

The integrative framework developed in this chapter is grounded in a systematic, multi-level synthesis of the innovation readiness literature reported by De Villiers and Dennett (forthcoming). This synthesis draws on 118 peer-reviewed studies published between 1990 and 2025, with an in-depth analysis of 55 recent contributions. The reviewed studies span multiple theoretical traditions and levels of analysis, including organizational behavior, strategic management, innovation studies, and institutional and socio-technical systems research.

Rather than privileging a single theoretical lens, the synthesis adopts a configurational logic. Studies were examined and coded according to their primary level of analysis, theoretical orientation, methodological approach, and principal findings. This enabled both a thematic synthesis, identifying recurrent constructs such as leadership support, absorptive capacity, network structure, and institutional quality, and a relational synthesis, highlighting how different combinations of conditions shape innovation-related outcomes in different contexts. The purpose of the present chapter is not to reproduce the full methodological apparatus of that review but to translate its validated insights into a coherent conceptual architecture that is suitable for an integrative book chapter and meaningful for an SME readership.

3. Theoretical foundations

Four interrelated theoretical perspectives underpin the integrative conception of innovation readiness advanced in this chapter: dynamic capabilities theory, absorptive capacity, corporate entrepreneurship and ambidexterity, and institutional and socio-technical systems theory. Taken together, these perspectives provide a foundation for understanding how firms mobilize, combine, and renew resources within and beyond their organizational boundaries under conditions of uncertainty and change.

Dynamic capabilities theory explains how firms integrate, build, and reconfigure internal and external competences in response to shifting environments [1]. Within this perspective, innovation readiness may be understood as the practical effectiveness of sensing, seizing, and transforming processes [12]. Sensing concerns the interpretation of technological, market, and institutional signals; seizing involves the mobilization and commitment of resources to pursue emerging opportunities; transforming refers to the reconfiguration of assets, structures, and routines to sustain alignment over time. From this viewpoint, readiness is not a matter of possessing particular resources but of maintaining the organizational capacity to repeatedly and coherently renew them.

Absorptive capacity occupies a pivotal mediating position within this framework. Originally defined as the ability to recognize, assimilate, and apply external knowledge [10], it was later elaborated into potential and realized components encompassing acquisition and assimilation on the one hand, and transformation and exploitation on the other [11]. A substantial body of empirical work demonstrates that external search and collaboration enhance innovation performance only when firms possess the routines and skills required to integrate and use incoming knowledge [15, 16]. Absorptive capacity thus provides a critical link between the inter-firm and intra-firm dimensions of innovation readiness.

Corporate entrepreneurship and ambidexterity theory contribute an organizational design perspective to the analysis. Corporate entrepreneurship emphasizes intentional organizational renewal and strategic experimentation within established firms [13]. Ambidexterity theory highlights the persistent tension between exploration and exploitation, and the need for organizational arrangements that allow both to be pursued in parallel or in sequence [5, 17]. These literatures underscore that innovation readiness depends not only on the presence of

opportunities or resources but also on the firm's capacity to organize and govern competing demands over time.

Finally, institutional and socio-technical systems theories extend the analysis beyond the firm and its immediate partners. Institutional research shows that intellectual property regimes, subsidy schemes, and regulatory stability shape firms' incentives to invest in innovation and to collaborate with others [18, 19]. Socio-technical systems theory, in turn, emphasizes the co-evolution of technologies, markets, institutions, and social practices, and highlights how multi-level transition dynamics create both constraints and opportunities for firms [20]. From this perspective, innovation readiness is not simply an organizational achievement but a relational and contextual accomplishment embedded in wider systems of production and governance.

Together, these perspectives support a view of innovation readiness as a dynamic, multi-level, and situated capability. The following sections build on this foundation by examining, in turn, the intra-firm, inter-firm, and extra-firm conditions that shape such readiness in practice.

3.1 Positioning the SiR framework

The concept of innovation readiness has emerged across several research streams concerned with firms' ability to generate and exploit innovation under conditions of uncertainty. Existing work, however, conceptualizes readiness through several adjacent constructs that remain analytically fragmented. These include absorptive capacity, dynamic capabilities, corporate entrepreneurship, digital maturity, and ecosystem participation. While each of these perspectives captures important elements of innovation capability, none individually provides a comprehensive explanation of how firms become prepared to innovate within complex and evolving environments.

Absorptive capacity research emphasizes the ability of firms to recognize, assimilate, and exploit external knowledge [10, 11]. This perspective highlights the cognitive and learning mechanisms through which organizations internalize technological opportunities. However, absorptive capacity primarily addresses knowledge processing capabilities within the firm and pays limited attention to the broader organizational, relational, and contextual conditions that shape innovation preparedness.

Dynamic capabilities theory extends this perspective by focusing on the firm's capacity to sense opportunities, seize them through investment and coordination, and transform organizational assets accordingly [1, 12]. While this literature provides a powerful explanation of adaptive organizational behavior, it largely conceptualizes capabilities as internal strategic processes and does not systematically incorporate the inter-firm and institutional environments within which SMEs operate.

Similarly, open innovation and ecosystem research highlight the importance of external collaboration, platform participation, and network structures in shaping innovation outcomes [6, 21, 22]. This stream emphasizes the relational architecture of innovation but often treats firms as structurally embedded actors rather than examining the internal readiness conditions that enable them to effectively participate in such ecosystems.

Finally, studies of digital maturity and transformation focus on technological adoption and organizational digitization as key drivers of innovation capacity [23]. While these approaches illuminate the role of digital infrastructure and data capabilities, they tend to equate technological adoption with innovation preparedness and insufficiently address the organizational and contextual configurations that determine whether digital investments translate into sustained innovation performance.

The Situated Innovation Readiness (SiR) model advances this literature by integrating these perspectives into a single configurational framework. Rather than treating innovation readiness as a singular capability or technological condition, SiR conceptualizes readiness as a multi-level state emerging from the alignment of organizational capabilities, collaborative architectures, and contextual conditions.

Three conceptual advances distinguish the SiR model from adjacent constructs.

First, the model explicitly integrates intra-firm, inter-firm, and extra-firm dimensions of readiness. While prior research typically examines these domains separately, SiR conceptualizes innovation readiness as the outcome of their interaction. Organizational capabilities, ecosystem relationships, and institutional contexts jointly shape the firm's capacity to innovate.

Second, the model introduces the notion of situated readiness. Innovation capability is not treated as a universal organizational attribute but as a contextually embedded condition that depends on technological regimes, regulatory environments, and ecosystem structures. This perspective aligns with socio-technical systems theory, which emphasizes the co-evolution of organizations, technologies, and institutions [9].

Third, the SiR framework provides a diagnostic architecture for SMEs, enabling firms to map readiness conditions across multiple domains rather than focusing solely on technological investment or internal capabilities. In doing so, the model shifts attention from isolated capability building toward the strategic alignment of organizational, relational, and contextual elements.

By integrating insights from dynamic capabilities, absorptive capacity, ecosystem theory, and socio-technical systems research, the SiR model provides a more comprehensive explanation of how SMEs become prepared to innovate within complex and evolving environments.

3.2 SiR boundary statement and comparative constructs

The SiR construct is closely related to, but analytically distinct from, dynamic capabilities. Dynamic capabilities theory explains how firms sense opportunities, seize them through investment and coordination, and transform their resource base in response to change [1, 12]. SiR does not describe these action mechanisms themselves. Rather, it captures the situated pre-conditions under which such mechanisms are likely to emerge, be mobilized, and operate effectively. Specifically, SiR refers to the degree of alignment across intra-firm capacities, inter-firm collaborative arrangements, and extra-firm institutional and socio-technical conditions that make innovation action possible and sustainable [9–11, 21]. In this sense, dynamic capabilities are enacted processes, whereas SiR is a configurational readiness condition.

SiR reflects the degree to which a firm's organizational structures, collaborative relationships, and institutional environment are aligned to support innovation

activity. In this sense, dynamic capabilities represent the mechanisms through which firms act, whereas SiR represents the situated configuration that determines whether those mechanisms can be mobilized successfully. The distinction is important: firms may possess nominal dynamic capabilities in principle, yet remain insufficiently innovation-ready if organizational, relational, or contextual conditions are misaligned. SiR, therefore, complements dynamic capabilities by specifying the boundary conditions and enabling architecture within which innovation-oriented capabilities can be meaningfully exercised. The following section introduces the SiR framework and its three analytical lenses.

4. Intra-firm conditions: Organizational micro-foundations of innovation readiness

Innovation readiness within the firm is increasingly understood as a dynamic, intra-organizational system rather than as a single, static attribute. The literature synthesized in this chapter points to a remarkably consistent set of organizational micro-foundations that shape this system and condition the firm's capacity to generate, absorb, and exploit novel knowledge [1, 24]. These micro-foundations are not independent levers; rather, they form an interdependent configuration encompassing leadership orientations, organizational culture and psychological safety, structural and ambidextrous design, learning routines and absorptive capacity, and the renewal of digital and human capital.

Leadership occupies a foundational position in this configuration. A substantial body of research characterizes effective innovation-oriented leaders as "climate architects" who shape the cognitive and emotional conditions under which experimentation becomes legitimate and failure becomes tolerable [25–27]. Empirical studies consistently associate management support and resource authorization – core elements of the Corporate Entrepreneurship Assessment Instrument – with higher levels of intrapreneurial behavior and new product success [28, 29]. Leadership temporal orientation further shapes the balance between exploration and exploitation, with future-oriented leadership associated with a greater willingness to invest in uncertain opportunities [30]. More recent work also points to the growing importance of digital leadership capabilities in enabling agile decision-making and in reframing innovation processes in data-intensive environments [31]. Taken together, these findings suggest that leadership does not simply "support" innovation, but actively structures the conditions under which readiness can be enacted.

Organizational culture provides the social context within which these leadership influences are embedded. Cultural attributes such as openness, risk tolerance, and a learning orientation are repeatedly linked to creativity and innovation outcomes [4, 32]. Research drawing on the Competing Values Framework indicates that cultures oriented toward flexibility and experimentation are more conducive to radical innovation than control-oriented, hierarchical cultures [33]. Inclusive climates, moreover, enhance creative self-efficacy and support broader participation in innovation processes [34]. Importantly, learning-oriented cultures also moderate the effects of workforce diversity, enabling age-diverse teams, for example, to translate heterogeneity into innovative outcomes rather than into coordination costs [32]. From an innovation readiness perspective, culture therefore functions less as

a background variable and more as a critical enabling or constraining condition for the mobilization of organizational knowledge.

Structural design and ambidexterity constitute a third pillar of intra-firm readiness. Ambidexterity theory emphasizes the persistent tension between exploration and exploitation, and the need for organizational arrangements that allow both to be pursued over time [5, 17]. Structural solutions, such as the separation of exploratory and exploitative units, can protect radical initiatives from short-term performance pressures, while contextual solutions rely on leadership, incentives, and social norms to enable individuals and teams to allocate their attention flexibly across competing demands [35]. The literature suggests that no single structural template guarantees readiness. Rather, readiness depends on the firm's capacity to reconfigure structures and processes as strategic priorities and environmental conditions evolve.

Learning routines and absorptive capacity form the cognitive and procedural core of this internal configuration. Absorptive capacity, defined as the ability to recognize, assimilate, transform, and exploit external knowledge, consistently mediates the relationship between external search and innovation outcomes [10, 11, 15, 16]. Firms that invest in data-driven learning routines and in the development of micro-routines for knowledge integration are better positioned to convert information flows into product and process innovation. In this sense, learning routines are not merely supportive mechanisms; they are constitutive elements of innovation readiness itself.

Finally, the renewal of digital and human capital increasingly shapes the firm's internal innovation capacity. Digital maturity reconfigures innovation processes from ideation through experimentation to scaling, while platform strategies and digital infrastructures extend organizational affordances for collaboration and recombination [23]. At the same time, these technological investments require complementary human capital development if they are to translate into sustained capability. For SMEs in particular, the challenge lies not in adopting individual digital tools but in integrating technological, organizational, and cognitive resources into a coherent capability configuration.

Taken together, these intra-firm conditions constitute the organizational micro-foundations of innovation readiness. Weakness or misalignment in any one domain can become a binding constraint, limiting the returns on investment in others. Readiness, therefore, is best understood as a property of the configuration as a whole rather than of any single element in isolation.

5. Inter-firm conditions: Collaborative and ecosystem readiness

While intra-firm conditions shape the internal conversion of knowledge into innovation, inter-firm conditions determine the volume, diversity, and strategic relevance of knowledge inflows and complementary resources. The literature reviewed here converges on a set of interrelated dimensions that together constitute collaborative and ecosystem-level readiness. These include ecosystem positioning and governance, network structure and relationship dynamics, knowledge sourcing and integration mechanisms, collaborative agreements and governance structures, institutional logics and legacy ecosystem navigation, and the interaction between competition, dynamic capabilities, and adaptive learning.

Ecosystem positioning and governance influence a firm's capacity to mobilize partners' assets and shape collective innovation trajectories. Firms occupying central or orchestrating positions within ecosystems are better able to align complementary investments and influence architectural choices [21]. Platform-based governance structures, in particular, have been shown to shape collaboration outcomes by defining participation rules, standards, and value capture mechanisms. Trust and a shared innovation culture further stabilize cooperative relationships and support co-evolutionary strategies, while complementor alignment with the focal firm's strategic direction increases the likelihood of successful joint innovation. At the same time, degrees of complementor autonomy and the management of co-opetitive tensions influence overall ecosystem value creation, underscoring the political as well as technical dimensions of collaboration.

Network structure and relationship dynamics provide a second layer of influence. Empirical research indicates that strong ties, combined with network diversity, jointly enhance knowledge transfer effectiveness, whereas extreme reliance on either dense or sparse networks can limit learning. Structural holes may facilitate certain forms of team-level learning while impeding cross-level knowledge integration, and informal ties often play a critical role in cross-team idea recombination. Geographic and institutional distance further moderate these effects, suggesting that the benefits of external linkages are contingent on both relational and contextual proximity. From the perspective of innovation readiness, these findings imply that network configuration is not a matter of maximizing connections, but of achieving a contingent fit between relational diversity, tie strength, and managerial integration capacity.

Knowledge sourcing and integration mechanisms constitute the operational core of inter-firm readiness. Open innovation practices have expanded firms' access to external ideas, yet many organizations continue to underinvest in the routines required to integrate and commercialize those ideas effectively [6]. The well-documented inverted U-shaped relationship between external search breadth and innovation performance indicates that excessive openness can overwhelm managerial attention and absorptive capacity [7, 36]. Absorptive capacity again plays a mediating role, particularly in translating deep search into more radical innovation outcomes, while dedicated integration routines, such as those found in international joint ventures, support downstream value creation.

Collaborative agreements and governance mechanisms provide the formal infrastructure for inter-firm innovation. Contractual complexity moderates the impact of outsourcing on R&D productivity, and joint patenting arrangements facilitate inbound–outbound innovation cycles. However, the literature consistently indicates that formal contracts and relational governance mechanisms function as complements rather than substitutes, particularly under conditions of uncertainty and knowledge asymmetry. The capacity to design and adapt such hybrid governance structures is, therefore, an important component of collaborative readiness.

Institutional logics and legacy ecosystem conditions further shape the strategic latitude available to firms, especially SMEs and new entrants. Alignment between investor logics and firm strategies influences innovation outcomes, with venture capital logics often associated with higher levels of patenting and product innovation, while public-funder logics may constrain strategic flexibility. Disruptive entrants must also navigate incumbent interests and established technological trajectories if they are to avoid premature failure, highlighting the path-dependent character of ecosystem participation.

Finally, competition and adaptive learning dynamics interact with relational ties and dynamic capabilities. Competitive intensity tends to dampen technological radicalness while stimulating business-model innovation, and different types of ties – such as business versus political ties – support exploratory and exploitative innovation in distinct ways. Strong dynamic capabilities and "learning to learn" routines enhance ecosystem adaptability and long-term value capture, reinforcing the view that collaborative readiness is not simply a matter of access to partners but of the capacity to reconfigure relationships as conditions change.

6. Extra-firm conditions: Contextual and socio-technical readiness

Beyond the boundaries of the firm and its immediate partners, extra-firm conditions establish the broader opportunity structure within which innovation strategies are formed and enacted. The literature reviewed here identifies six interrelated contextual domains that shape innovation readiness: policy and regulatory environments, financial incentives and investment flows, institutional and ecosystem structures, knowledge and technology transfer systems, standards and infrastructures, and environmental and socio-technical transition pressures.

Policy and regulatory environments exert a powerful influence on firms' innovation incentives and risk perceptions. Regulatory clarity and coherence have been shown to stimulate SME digital investment and innovation activity, whereas regulatory uncertainty tends to dampen exploratory spending. Policy stringency, particularly in environmental domains, can induce eco-innovation readiness when enforcement is predictable but may discourage investment when rules are volatile or ambiguous. Comparative institutional analyses further indicate that coordinated and liberal market economies shape firm-level innovation trajectories in systematically different ways [8, 37].

Financial incentives and investment flows, including public R&D subsidies and foreign direct investment (FDI), shape both the scale and direction of innovative activity. Well-targeted R&D subsidies tend to crowd in private innovation expenditure, while pro-patent reforms stimulate early-stage venture activity. FDI enhances domestic innovation through knowledge spillovers, particularly when technological similarity is high, although strict environmental regulations may moderate these effects in newly industrialized economies. From a readiness perspective, these findings highlight the importance of firms' capacity to interpret and respond to evolving incentive structures rather than merely accessing individual funding instruments.

Institutional and ecosystem structures, such as the quality of national innovation systems and the presence of effective intermediaries, further condition firm readiness. High-quality innovation systems are associated with higher firm-level innovation performance, and intermediary organizations facilitate SME scaling, network formation, and capability development. Institutional pressures – normative, mimetic, and coercive – jointly shape innovation behavior, particularly under conditions of environmental uncertainty, while multi-level pressures accelerate broader socio-technical transitions [20].

Knowledge and technology transfer systems hinge critically on domestic absorptive capacity, which determines the extent to which firms can benefit from FDI and other external knowledge sources. SMEs that acquire digital knowledge significantly improve service innovation performance, and the combination of

circular-economy practices with digitalization increases innovation propensity. Standards and intellectual property regimes also play a central role in structuring innovation opportunities. Strong IP protection promotes collaborative patenting, while consensus standards reduce time to market and lower coordination costs in emerging technological fields [18, 38].

Environmental and socio-technical pressures are increasingly reshaping the innovation landscape. Stringent environmental policies and institutional pressures raise the likelihood of eco-innovation, and hybrid public–private ecosystems have proved effective in diffusing clean technologies. Socio-technical transition theory suggests that niche experimentation, regime destabilization, and landscape-level change interact to accelerate adoption curves, implying that firms should view sustainability mandates not merely as compliance burdens but as catalysts for new alliance structures and investment models [20].

These extra-firm conditions do not determine innovation outcomes directly. Rather, they amplify or dampen the effectiveness of intra-firm and inter-firm mechanisms, thereby shaping the overall level and trajectory of innovation readiness.

7. The 3-lens SiR framework

Bringing together the preceding analysis, this chapter advances the 3-Lens SiR Framework (see **Figure 1**) as an integrative conceptual and diagnostic architecture

Figure 1.
SiR framework, which conceptualizes innovation readiness as a multi-level, configurational capability emerging from the alignment of intra-firm, inter-firm, and extra-firm conditions.

that links intra-firm, inter-firm, and extra-firm conditions within a single, coherent perspective. The framework is grounded in dynamic capabilities theory and informed by a socio-technical systems view of innovation, and it is intended to function as a structured device for managerial and scholarly sensemaking rather than as a prescriptive implementation model.

The first lens, the intra-firm lens, captures the organizational microfoundations of readiness, including leadership orientations, culture and psychological safety, ambidextrous structures, learning routines and absorptive capacity, and the renewal of digital and human capital. The second lens, the inter-firm lens, focuses on collaborative and ecosystem-level conditions, encompassing ecosystem positioning and governance, network structure and relational dynamics, knowledge sourcing and integration mechanisms, and the design of hybrid contractual and relational governance arrangements. The third lens, the extra-firm lens, addresses the broader contextual conditions within which firms operate, including policy and regulatory regimes, financial incentives and investment flows, institutional and intermediary structures, standards and infrastructures, and socio-technical transition pressures.

The analytical value of the framework lies not in the isolated examination of each lens but in their joint consideration. Innovation readiness, from this perspective, is a configurational property: it depends on the alignment and mutual reinforcement of organizational capabilities, relational architectures, and contextual conditions. Strength in one domain cannot fully compensate for severe weaknesses in another. A firm with sophisticated internal capabilities, for example, may still struggle to innovate if it is poorly positioned within its ecosystem or if it operates under conditions of extreme regulatory uncertainty. Conversely, favorable contextual conditions and rich networks may yield limited benefits in the absence of adequate absorptive capacity or organizational learning routines.

The framework is designed to support three interrelated analytical and managerial purposes. First, it enables firms to map their current readiness profile by positioning themselves against a set of empirically grounded sub-constructs within each lens. This mapping exercise makes visible patterns of strength, weakness, and imbalance that are often obscured by more fragmented assessments of innovation capability. Second, it supports diagnosis by highlighting critical bottlenecks and misalignments that constrain the firm's ability to translate ideas into value. These bottlenecks may reside within the organization, in its network relationships, or in the broader institutional environment, and their identification is a prerequisite for effective prioritization. Third, the framework informs prioritization by linking diagnosed gaps to targeted tactical interventions and longer-term strategic moves, thereby providing a structured basis for sequencing change initiatives under conditions of resource constraint.

Importantly, the framework is consistent with a dynamic capabilities view of strategy. It treats innovation readiness not as a state to be achieved but as a capacity to be continually reconfigured through cycles of sensing, seizing, and transforming. In this sense, its primary contribution is not to offer a definitive prescription for innovation management but to provide a disciplined way of thinking about how organizational, relational, and contextual elements co-evolve, and how firms – particularly SMEs – might navigate this co-evolution more reflectively and strategically.

Figure 2 illustrates the interaction effect between the constructs of the SiR-framework, with the green – symbol indicating resonance interaction or alignment, and the orange ! – symbol indicating misalignment between the constructs. Within

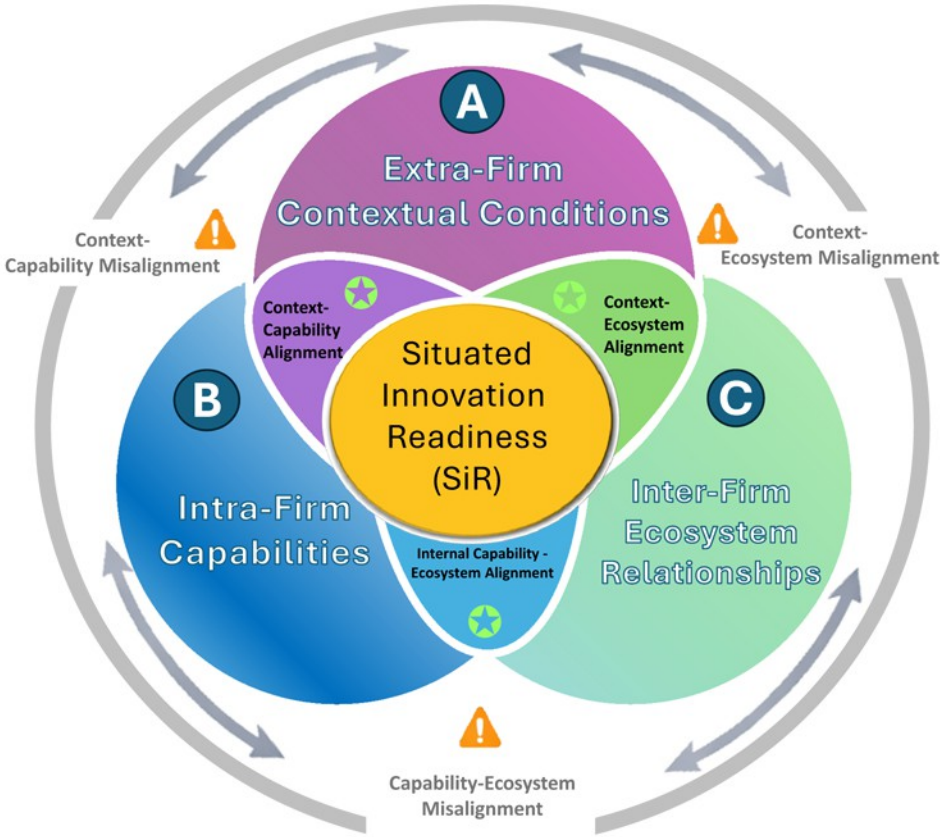

Figure 2.
SiR construct interaction.

the SiR framework, optimal innovation readiness emerges when the three lenses (A, B, and C) achieve constructive alignment, meaning that intra-organizational capabilities and competencies (B), ecosystem or inter-firm relationships (C), as well as contextual conditions (A), mutually reinforce one another. In contrast, destructive misalignment occurs when tensions at the boundaries between these domains – such as capability–ecosystem mismatch or regulatory–organizational gaps – cancel or weaken otherwise strong innovation drivers.

8. Using the 3-lens innovation readiness (SiR) tool in SME practice

The contribution of the 3-Lens SIR Framework is not merely classificatory; it is explicitly diagnostic and action-oriented. Many SMEs struggle to translate broad innovation prescriptions into situated decisions because existing instruments are either too narrow, capturing only intra-firm enablers, or too expansive, collapsing distinct levels of analysis into undifferentiated checklists. In contrast, the present framework operationalizes a multilevel logic of innovation capability by rendering intra-firm, inter-organizational, and extra-firm determinants commensurable through a shared ordinal scale and a deliberately disciplined set of constructs,

consistent with the view that innovation readiness is a multi-level capability requiring orchestration across organizational, network, and contextual domains [3].

The framework is best deployed as a structured managerial inquiry, undertaken by a cross-functional team capable of triangulating operational realities with strategic intent. A rapid self-assessment can be completed when participants score each core enabler on an ordinal scale while documenting concrete evidence for each judgment to minimize impressionistic bias. Such a reflective and evidence-oriented approach is consistent with research on organizational learning and capability development, which emphasizes the importance of deliberate articulation and evaluation of experience in avoiding superficial or ceremonial adoption of managerial concepts.

Because innovation readiness is path-dependent and often unevenly distributed across organizational domains, the value of the framework lies less in the absolute scores it generates than in the patterns and tensions it reveals. An SME may, for example, report a strong culture of experimentation while simultaneously exhibiting weak learning routines or limited absorptive capacity. In such circumstances, creative effort is likely to dissipate because experience is not converted into institutionalized capability, and the organization remains dependent on episodic rather than cumulative innovation [10]. From this perspective, the diagnostic function of the framework is to make visible precisely those forms of misalignment between aspiration, structure, and routine that constrain the effective renewal of capabilities.

This diagnostic logic mirrors a central insight of the dynamic capabilities literature, namely that sustained performance does not derive from the possession of isolated resources, but from the coherence and adaptability of the processes through which resources are integrated and reconfigured over time [1, 12]. Used in this way, the framework provides a disciplined mechanism for interrogating the internal consistency of the firm's innovation system and for distinguishing between areas where incremental improvement is likely to be effective and those where more fundamental reconfiguration is required.

The practical value of the framework becomes most apparent when the processes of mapping, diagnosing, and prioritizing are treated as analytically distinct but mutually reinforcing stages of managerial sensemaking. The initial mapping exercise positions the firm across the intra-firm, inter-firm, and extra-firm dimensions of readiness, making explicit the configuration of organizational capabilities, relational assets, and contextual conditions within which innovation activities are embedded. This responds to long-standing concerns in the innovation literature that firms tend to overemphasize internal factors while underestimating the strategic significance of network position and institutional context [7, 8, 21]. See Appendix A and Appendix B for examples of Operationalizing the SiR framework for SMEs.

Diagnosis then involves interpreting this configuration in order to identify binding constraints and critical misalignments. From a dynamic capabilities perspective, such constraints often manifest as weaknesses in sensing, seizing, or transforming processes*, even where other elements of the system appear relatively well-developed [12]. For example, strong internal technical capabilities may fail to translate into commercial innovation if the firm occupies a peripheral or dependent position within its ecosystem, or if regulatory and standards regimes impose high coordination or compliance costs [18, 21]. Conversely, favorable contextual

conditions and rich network connections may yield limited benefits in the absence of adequate absorptive capacity or organizational learning routines [10, 11].

The final stage, prioritization, addresses the central managerial problem faced by most SMEs, namely the necessity of allocating scarce resources under conditions of uncertainty. The framework does not prescribe a universal sequence of interventions; rather, it provides a structured basis for distinguishing between issues that require internal capability development, relational reconfiguration, or engagement with the wider institutional environment. In this respect, it is consistent with the ambidexterity literature's emphasis on the need to balance exploration and exploitation through context-sensitive organizational design choices [5, 17].

Used iteratively, the framework supports a cycle of assessment, reflection, and strategic adjustment, through which innovation readiness is treated as an evolving capability rather than a fixed state. This view aligns closely with socio-technical systems perspectives, which emphasize that firms operate within shifting technological, institutional, and societal landscapes and must continuously recalibrate their strategies and organizational arrangements in response to multi-level change processes [20]. The practical significance of the framework for SMEs, therefore, lies not in the production of a static scorecard but in its use as a disciplined sensemaking device that anchors innovation investment decisions in a coherent, theory-informed understanding of the firm's changing strategic context [11, 12, 21].

** Involves scanning for opportunities/threats (sensing), mobilizing resources for those opportunities (seizing), and continuously realigning assets to remain relevant (transforming).*

Taken together, these considerations underscore both the practical promise and the analytical limits of any integrative readiness framework. They also draw attention to a set of unresolved questions concerning how such configurations are best measured, how they evolve over time, and how they vary across institutional and sectoral contexts. These issues provide a natural point of departure for the research agenda outlined in the following section.

9. Directions for future research

The integrative framework advanced in this chapter opens several avenues for future research. A first priority concerns the empirical examination of the configurational logic that underpins the 3-Lens Innovation Readiness Framework. While the framework is grounded in a systematic synthesis of prior studies, further work is required to investigate how different combinations of intra-firm, inter-firm, and extra-firm conditions jointly shape innovation outcomes across industries, regions, and stages of firm development. Configurational and longitudinal research designs appear particularly well-suited to capturing the non-linear and path-dependent dynamics implied by dynamic capabilities and socio-technical systems perspectives [12, 20].

A second avenue concerns the temporal evolution of readiness profiles. The present chapter conceptualizes innovation readiness as a situated and evolving capability, yet much of the existing empirical literature remains cross-sectional. Longitudinal studies could illuminate how firms reconfigure their organizational, relational, and contextual alignments in response to technological disruption, regulatory change, or shifts in ecosystem structure, and how such reconfigurations relate to performance trajectories and strategic renewal [17, 21].

A third direction involves the refinement and operationalization of specific sub-constructs within each lens, particularly in SME contexts. For example, further research could examine how different forms of digital maturity interact with learning routines and absorptive capacity, or how alternative governance arrangements shape knowledge integration in collaborative settings [15, 23]. Such work would strengthen the measurement foundations of the framework and enhance its diagnostic precision.

Finally, future studies could more explicitly examine the role of intermediaries, platforms, and policy instruments as active shapers of innovation readiness configurations rather than merely as exogenous contextual factors. From a socio-technical systems perspective, these actors are integral to the co-evolution of firms, networks, and institutions, and their influence on readiness dynamics warrants more systematic theoretical and empirical attention [18, 20].

10. Conclusion

This chapter has argued that innovation readiness is best understood not as a static organizational attribute or a collection of discrete practices, but as a situated, multi-level, and dynamic capability emerging from the interaction of intra-firm organizational microfoundations, inter-firm collaborative architectures, and extra-firm contextual conditions. By integrating insights from the dynamic capabilities, absorptive capacity, corporate entrepreneurship, open innovation, and socio-technical systems literatures, the chapter has sought to provide a more coherent and theoretically grounded account of why some firms are systematically better prepared than others to generate, absorb, and exploit novel ideas.

The central contribution of the chapter is the development of the 3-Lens Innovation Readiness Framework (SiR), which translates this integrative perspective into a structured diagnostic and sensemaking architecture for SMEs. The framework enables firms to map their current readiness profile, identify critical bottlenecks and misalignments, and prioritize targeted tactical actions and strategic moves within a coherent, theory-informed structure. In doing so, it seeks to bridge the gap between abstract theory and managerial practice without reducing innovation readiness to a decontextualized checklist of prescriptions.

In increasingly turbulent and interconnected innovation environments, the capacity to continuously recalibrate organizational, relational, and contextual alignments is likely to become a defining source of competitive advantage. The framework presented here provides both scholars and practitioners with a foundation for understanding, assessing, and developing that capacity in a more systematic and strategically reflective manner.

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Appendix A

Below is a proposed operationalization table for the SiR framework, designed for use across a broad subset of SMEs, including manufacturing firms, service firms such as software development businesses, and trade-based product-and-service firms such as motor mechanics. I have kept the indicators sufficiently general to permit cross-industry use, while still making them concrete enough to support diagnosis, scoring, and prioritization.

The logic of the table is as follows: the first column uses the SiR framework's constructs, the second specifies common operational indicators or KPIs, the third identifies the principal theoretical or empirical source base from which the construct is derived, and the fourth provides an ordinal scoring rubric that can be used in a practical readiness assessment. A five-point scale is proposed throughout because it is sufficiently sensitive for managerial use while still remaining feasible for SMEs.

For consistency across lenses, the scoring anchors may be interpreted as follows: 1 = very weak or absent; 2 = emerging but inconsistent; 3 = established but uneven; 4 = strong and routinely embedded; 5 = highly developed, integrated, and strategically leveraged. (We only label 1, 3, and 5 to be concise and illustrative).

Table 1 illustrates how the SiR framework can be used for various SMEs. In manufacturing, indicators such as process digitization, supplier integration, standards compliance, and production learning loops would be particularly salient. In software development, the same constructs would be expressed through sprint learning, API and platform dependencies, partner architecture, talent retention, and

SiR lens and sub-construct	Common indicators/KPI$_S$ /Measures	Sources/Theoretical basis	Ordinal scoring anchors/ Rubric
Intra-firm: Leadership and managerial support	Percentage of management time allocated to innovation review; frequency of innovation decision meetings; share of budget explicitly committed to experimentation; employee perception of management support for innovation	Amabile et al. [26]; Hornsby et al. [28]; Kuratko et al. [29]; Wang et al. [31]	1 = no visible leadership support; 3 = periodic support and selective resourcing; 5 = consistent strategic sponsorship, resourcing, and innovation accountability
Intra-firm: Culture and psychological safety	Staff willingness to voice ideas; frequency of post-project reflection; tolerance of failed experiments; evidence of cross-functional learning routines	Martins and Terblanche [4]; Carmeli et al. (2010); Cameron and Quinn [33]; Argyris (2017)	1 = risk-averse and blame-oriented; 3 = mixed climate with pockets of openness; 5 = openly experimental, reflective, and psychologically safe
Intra-firm: Ambidextrous structure and governance	Balance between short-term operational improvement and longer-term experimentation; number of active exploratory initiatives; formal allocation of time/resources across exploitative and exploratory work	Jansen et al. [5]; Gibson and Birkinshaw [35]; O'Reilly and Tushman [17]	1 = entirely operationally driven; 3 = some experimentation but ad hoc; 5 = clear and managed balance of optimization and exploration

SiR lens and sub-construct	**Common indicators/KPI$_S$ /Measures**	**Sources/Theoretical basis**	**Ordinal scoring anchors/ Rubric**
Intra-firm: Learning routines and absorptive capacity	Time from new knowledge acquisition to implementation; frequency of training linked to innovation priorities; number of process/product changes based on external knowledge; degree of documentation and reuse of lessons learned	Cohen and Levinthal [10]; Zahra and George [11]; Kostopoulos et al. [15]; Crossan et al. (1999); Zollo and Winter (2002)	1 = little or no structured learning; 3 = learning occurs but is fragmented; 5 = systematic acquisition, integration, and application of knowledge
Intra-firm: Digital and data capability	Use of digital tools in operations; data availability for decision-making; proportion of core processes digitized; interoperability across systems	Verhoef et al. [23]; Nambisan et al. (2019); Wang et al. [31]	1 = largely manual and fragmented; 3 = partial digitization with limited integration 5 = digitally integrated and routinely data-driven
Intra-firm: Ecosystem position and governance	Number and strategic diversity of external partners; degree of dependency on a single partner/ platform; presence of alliance governance routines; role in network as dependent participant, active collaborator, or orchestrator	Adner [21]; Gawer and Cusumano [22]; Jacobides et al. [22]	1 = isolated or highly dependent; 3 = moderate network participation with limited governance; 5 = strategically positioned with active coordination capability
Intra-firm: Network structure and ties	Breadth of external search; depth of key relationships; ratio of repeat to new collaborative ties; external knowledge inflow frequency	Laursen and Salter [7]; Katila and Ahuja [36]; Inkpen and Tsang (2005)	1 = very narrow or absent network; 3 = moderate breadth/ depth with uneven value capture; 5 = balanced and strategically managed network portfolio
Intra-firm: Knowledge sourcing and integration	Number of externally sourced ideas or technologies adopted; speed of integrating partner knowledge into operations; existence of boundary-spanning roles; conversion rate from external opportunities to implemented improvements	Chesbrough [6]; Jansen et al. [5]; Grimpe and Kaiser (2010); Zahra and George [11]	1 = external ideas rarely used; 3 = some sourcing but weak conversion; 5 = strong external sensing and effective integration into business value
Intra-firm: Collaborative governance and trust architecture	Presence of clear contracts; clarity of IP/data ownership; frequency of joint reviews with partners; perceived trust and problem-solving quality in alliances	Dyer and Singh (1998); Poppo and Zenger (2002); Martinez-Noya and Garcia-Canal (2016)	1 = transactional, unclear, and fragile relationships; 3 = some governance but inconsistent trust; 5 = clear hybrid governance, combining contractual clarity and relational trust

SiR lens and sub-construct	Common indicators/KPI_S /Measures	Sources/Theoretical basis	Ordinal scoring anchors/ Rubric
Extra-firm: Policy and regulatory climate	Regulatory predictability; compliance burden relative to firm size; access to grants/ subsidies; degree to which regulation supports or constrains innovation initiatives	Blind [18]; Hall and Soskice [37]; Fagerberg and Srholec [8]	1 = highly uncertain or constraining; 3 = mixed or sectorally uneven; 5 = predictable and enabling environment
Extra-firm: Institutional and ecosystem quality	Availability of industry bodies, clusters, incubators, or support agencies; access to finance; quality of local innovation infrastructure; university/industry access	Fagerberg and Srholec [8]; Geels [9]; Adner [21]	1 = weak external support and poor connectivity; 3 = selective support availability; 5 = strong and accessible support infrastructure
Extra-firm: Knowledge and technology transfer environment	Ease of accessing new technologies; participation in standards, supplier, customer, or university knowledge channels; relevance of external technical support	Cohen and Levinthal [10]; Blind and Gauch (2021); Geels [24]	1 = low access and weak transfer channels; 3 = moderate access but sporadic uptake; 5 = strong and regular access to useful external knowledge
Extra-firm: Market and socio-technical Turbulence	Rate of customer preference change; product/service lifecycle compression; competitive intensity; technological disruption affecting business model or operations	Teece [12]; Geels [24]; Verhoef et al. [23]	1 = low turbulence and slow change; 3 = moderate turbulence; 5 = rapid and disruptive turbulence, requiring continual adaptation
Extra-firm: Sustainability and environmental pressure	Degree of pressure from customers, regulators, or supply chains for greener practices; exposure to resource efficiency or sustainability standards; integration of sustainability into innovation priorities.	Geels [24]; Crespi and Quatraro (2015).	1 = no meaningful pressure or response; 3 = emerging compliance orientation; 5 = sustainability actively shaping innovation choices.

Table 1.
Operationalizing the situated innovation readiness (SiR) framework for SMEs.

product-market adaptation speed. The value of the SiR framework and its application here lies precisely in this cross-sector applicability: the constructs remain stable, while their observable indicators are interpreted in context.

Appendix B

Next, we offer a worked example of a readiness profile for a medium-sized motor mechanics and vehicle servicing SME with workshop operations, diagnostics, parts sourcing, and a growing software-enabled booking and customer relationship (CRM) function. This is a useful example because it lies between a traditional product-service business and a digitally exposed operational environment.

The worked example here in **Table 2**, illustrates that the firm is not weak in an absolute sense; rather, it is unevenly ready. Its most immediate bottlenecks are not

SiR sub-construct	Example score (1–5)	Diagnostic Interpretation	Priority action
Leadership and managerial support	4	Owner-manager strongly supports modernization but innovation decisions remain centralized	Formalize quarterly innovation review and delegate experimentation authority.
Culture and psychological safety	2	Staff solve problems informally but rarely propose process improvements systematically	Introduce structured improvement huddles and non-punitive learning reviews.
Ambidextrous structure and governance	2	Focus remains heavily operational; little time is protected for future-oriented service development	Allocate modest, protected time/budget for service innovation and digital experimentation.
Learning routines and absorptive capacity	3	External training occurs, but lessons are not consistently captured or reused	Create a simple knowledge log for recurring technical and customer insights.
Digital and data capability	3	Booking, invoicing, and diagnostics are partly digitized but systems are weakly integrated	Integrate booking, job tracking, parts, and customer data for better visibility.
Ecosystem position and governance	2	Strong dependence on a few suppliers and limited strategic partnering	Diversify key suppliers and build ties with fleet operators, insurers, or EV service networks.
Network structure and ties	3	Some external relationships exist, but mostly transactional	Develop one or two deeper strategic relationships alongside broader scanning.
Knowledge sourcing and integration	2	New technical information is accessed, but not systematically converted into service innovation	Assign a boundary-spanning role for monitoring new technologies, especially EV and diagnostic systems.
Collaborative governance and trust	3	Supplier relationships are stable but informal	Clarify service agreements, data access, and training support with technology partners.
Policy and regulatory climate	3	Compliance environment is manageable but evolving, especially in EV safety	Monitor regulatory changes and utilize industry association updates more actively.
Institutional and ecosystem quality	2	Limited use of training bodies, industry networks, or innovation support services	Engage local trade and SME support programs for capability development.
Knowledge and technology transfer environment	3	Access to technical information exists through suppliers, but uptake is uneven	Formalize supplier-led learning and technical certification pathways.
Market and socio-technical turbulence	4	Shift to EVs, software diagnostics, and customer convenience services is accelerating	Prioritize EV capability and digitally enhanced service offerings.
Sustainability and environmental pressure	3	Pressure is increasing, but not yet strategic.	Begin integrating sustainability into equipment, waste, and service design decisions.

Table 2.
Readiness profile for a motor mechanic (the european car specialists, SME).

leadership or general operational competence but *low structural ambidexterity*, *weak knowledge integration*, and *overreliance on transactional external relationships*. The prioritized actions should, therefore, focus on strengthening learning routines, formalizing future-oriented experimentation, and improving ecosystem positioning before significant capital-intensive expansion.

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