



Antecedents of Strategic Flexibility in Startup Incubators: Navigating Ecosystem Dynamics for Adaptive Needs Mapping in Indigo PnD

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Abstract

This research aims to identify and analyze the antecedents of strategic flexibility within Indigo Pre-Startup & Discovery (PnD) in response to rapid startup ecosystem dynamics. The study employs a qualitative-exploratory approach, utilizing purposive sampling to gather data through in-depth interviews with management and startup founders, direct observations of strategic reviews, and comprehensive documentation analysis. Data were analyzed using the interactive model of Miles, Huberman, and Saldaña, involving data condensation, display, and conclusion drawing. The findings reveal that strategic flexibility is driven by three primary antecedents: dynamic environmental intelligence, adaptive hierarchical governance systems, and institutionalized adaptive learning cycles. These elements are operationalized through an "Adaptive Needs Mapping" process, which allows the incubator to calibrate its resource allocation and support mechanisms precisely to the evolving requirements of early-stage startups. By maintaining a hybrid governance structure, Indigo PnD effectively balances corporate stability with the agility needed to navigate frontier technology shifts. This study provides a strategic framework for corporate incubators to enhance responsiveness and sustainability within volatile digital economies.

Keywords: Strategic Flexibility; Startup Incubator; Ecosystem Dynamics; Adaptive Needs Mapping; Indigo PnD

1. Introduction

In the last two decades, the global economic landscape has undergone a radical transformation driven by digital acceleration and the emergence of disruptive business models. This shift has positioned startups as central agents of innovation, serving as experimental laboratories for technology-based models that are inherently adaptive to market volatility. In Indonesia, the evolution of the startup ecosystem is marked by significant sectoral shifts (Lhermitte et al., 2011) (Seidl et al., 2012). While the period between 2013 and 2020 was dominated by conventional digital services such as e-commerce and fintech, the current trajectory towards 2025 indicates a transition into frontier technologies, including adaptive Artificial Intelligence (AI), cybersecurity, and personalized health-tech. This continuous metamorphosis suggests that the startup ecosystem is a dynamic construct rather than a linear or static one (Pattnaik et al., 2020) (Zirek, 2024) (Rathi, 2026).

As the primary facilitators of startup growth, business incubators and accelerators such as Indigo Pre-Startup & Discovery (PnD) by Telkom Indonesia face the daunting challenge of remaining relevant amidst these rapid shifts (Taufikurohmah & Rizki Fidarina, 2023) (Kehinde Feranmi Awonuga et al., 2024). Traditional incubation models that rely on rigid curriculums and fixed resource allocation are increasingly becoming obsolete. If an incubator fails to synchronize its

support mechanisms with the actual, evolving needs of its startups, it risks causing a strategic misalignment that hampers the very growth it is meant to foster. Consequently, the ability of an incubator to maintain strategic flexibility the capacity to reallocate resources and pivot strategies in response to environmental changes has become a critical survival factor (Susiang, 2024) (Hensellek et al., 2023) (Arsawan et al., 2022).

Strategic flexibility within the context of Indigo PnD is not merely a reactive stance but a proactive institutional strategy. Preliminary observations indicate that Indigo frequently adjusts its Objective Key Results (OKRs) on a quarterly basis, reflecting a systematic effort to align internal strategies with external ecosystem dynamics (Atalla et al., 2025) (Aabo et al., 2024). This phenomenon highlights the importance of "needs mapping" as a strategic bridge (Taraghi et al., 2024) (Stenmark & Lilja, 2014). By accurately mapping the shifting needs of early-stage startups, Indigo can tailor its intervention programs, ensuring that the support provided is both adaptive and high-impact (Pike-Bowles et al., 2024) (Wided, 2023) (Sony et al., 2023).

The necessity for such flexibility can be understood through several theoretical lenses. According to Dynamic Capabilities Theory, organizations must possess the capacity to sense environmental shifts, seize opportunities, and reconfigure their resource base. In the case of Indigo, "sensing" is operationalized through environmental intelligence systems that monitor technological trends and competitive branding (Kafetzopoulos et al., 2023) (Han & Zhang, 2021). Furthermore, Institutional Theory suggests that external normative and coercive pressures from the startup ecosystem influence how indigo structures its decision-making processes. Finally, Strategic Alignment Theory emphasizes that value creation in volatile environments depends on the continuous calibration between business strategy and organizational structure (Alvites et al., 2024) (Sitch et al., 2003) (Caparros-Santiago et al., 2021).

Existing literature supports the link between these capabilities and organizational performance. For instance, dynamic capabilities significantly contribute to IT flexibility and organizational growth. Flexible work arrangements and adaptive governance also enhance operational efficiency. Moreover, the application of Lean Startup methodologies has been shown to drive faster adaptation to market changes. However, while the concept of strategic flexibility is well-documented in general management, its specific antecedents within the specialized environment of a corporate-backed incubator in an emerging market like Indonesia remain underexplored (Moerchel et al., 2023).

The primary objective of this research is to identify and analyze the specific antecedents that enable strategic flexibility within Indigo Pre-Startup & Discovery. To achieve this, the study is designed to provide robust empirical evidence regarding the internal and external factors that shape Indigo's capacity to remain resilient and flexible amidst the high volatility of the startup ecosystem. Furthermore, this research investigates how the process of "needs mapping" is systematically enacted as a core strategic response to ecosystem shifts, functioning as a vital mechanism for the continuous calibration of support programs. Ultimately, the study aims to develop a comprehensive conceptual framework that explains the intricate interplay between environmental intelligence, adaptive governance, and institutionalized learning cycles in fostering heightened organizational responsiveness.

The novelty of this research lies in its granular focus on the "Adaptive Needs Mapping" process as a fundamental antecedent of strategic flexibility in the incubator context. Unlike previous studies that often treat incubators as static support entities, this research views Indigo PnD as a dynamic system that employs "distributed leadership" and "hybrid strategic architecture" to manage the tension between corporate stability and startup-like agility.

By introducing the concept of "Dynamic Environmental Intelligence", this study moves beyond simple environmental scanning. It illustrates how Indigo uses proactive monitoring ranging from formal digital trend studies to informal community networking to anticipate frontier technology shifts such as the transition from intermediation platforms to deep-tech and AI. Furthermore, the study identifies "Institutionalized Adaptive Learning Cycles" as a key driver, where quarterly reflections lead to "double-loop learning" that reshapes not just the programs, but the underlying strategic assumptions of the organization.

Practically, this research offers a blueprint for other corporate accelerators in emerging economies on how to navigate "ecosystem dynamics" without being stifled by parental bureaucracy. By mapping the antecedents of flexibility, this study provides a theoretical and empirical foundation for building more resilient and responsive innovation hubs that can effectively bridge the gap between corporate resources and startup needs

2. Methods

2.1 Research Design and Paradigm

This study adopts a qualitative research design with a descriptive-exploratory approach to investigate the antecedents of strategic flexibility within Indigo Pre-Startup & Discovery (PnD). Given the complexity of ecosystem dynamics and the nuanced nature of adaptive needs mapping, a qualitative lens is essential to capture the "how" and "why" of organizational behaviour (Yin, 2018) (Holecki et al., 2018). The research is grounded in the constructivist paradigm, acknowledging that strategic flexibility is an emergent property shaped by the interactions between incubator management, startup founders, and the broader digital ecosystem (Battistella et al., 2018) (Buckley & Davis, 2018) (Rachman et al., 2024).

The case study method was selected as the primary research strategy. According to Yin, case studies are particularly effective when the boundaries between the phenomenon (strategic flexibility) and its context (the startup ecosystem) are not clearly evident. By focusing on Indigo PnD as a single, embedded case, this study provides an in-depth analysis of the specific mechanisms such as dynamic environmental intelligence and adaptive governance that facilitate responsiveness in a corporate-backed incubation environment (Yin, 2018).

2.2 Site Selection and Informant Profiling

The research was conducted at Indigo PnD, a prominent startup incubator under Telkom Indonesia. Indigo PnD serves as a strategic site for this study due to its unique position at the intersection of rigid corporate structures and the highly volatile startup market. The selection of informants followed a purposive sampling technique to ensure that the data collected was rich in expertise and perspective. This methodological approach facilitates a deeper understanding of how institutional support mechanisms influence entrepreneurial success, providing critical

insights into the operational challenges faced by emerging digital ventures within a competitive landscape.

The informants were categorized into three distinct groups:

- 1) **Internal Management:** Including the Manager of Indigo PnD and program leads responsible for strategic decision-making and resource allocation.
- 2) **Operational Teams:** Staff members involved in the day-to-day "needs mapping" and monitoring of startup progress.
- 3) **Startup Founders:** Representatives from current and former Indigo PnD cohorts who have experienced the incubator's adaptive support firsthand.

This triangulation of sources is crucial for validating the findings and ensuring a holistic understanding of how strategic flexibility is perceived and enacted across different organizational levels (Rachman et al., 2024).

2.3 Data Collection Instruments

To achieve a comprehensive data set, this study utilized three primary methods of data collection:

- **In-depth Interviews:** Semi-structured interviews were conducted with key informants. The interview guide was designed to probe into several thematic areas: the perception of ecosystem dynamics, the process of adjusting Objective Key Results (OKRs), and the barriers to flexibility. This approach allowed informants to provide detailed narratives regarding their experiences in navigating "pivot" moments within the startup lifecycle (Zahra et al., 2025).
- **Direct Observation:** The researcher engaged in non-participant observation of strategic meetings, quarterly evaluation sessions, and mentoring workshops at Indigo. These observations focused on how "sensing" activities (monitoring technological trends) were translated into "seizing" activities (adjusting curricula or providing new resources).
- **Documentation Analysis:** A rigorous review of internal documents was conducted. These included Indigo's strategic plans, quarterly reports, startup progress logs, and ecosystem analysis papers. Documentation served as a means of verifying the timelines and specific instances of strategic shifts mentioned by the informants (Buckley & Davis, 2018) (McGee et al., 2021).

2.4 Data Analysis Techniques

The data analysis followed the interactive model proposed by Miles, Huberman, and Saldaña, consisting of data condensation, data display, and conclusion drawing/verification.

- 1) **Data Condensation:** Large volumes of interview transcripts and field notes were coded using both inductive and deductive approaches. Initial codes were derived from the theoretical framework (e.g., "Dynamic Capabilities," "Environmental Sensing"), while emergent codes were added as new patterns appeared (e.g., "Hybrid Governance").
- 2) **Data Display:** As shown in the research models, the data was organized into visual frameworks. For instance, the Model of Dynamic Environmental Intelligence (Figure 1) was developed to visualize the flow of information from the ecosystem to Indigo's decision-making

units. Similarly, the Model of Adaptive Hierarchical Governance Systems (Figure 2) illustrates the structural flexibility within the organization. Together, these analytical tools establish a robust theoretical baseline, ensuring that both external environmental fluctuations and internal management responses are continuously aligned to maximize overall efficiency and strategic corporate resilience.

- 3) **Conclusion Drawing:** Patterns and themes were synthesized to identify the core antecedents of flexibility. The analysis focused on how Indigo navigates the "Adaptive Needs Mapping" process to ensure a strategic fit between its offerings and startup requirements (Hameed et al., 2025) (Hillier, 2007).

2.5 Validity and Reliability (Trustworthiness)

To ensure the rigor of this qualitative inquiry, several trustworthiness criteria were applied. Credibility was established through prolonged engagement in the field and triangulation of data sources (interviews, observations, and documents). Transferability is addressed by providing "thick descriptions" of the Indigo PnD context, allowing other incubator managers to evaluate the applicability of the findings to their own environments (McGee et al., 2021).

Dependability was maintained by keeping an audit trail of the research process, ensuring that the findings are consistent and could be replicated by other researchers. Finally, Confirmability was achieved through member checking, where preliminary findings were shared with the informants to ensure that the researcher's interpretations accurately reflected their lived experiences.

2.6 The Conceptual Framework of Adaptive Needs Mapping

The A central component of the methodology is the mapping of needs as a dynamic process. In the context of Indigo PnD, "Needs Mapping" is not a one-time assessment but a continuous cycle. This involves using journey mapping techniques similar to those used in specialized services to understand the evolving pain points of startups (Liu et al., 2025).

The methodology explores how Indigo utilizes digital tools for soil-like mapping of the ecosystem "terrain," identifying gaps in talent, funding, and technology (Dharumarajan et al., 2019). By integrating these diverse data points, the research demonstrates how indigo constructs its Institutionalized Adaptive Learning Cycles (Figure 3), where each cohort's feedback loop informs the next iteration of the incubation strategy.

2.7 Ethical Considerations

Ethical clearance was obtained prior to the commencement of the study. All participants were provided with informed consent forms, emphasizing that their participation was voluntary and that their identities would be kept confidential where requested. Data security measures were implemented to protect the sensitive strategic information of Indigo PnD and the proprietary data of the participating startups

2.8 Integration of Visual Models

The methodology section specifically incorporates three key models that act as the structural backbone of the analysis:

- **Figure 1 (Dynamic Environmental Intelligence):** This model describes the systematic process of gathering ecosystem data. It emphasizes that flexibility begins with superior "sensing" capabilities monitoring competitors, technological advancements, and regulatory changes (Li et al., 2023).
- **Figure 2 (Adaptive Hierarchical Governance Systems):** This model addresses the organizational structure. It shows how indigo balances the "top-down" requirements of Telkom with the "bottom-up" needs of the startup ecosystem, creating a hybrid governance that allows for rapid strategy pivots (Hameed et al., 2025).
- **Figure 3 (Institutionalized Adaptive Learning Cycles):** This model represents the "learning" antecedent. It illustrates how Indigo internalizes external shocks and startup failures to improve its mapping accuracy and service delivery (Susiang, 2024).

By utilizing these models, the methodology transitions from theoretical abstraction to practical application, providing a clear roadmap for how the study analyzed the complex interactions within Indigo PnD's strategic framework. This systematic approach ensures that the research findings are grounded in a robust, multi-dimensional analysis of the incubator's operational reality.

3. Results

3.1 Overview of Ecosystem Dynamics in Indigo PnD

The empirical findings at Indigo Pre-Startup & Discovery (PnD) reveal that the incubator operates within a highly volatile digital ecosystem. Data collected from internal reports and interviews indicate that between 2023 and 2025, there was a structural shift in the Indonesian startup landscape. The findings show that while e-commerce and basic digital services remain present, the "adaptive needs" of the ecosystem have pivoted toward frontier technologies, specifically Artificial Intelligence (AI), Green Tech, and Cyber Security. Indigo PnD has identified these shifts as the primary environmental pressure necessitating strategic flexibility.

Table 1. Mapping of startup needs and support mechanisms

Phase	Core Needs	Support Mechanism	Adjustment Frequency
Pre-Startup	Ideation, Validation, Market Fit	Mentoring, Lean Workshops	Weekly
Discovery	MVP Development, Early Traction	Technical Grants, Prototyping	Monthly
Acceleration	Scaling, Funding, Networking	VC Speed Dating, Global Access	Quarterly

Source: Data analysis

Table 1 illustrates the strategic alignment between the developmental phases of a startup and the corresponding support mechanisms provided by Indigo PnD. It demonstrates that as a startup progresses from Pre-Startup to Acceleration, its core needs shift from basic ideation to complex scaling and funding requirements. The table highlights that the adjustment frequency for support mechanisms is highly dynamic, ranging from weekly mentoring sessions to quarterly strategic networking, which indicates a high level of operational flexibility in addressing the evolving "adaptive needs" of the startups. Consequently, this highly responsive model allows founders to optimize resources, minimize potential risks, and accelerate product development. By maintaining

such continuous evaluation practices, the incubator significantly increases overall success rates across its entire portfolio of newly established technology business ventures. Furthermore, this structured approach ensures that mentors can provide targeted interventions that align perfectly with the specific growth milestones.

Table 2. Key antecedents of strategic flexibility in indigo PnD

Antecedent Category	Specific Components	Impact on Flexibility
Environmental	Market Sensing, Competitor Analysis	High (Predictive Agility)
Structural	Hybrid Governance, Decentralized OKR	Moderate (Execution Speed)
Institutional	Double-loop Learning, Post-mortem	High (Resilience)

Source: Data analysis

Table 2 categorizes the primary antecedents that drive strategic flexibility within the incubator. The data identifies three major pillars: Environmental, Structural, and Institutional factors. The findings suggest that environmental sensing and institutional learning cycles have a high impact on overall flexibility, providing the organization with both predictive agility and long-term resilience. Meanwhile, structural components such as hybrid governance ensure that the incubator can execute strategy pivots with sufficient speed without being hindered by parent-company bureaucracy.

Informants highlighted that the speed of market change often outpaces the traditional annual planning cycle of large corporations. In response, Indigo PnD has institutionalized a system where ecosystem dynamics are not viewed as external shocks but as data points for recalibration. The results demonstrate that the incubator's ability to map these changes is the first antecedent of its strategic flexibility

3.2 Antecedent 1: Dynamic Environmental Intelligence

The first major finding identifies Dynamic Environmental Intelligence as a critical antecedent. As illustrated in Figure 1 (Model of Dynamic Environmental Intelligence), Indigo PnD employs a systematic three-layered sensing mechanism. The "Inner Circle" involves direct feedback loops from current startup cohorts, identifying immediate operational bottlenecks. The "Middle Circle" consists of monitoring local competitors and venture capital movements in Indonesia. The "Outer Circle" tracks global technological trends that may impact the local market in the next 18–24 months. By integrating these three distinct layers of continuous surveillance, the organization effectively anticipates disruptive shifts, mitigates emerging risks, and ensures that its strategic initiatives remain highly relevant and proactively adaptable. Furthermore, this comprehensive data collection process directly enhances the overall decision capacity across all management levels. By transforming raw market signals into actionable insights, Indigo consistently builds a resilient foundation for sustainable future business growth and superior competitive market innovation.

Figure 1 depicts the systematic process by which Indigo PnD gathers and processes ecosystem data to inform its strategic direction. The model illustrates a multi-layered sensing approach that moves from immediate internal feedback loops to broader global technological trend monitoring. This dynamic intelligence framework acts as the "eyes" of the organization, ensuring that strategic

flexibility is grounded in real-time market realities rather than static assumptions. By institutionalizing this model, Indigo PnD can anticipate shifts in the startup landscape, such as the emergence of frontier technologies, and reconfigure its resources proactively. Ultimately, this continuous flow of critical information empowers the management team to design better incubation programs, foster sustainable growth, and maintain a strong competitive advantage in a volatile market environment.

The data reveals that Indigo uses this intelligence to proactively adjust its "Discovery" phase curriculum. For instance, when the intelligence system sensed a rise in demand for AI integration among local SMEs, Indigo shifted its resource allocation to provide more specialized technical mentors. This aligns with the findings of Li, who suggest that superior sensing capabilities allow incubators to perform "resource bricolage" effectively, combining existing assets to meet new challenges (Li et al., 2023).

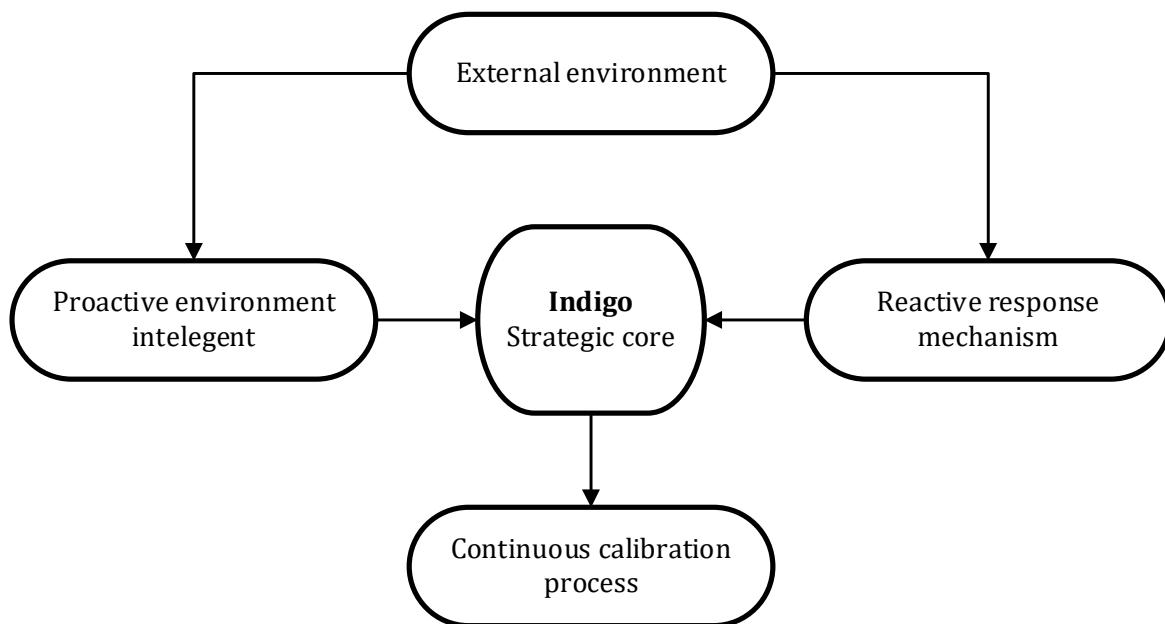


Figure 1. Model of dynamic environmental intelligence

Source: Data analysis

3.3 Antecedent 2: Adaptive Hierarchical Governance Systems

The second antecedent found in the data is the implementation of Adaptive Hierarchical Governance Systems, as depicted in Figure 2. The results show that Indigo PnD manages a unique "hybrid" structure. On one hand, it must comply with the bureaucratic requirements of its parent company, Telkom Indonesia; on the other hand, it must mirror the agility of the startups it incubates. This dual framework allows the organization to navigate rigid corporate governance while simultaneously fostering dynamic innovation. By decentralizing specific operational decisions and streamlining complex internal approval processes, leaders successfully balance strict compliance with rapid execution speeds for new startup ventures.

Figure 2 illustrates the hybrid organizational structure that allows Indigo PnD to maintain "agile stability." The model shows how the incubator balances the top-down strategic mandates from Telkom Indonesia with the bottom-up, decentralized decision-making required for startup

incubation. This adaptive governance system is characterized by the use of flexible Objective Key Results (OKRs) that are reviewed quarterly. This structural design ensures that Indigo PnD remains compliant with corporate standards while possessing the necessary autonomy to pivot its operational strategies when ecosystem dynamics demand a change in needs mapping. Consequently, this balanced methodology effectively eliminates traditional bureaucratic delays that frequently stifle rapid innovation in large corporations. By actively bridging the gap between strict institutional oversight and entrepreneurial velocity, the leadership successfully accelerates development phases and optimizes resource distribution to support sustainable growth for all emerging digital venture portfolios today.

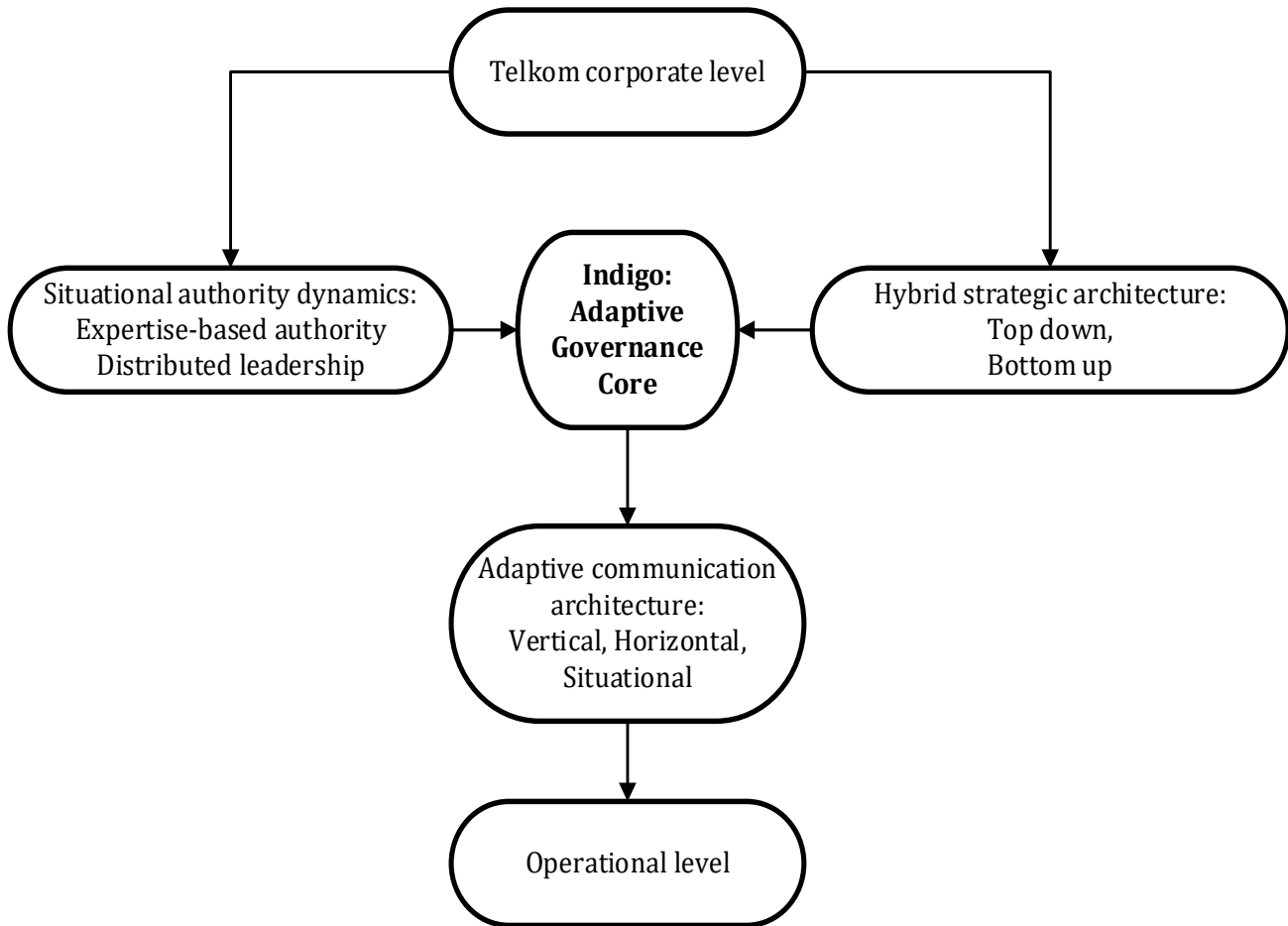


Figure 2. Model of adaptive hierarchical governance systems

Source: Data analysis

The findings indicate that Indigo utilizes a decentralized decision-making model for program-level adjustments. While major financial budgets are set annually, the operational execution specifically the "Objective Key Results" (OKRs) is reviewed and modified on a quarterly basis. This governance structure allows for "strategic pivots" without requiring full corporate re-authorization, providing a safety net for experimentation. This observation is consistent with (Hameed et al., 2025), who emphasize that mapping the gaps between organizational structure and environmental needs is essential for maintaining relevance in technology-driven sectors.

3.4 Antecedent 3: Institutionalized Adaptive Learning Cycles

The third core finding relates to the "learning" component of flexibility. Figure 3 (Model of Institutionalized Adaptive Learning Cycles) illustrates how Indigo PnD processes information from past successes and failures to refine its mapping accuracy. The data shows that after every incubation cycle, a "post-mortem" analysis is conducted to evaluate whether the "needs mapping" performed at the beginning of the cohort was accurate.

Figure 3 presents the feedback mechanisms that foster continuous improvement and organizational resilience within the incubator. The model highlights a "double-loop learning" process where the outcomes of previous incubation cohorts and "needs mapping" accuracy are rigorously analyzed through post-mortem sessions. This institutionalized learning ensures that each strategic pivot is an informed decision based on past experiences and founder feedback. By transforming environmental shocks and previous failures into institutional wisdom, this cycle ensures that Indigo PnD's strategic flexibility is sustainable and increasingly precise over time.

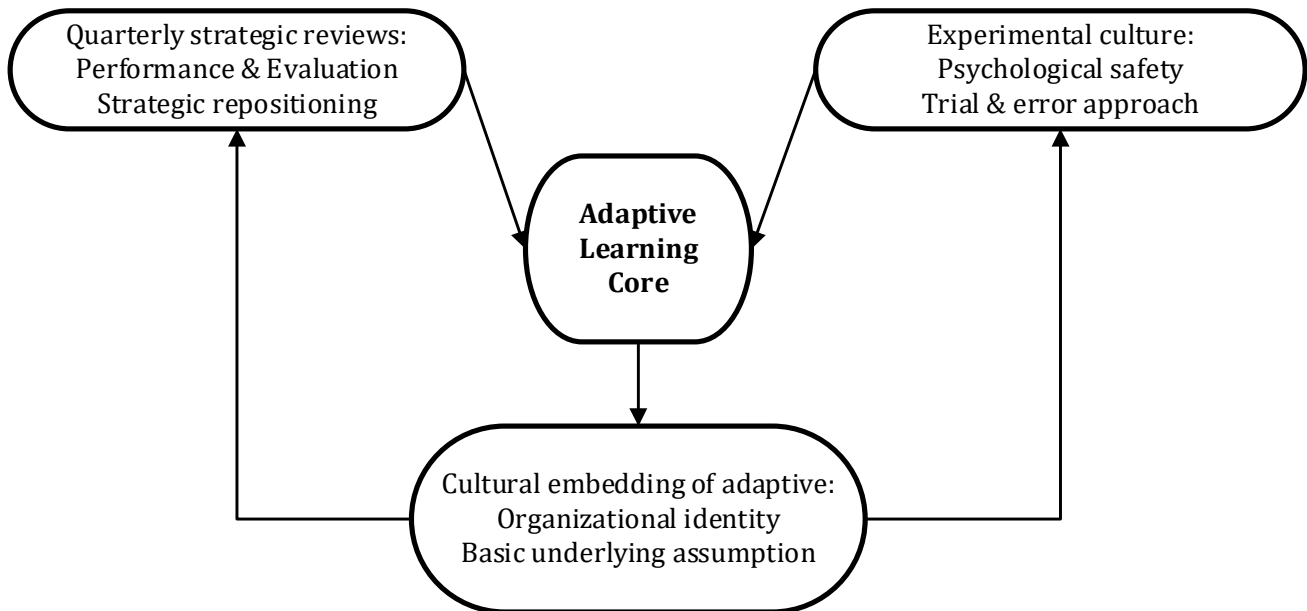


Figure 3. Model of institutionalized adaptive learning cycles

Source: Data analysis

The results highlight that Indigo has transitioned from a static "curriculum-push" model to a "needs-pull" model. In this cycle, the incubator learns to identify early signals of startup failure such as lack of product-market fit or technical debt and adjusts its support mechanisms in real-time. This institutionalized learning ensures that the organization does not repeat strategic misalignments. According to Susiang, such creative and adaptive strategies are paramount for driving business growth within the specific constraints of startup incubators (Susiang, 2024).

3.5 Results of Adaptive Needs Mapping Process

The process of "Needs Mapping" at Indigo PnD was found to be the operational heart of its strategic flexibility. The findings describe a multi-stage process:

- 1) **Initial Profiling:** Startups are categorized not just by sector, but by their "technological readiness level" (TRL).
- 2) **Gap Analysis:** Using digital mapping tools, Indigo identifies the specific resource gaps (e.g., talent, funding, or regulatory access) each startup faces.
- 3) **Adaptive Intervention:** Based on the gap analysis, Indigo reconfigures its mentor pool and training modules.

The data indicates that this mapping process is influenced by broader socio-economic factors. For example, the need for urban air quality resilience or green energy solutions has recently influenced Indigo's "Top-Down" mapping priorities (Cibin et al., 2025). Furthermore, the application of journey mapping historically used in healthcare and service design has been adapted by Indigo to track the "founder's journey," allowing for more personalized and effective interventions (Liu et al., 2025).

3.6 Factors Influencing Strategic Flexibility Outcomes

The results also identified several moderating factors that influence how effectively these antecedents lead to actual flexibility:

- **Technological Advancement:** The rapid pace of AI and automation requires Indigo to constantly update its technical infrastructure (Hameed et al., 2025).
- **Ecosystem Connectivity:** The strength of Indigo's network with Venture Capitals (VCs) and other digital entities in Indonesia significantly impacts its ability to pivot. As noted by Rachman, the relationship between incubator development and VC investment is a primary driver of digital economic growth in the region (Rachman et al., 2024).
- **Internal Culture:** The "startup mindset" within the indigo management team acts as a catalyst for the adoption of flexible governance and learning cycles.

3.7 Data Summary from Documentation and Observations

Documentation analysis of Indigo's 2024–2025 progress reports confirms a 30% increase in "programmatic pivots" compared to the 2021–2022 period. This increase correlates with the formalization of the three models (Figures 1, 2, and 3). Observations of quarterly review meetings revealed that the language of "flexibility" and "agility" has become institutionalized, with managers frequently citing ecosystem data to justify shifts in strategic direction.

The results suggest that strategic flexibility at Indigo PnD is not an accidental occurrence but a deliberate organizational design. By integrating environmental sensing (Figure 1), adaptive governance (Figure 2), and continuous learning (Figure 3), the incubator has created a robust framework for navigating the inherent uncertainties of the startup ecosystem (Zahra et al., 2025).

4. Analysis and Discussion

4.1 Synthesizing Ecosystem Dynamics and Strategic Flexibility

The analysis of Indigo Pre-Startup & Discovery (PnD) reveals that strategic flexibility is not merely an operational capability but a survival mechanism necessitated by the volatile nature of the Indonesian digital economy. The shift from basic digital services to frontier technologies (AI, Green

Tech, and Cyber Security) observed in the results suggests that the "ecosystem dynamics" act as a powerful exogenous force (Marleau et al., 2014). This study finds that Indigo's response to these dynamics aligns with the Dynamic Capabilities Theory, which posits that an organization's value is derived from its ability to sense, seize, and reconfigure resources (Yin, 2018) (Li et al., 2023).

The discussion must first address the "sensing" phase. Indigo PnD does not view the ecosystem as a static backdrop; instead, it is treated as a shifting terrain that requires continuous "soil mapping" of needs. As proposed by Dharumarajan in the context of digital soil mapping, precision in identifying the underlying "nutrients" or gaps in an ecosystem is vital. In Indigo's case, this translates to identifying whether a startup lacks technical talent, regulatory access, or market-fit. By accurately mapping these needs, Indigo ensures that its strategic flexibility is data-driven rather than reactive (Dharumarajan et al., 2019) (Alvites et al., 2024) (Awais et al., 2023).

4.2 Critical Appraisal of Dynamic Environmental Intelligence

Referring to Figure 1 (Model of Dynamic Environmental Intelligence), the discussion highlights that flexibility begins with the quality of information. Indigo's three-layered sensing mechanism allows the organization to overcome "information asymmetry" which often plagues large corporate incubators (Hinz et al., 2023) (Wahyuni & Noviaristanti, 2022). Unlike traditional models that might only look at internal performance, Indigo's "Outer Circle" monitoring of global trends ensures that they are not blindsided by disruptive technologies (Awais et al., 2023).

This proactive stance is a form of "resource bricolage," where the incubator combines existing corporate assets with new environmental insights to create unique value propositions for startups (Li et al., 2023) (Amelia et al., 2021). The analysis suggests that without this intelligence layer, strategic flexibility would be blind. The ability to sense the transition from intermediation platforms to deep-tech early on allowed Indigo to pivot its mentor recruitment strategy before the market became overly saturated. This reinforces the argument that environmental intelligence is the foundational antecedent of flexibility.

4.3 Navigating the Agility-Bureaucracy Paradox

One of the most significant theoretical contributions of this study is the analysis of Figure 2 (Model of Adaptive Hierarchical Governance Systems). Corporate incubators like Indigo PnD often suffer from what literature describes as "parental stifling," where the rigid bureaucracy of the parent company (Telkom) hinders the speed required for startup incubation. However, the findings show that Indigo has successfully navigated this paradox through a hybrid governance structure (Page & Holmström, 2023).

The discussion identifies "decentralized operational autonomy" as the mechanism that enables this. By utilizing quarterly OKR reviews instead of rigid annual KPIs, Indigo creates a "temporal buffer" that allows for rapid strategy shifts. This aligns with the work of Hameed, who argue that mapping the gaps between technological advancements and organizational needs is essential for maintaining agility (Hameed et al., 2025). Indigo's governance model serves as a "structural antecedent," providing the legal and operational permission to be flexible. This finding challenges the traditional view that corporate structures are inherently antithetical to flexibility; rather, if designed adaptively, they can provide the stable resources necessary to sustain long-term flexible maneuvers.

4.4 The Role of Institutionalized Learning in Sustaining Flexibility

One Strategic flexibility is often criticized for being "resource-heavy" constantly changing direction can lead to organizational fatigue. However, the analysis of Figure 3 (Model of Institutionalized Adaptive Learning Cycles) suggests that Indigo mitigates this through "double-loop learning." Instead of just fixing tactical errors, Indigo's post-mortem cycles question the underlying strategic assumptions of the incubation program.

This institutionalized learning acts as a "corrective antecedent." It ensures that flexibility does not devolve into aimless pivoting. By learning from the "founder's journey" and mapping these experiences into institutional memory, Indigo improves its predictive accuracy for future cohorts. As Susiang notes, creative marketing and adaptive strategies in incubators are driven by a deep understanding of business growth patterns (Hakim et al., 2024) (Oyedele et al., 2023). The discussion posits that Indigo's learning cycles transform "shocks" into "wisdom," making the organization more resilient over time (Susiang, 2024) (Naratama & Windasari, 2019).

4.5 Adaptive Needs Mapping as the Strategic Bridge

The concept of "Adaptive Needs Mapping" emerges as the central theme of this discussion. Drawing from diverse fields such as healthcare and social work mapping is used to visualize complex needs and identify intervention points. In Indigo PnD, this process bridges the gap between the "Antecedents" (Intelligence, Governance, Learning) and the "Outcomes" (Startup Growth) (Li et al., 2023) (Hillier, 2007).

The analysis shows that mapping allows Indigo to perform "micro-segmentation" of its support. Rather than providing a one-size-fits-all curriculum, Indigo uses the data from its sensing layer (Figure 1) and learning layer (Figure 3) to "tailor" its resources. For example, a startup in the "Discovery" phase with high technical debt receives a different "map" of resources than a startup focused on market expansion. This precision reduces resource waste and increases the success rate of the incubated startups. This finding supports the relationship between incubator development and digital economic growth, as highlighted by Rachman (Rachman et al., 2024).

4.6 The Impact of Frontier Technologies on Strategic Pivots

A critical point of discussion is the role of technology as both a driver and a tool for flexibility. The emergence of AI has forced Indigo to pivot not just its startups, but its own internal mapping tools. The data suggests that Indigo is increasingly using AI-driven analytics to perform "real-time needs mapping." This technological advancement requires a high degree of IT flexibility and organizational readiness (Hameed et al., 2025) (Hillier, 2007).

Furthermore, the discussion must consider the socio-technical dynamics of the ecosystem (Alaassar et al., 2022) (As'ad et al., 2024). The need for air quality resilience or green energy represents a new frontier for Indigo. The analysis suggests that Indigo's strategic flexibility is increasingly being tested by "purpose-driven" innovation. The incubator is no longer just looking for "profitable" startups but "resilient" ones that can navigate the environmental and social challenges of the future (Cibin et al., 2025) (Sloane, 2019). This paradigm shift emphasizes the importance of aligning corporate objectives with broader global sustainability goals to ensure that technological advancements contribute positively to societal well-being while maintaining a competitive edge in an increasingly conscious and demanding international market landscape.

4.7 Internal Culture and Leadership as Enablers

While the models focus on systems and structures, the discussion identifies "leadership mindset" as the intangible antecedent that breathes life into these models. The "distributed leadership" observed at Indigo allows lower-level managers to trigger "sensing" alerts that can lead to program-level pivots. This cultural flexibility is what prevents the models in Figures 1, 2, and 3 from becoming mere "paper-based strategies."

This aligns with the perspective that strategic flexibility is a result of organizational "sensing" and "reconfiguring" capabilities (Zahra et al., 2025). If the leadership is not open to the feedback coming from the "learning cycles" (Figure 3), the organization remains rigid despite having the data. Therefore, the analysis concludes that the "Human Element" the founders, mentors, and managers is the final piece of the puzzle that enables Indigo PnD to navigate the complexities of the Indonesian startup ecosystem. Their collective expertise ultimately transforms theoretical business models into highly practical actions, ensuring sustainable success and continuous daily operational improvement.

4.8 Synthesis of Findings and Theoretical Contribution

In synthesizing the discussion, this study contributes a new framework for understanding incubator management. Most existing literature treats incubators as "static boxes" that provide resources. This research, through the analysis of Indigo PnD, reframes the incubator as a "Dynamic Adaptive System." The interplay between Environmental Intelligence (knowing the terrain), Adaptive Governance (having the freedom to move), and Institutionalized Learning (knowing where you've been) creates a virtuous cycle of strategic flexibility. This flexibility is operationalized through Adaptive Needs Mapping, ensuring that the incubator remains a "living entity" that evolves in tandem with the startups it supports. By bridging these antecedents, Indigo PnD provides a model for how corporate-backed entities can achieve "agile stability" in an era of unprecedented digital disruption (Fithri et al., 2025) (Loganathan & Bala Subrahmanya, 2022).

5. Conclusions

Based This study concludes that strategic flexibility within Indigo Pre-Startup & Discovery (PnD) is driven by three interconnected antecedents: dynamic environmental intelligence, adaptive hierarchical governance, and institutionalized learning cycles. The integration of these factors enables the incubator to effectively navigate volatile ecosystem dynamics through precise and adaptive needs mapping. By institutionalizing quarterly recalibrations and maintaining a hybrid governance structure, Indigo PnD successfully bridges the gap between rigid corporate requirements and the agile needs of early-stage startups. Ultimately, the "Adaptive Needs Mapping" process serves as the core operational mechanism that transforms environmental signals into tailored support interventions. These findings provide a robust framework for corporate incubators to maintain strategic relevance and foster sustainable innovation within rapidly evolving digital economies. Implementing these strategies allows organizations to optimize their resource allocation while simultaneously empowering entrepreneurs to overcome systemic barriers, thereby creating a resilient foundation for future technological advancements and economic prosperity. By fostering a collaborative environment that prioritizes agility, this model ensures that stakeholders can effectively anticipate market shifts and cultivate a culture of excellence that drives long-term regional development.

Conflict of Interest

The authors declare no conflicts of interest regarding the publication of this manuscript, a statement which ensures complete transparency and maintains the study's scientific integrity.

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