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Exploring the Digital Entrepreneurship Ecosystem in Indonesian Higher Education: Barriers, Enablers, and Strategic Empowerment

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A B S T R A C T

This study explores the configuration of digital entrepreneurship ecosystems in Indonesian higher education institutions (HEIs), emphasizing barriers and enabling factors that shape students' entrepreneurial engagement. Using an explanatory sequential mixed-methods design, the research integrates quantitative survey data (N = 173) and qualitative interviews to examine entrepreneurial readiness, innovation capacity, and institutional support structures. Findings indicate that students demonstrate high motivation and self-efficacy but face persistent constraints related to mentorship, funding, and technical access. The qualitative phase identifies six recurring challenges—ideation and market-fit, marketing skills, time management, mentoring gaps, technical limitations, and financial barriers—revealing a fragmented yet promising ecosystem. To address these issues, the study proposes the Strategic Empowerment Model for Digital Entrepreneurship (SEM-DE), a four-lever framework emphasizing structured ideation, continuous mentoring, skill-based clinics, and micro-grant schemes. This research contributes a contextualized and actionable model for strengthening university-based entrepreneurship ecosystems and informs policy directions toward inclusive, innovation-driven higher education in emerging economies.

KATA KUNCI

Wirausaha Digital, Pendidikan Tinggi, Ekosistem Inovasi, Metode Campuran, Indonesia

A B S T R A K

Penelitian ini mengkaji konfigurasi ekosistem kewirausahaan digital di perguruan tinggi Indonesia (PT), dengan penekanan pada hambatan dan faktor pendorong yang memengaruhi keterlibatan kewirausahaan mahasiswa. Menggunakan desain campuran metode kualitatif dan kuantitatif secara berurutan, penelitian ini menggabungkan data survei kuantitatif (N = 173) dan wawancara kualitatif untuk menganalisis kesiapan kewirausahaan, kapasitas inovasi, dan struktur dukungan institusional. Temuan menunjukkan bahwa mahasiswa menunjukkan motivasi dan kepercayaan diri yang tinggi, namun menghadapi hambatan yang terus-menerus terkait bimbingan, pendanaan, dan akses teknis. Fase kualitatif mengidentifikasi enam tantangan berulang ideasi dan kesesuaian pasar, keterampilan pemasaran, manajemen waktu, kekurangan bimbingan, batasan teknis, dan hambatan finansial menunjukkan ekosistem yang terfragmentasi namun menjanjikan. Untuk mengatasi masalah ini, studi ini mengusulkan Model Pemberdayaan Strategis untuk Kewirausahaan Digital (SEM-DE), kerangka kerja empat pilar yang menekankan ideasi terstruktur, bimbingan berkelanjutan, klinik berbasis keterampilan, dan skema hibah mikro. Penelitian ini menyumbangkan model yang kontekstual dan dapat diterapkan untuk memperkuat ekosistem kewirausahaan berbasis universitas dan memberikan arahan kebijakan menuju pendidikan tinggi yang inklusif dan berorientasi inovasi di ekonomi berkembang.

1. Introduction

The accelerating shift toward Industry 4.0 and Society 5.0 has positioned digital entrepreneurship as a strategic avenue for youth to drive inclusive and sustainable economic growth. In this context, higher education institutions (HEIs) play a pivotal role in cultivating entrepreneurial mindsets and digital innovation capabilities among students [1], [2]. As digital technologies become increasingly embedded in entrepreneurial practices, universities are expected to foster enabling ecosystems that extend beyond classroom-based entrepreneurship education toward experiential, innovation-oriented learning [3], [4]. However, evidence indicates that student-led digital ventures often encounter structural and institutional challenges including fragmented mentorship, limited funding, and underdeveloped incubation systems that constrain their scalability and long-term sustainability.

Entrepreneurship education (EE) has long been recognized as a key mechanism for nurturing entrepreneurial intention and competence among university students [1], [5]. Research demonstrates that exposure to entrepreneurship curricula increases students' confidence and motivation to initiate ventures [6]. Yet, EE in Indonesia remains unevenly distributed, concentrated in urban centers, and often disconnected

from practical industry demands. Non-business students in particular struggle to translate theoretical knowledge into practice due to limited mentoring and incubation access [7]. This concern is echoed by research, which stresses that many university programs still neglect the contextual ecosystem of support, such as networks, resources, and institutional guidance critical for student entrepreneurship [8], [9].

Parallel to this, digital entrepreneurship (DE) has emerged as a transformative force reshaping how ventures are conceived and scaled through the integration of digital technologies [10]. DE requires not only technical proficiency but also innovation agility to adapt to fast-changing markets. Certain research emphasize that students' digital readiness and innovation attitudes are strong predictors of entrepreneurial success [3]. Consistent with different research, innovation capability is not innate but cultivated through iterative experimentation and systemic institutional support [11]. Recent studies corroborate this by showing that university support, entrepreneurial resilience, and flexible learning ecosystems significantly enhance innovation capacity [12], [13], [14]. Another research demonstrate that innovation stems from organizational orientation and contextual enablers, reinforcing the need for institutional scaffolding to nurture entrepreneurial creativity [15].

Nevertheless, current digital learning environments in HEIs remain limited in their capacity to promote such experimentation. While infrastructure has improved, teaching methods often remain static and non-interactive, limiting students' opportunities for entrepreneurial discovery [16]. Certain research further argue that rigid organizational structures and low faculty engagement impede innovation, suggesting that universities must rethink pedagogical and governance models to foster entrepreneurial ecosystems effectively [17].

Institutional ecosystems comprising incubators, accelerators, mentorship networks, and funding schemes are critical in enabling digital entrepreneurship [4], [18]. Yet, in Indonesia, these support structures often operate in isolation from curricular programs, creating inefficiencies and low participation rates [4]. Entrepreneurial universities, must adopt systemic entrepreneurial orientations where mission, governance, and pedagogy converge to support innovation outcomes [19]. Different research further emphasize that cross-disciplinary collaboration, organizational flexibility, and innovation culture are central determinants of students' innovation capacity factors often lacking in traditional higher education structures [20], [21].

Despite growing enthusiasm, student-led digital startups in Indonesia continue to face major barriers. A study identify limited digital literacy, insufficient funding, and weak institutional mentorship as key inhibitors of student venture growth [2]. Similarly, [22] note that weak ecosystem embeddedness and low dynamic capabilities prevent student startups from scaling effectively. Broader structural inequalities—including geographical, economic, and digital divides—further exacerbate these challenges [23]. While initiatives such as innovation hubs and capacity-building projects have shown localized success [24], their long-term sustainability remains uncertain without policy coherence and continuous institutional investment.

To address these persistent gaps, recent scholars call for inclusive, strategic empowerment models that integrate entrepreneurship education, innovation capability building, and ecosystem enhancement [25], [26]. Such models must be context-sensitive and adaptable to the socio-cultural and institutional realities of emerging economies. Certain research emphasize the influence of broader socio-economic and political contexts on students' entrepreneurial outcomes [27], while different one advocate for embedding mentorship, community engagement, and institutional partnerships into higher education entrepreneurship programs [28]. These perspectives converge on the need for holistic, multi-level interventions that position entrepreneurship not merely as an academic pursuit but as a strategic driver of national innovation and sustainable development.

Responding to these theoretical and empirical gaps, this study explores the barriers and enabling factors influencing student digital entrepreneurship within Indonesian HEIs and proposes a Strategic Empowerment Model for Digital Entrepreneurship (SEM-DE) tailored to this context.

2. Research Method

This study adopts an explanatory sequential mixed-methods design, which begins with quantitative data collection and analysis to identify key patterns and challenges, followed by qualitative inquiry to explore these findings in greater depth [29]. This design is suitable for examining complex, contextualized phenomena such as digital entrepreneurship ecosystems in higher education [16]. It allows for integration of numerical trends and rich narratives to better inform strategic interventions.

The population of this study consists of Indonesian university students who are either running a digital business or actively planning to initiate one.

a. Quantitative Phase

A simple random sampling technique is used to ensure generalizability of findings across various student backgrounds and institutional contexts. The target sample size is 100 students, ensuring statistical

representativeness while accounting for resource constraints.

b. Qualitative Phase

A purposive sampling strategy selects 10–20 students from the quantitative pool who exhibit unique or illustrative experiences in digital entrepreneurship, particularly those facing structural or institutional challenges.

3. Result and Discussion

This section presents the integrated findings of the explanatory sequential mixed-methods study that combined a large-scale quantitative survey (N = 173) with follow-up qualitative interviews. The quantitative phase explored general trends, barriers, and institutional conditions surrounding student-led digital entrepreneurship in Indonesian higher education institutions (HEIs). The subsequent qualitative phase deepened understanding by examining students' lived experiences, motivations, and adaptation strategies. The triangulation of both data sources thus enables a comprehensive perspective on the ecosystemic dynamics of digital entrepreneurship how institutional factors, personal agency, and capability constraints intersect to shape entrepreneurial outcomes.

3.1. Quantitative Overview of Student Digital Entrepreneurship

Descriptive statistics reveal that most respondents are engaged in service-oriented digital ventures, including online tutoring, digital marketing, and content creation. This tendency reflects an orientation toward low-capital and creativity-driven business models, consistent with [1], [2]. However, such concentration also indicates a limited transition toward technology-based innovation such as app or SaaS development.

The quantitative data, which can be seen on Table 1, further highlight that 1) 43.9% of respondents were neutral and 27.2% agreed that they struggle to generate innovative business ideas; 2) 41.6% found it difficult to maintain relevance with emerging market trends; and 3) more than half identified mentorship gaps (52.6%), financial constraints (49.1%), and technical limitations (42.2%) as their primary obstacles. These structural challenges overshadow personal barriers, confirming the argument that ecosystem deficiencies, rather than individual weaknesses, impede entrepreneurial development [4], [22].

Conversely, student motivation and self-efficacy are notably strong. About 70.5% expressed confidence in their creative capacity, while 74% remained motivated despite adversity. Moreover, 91.9% actively follow online sources or digital platforms to gain inspiration, demonstrating high digital connectedness and self-directed learning orientation. Together, these findings portray a motivated but structurally constrained student population high in enthusiasm yet operating within fragmented support systems.

Table 1. Summary of Quantitative Findings on Student Digital Entrepreneurship

No	Variable / Question	Dominant Response(s)	% of Respondents	Key Interpretation
1	Type of Digital Business	Service & content creation	~60.0	Students focus on creative, low-capital sectors.
2	Difficulty Generating Innovative Ideas	Neutral (43.9%), Agree (22.5%)	66.4	Moderate innovation challenges.
3	Difficulty Staying Trend-Relevant	Neutral (41.6%), Agree (24.3%)	65.9	Many struggle to adapt to market trends.
4	Main Barriers	Lack of mentorship (52.6%), Funding (49.1%)	—	Structural barriers dominate.
5	Most Difficult Challenge	Funding (35.8%), Creativity (18.5%)	54.3	Funding and creativity remain bottlenecks.
6	University Innovation Programs	Agree (46.8%), Strongly Agree (19.1%)	65.9	Support exists but is uneven.
7	Access to Incubators	Neutral (41%), Agree (26.6%)	67.6	Access inconsistent or underutilized.
8	Confidence in Creativity	Agree (41.6%), Strongly Agree (28.9%)	70.5	High creative self-efficacy.
9	Following Idea Platforms	Yes (91.9%)	91.9	High digital engagement.
10	Motivation Despite Challenges	Agree (44.5%), Strongly Agree (29.5%)	74.0	Strong entrepreneurial drive.
11	Main Motivation	Social impact (39.9%), Financial gain (28.3%)	—	Students pursue hybrid (social + economic) goals.

Overall, these results underscore three primary insights: 1) strong motivation and digital exposure characterize student entrepreneurs; 2) mentorship, funding, and technical access remain the most pressing ecosystem barriers; and 3) institutional initiatives are partially effective but lack integration. These patterns informed the design of the subsequent qualitative phase.

3.2. Qualitative Findings

The qualitative interviews sought to interpret the quantitative patterns by exploring students' personal journeys, challenges, and reflections. Following thematic framework, six major themes emerged from iterative coding and analysis [30], summarized in Table 2.

Students' narratives converged around common experiences: they are enthusiastic and creative but encounter practical difficulties translating ideas into viable ventures. As shown in Table 2, these themes include Ideation and Market Fit, Marketing and Growth, Time and Role Conflict, Mentorship and Networks, Technical Capability and Team Formation, and Finance and Resource Constraints.

Table 2. Summary of Qualitative Themes and Illustrative Excerpts

Theme	Core Description	Keyword Mentions	Representative Excerpt
Ideation & Market Fit	Difficulty producing original ideas and validating them amid changing market trends.	363	"The digital market is very competitive; it takes effort to create something that stands out."
Marketing & Growth	Limited mastery of SEO, paid ads, and social-media algorithms; learning by experimentation.	119	"We need to understand SEO and social media better; each platform changes so fast."
Time & Role Conflict	Difficulty balancing academic responsibilities with business execution.	111	"Lack of time often becomes the main obstacle for me as a student."
Mentorship & Networks	Uneven access to mentors; reliance on informal peer support or short-term events.	105	"After the competition ended, the mentor disappeared; we helped each other instead."
Technical Capability & Team	Gaps in technical knowledge and collaborator recruitment.	71	"I didn't have a tech background, so I had to learn the technical part myself."
Finance & Resource Constraints	Lack of start-up capital and limited access to micro-funding.	63	"We need at least a small grant to test our prototype."

The thematic configuration indicates a coherent ecosystem logic: students exhibit high motivation and self-efficacy (quantitative ≈ 70 %), but execution is constrained by interlinked capability, resource, and mentoring gaps. The findings confirm the "capability stack" model—students who can access multiple ecosystem layers (mentorship → skills → funding → time discipline) progress more effectively.

3.3. Cross-Theme Synthesis and Triangulation

The integration of quantitative and qualitative results reveals three interrelated insights. First, high motivation coexists with execution frictions. Although survey data show strong confidence and drive, interviews confirm that time conflicts, limited mentoring, and weak technical capacity hinder sustained progress. Second, ecosystem linkage remains fragmented. Students recognize the existence of entrepreneurship programs but experience inconsistent access to mentors and incubators, reaffirming prior observations of institutional silos [4].

Third, the themes collectively suggest a capability stack that underpins student venture performance. The six themes can be viewed as sequential layers of development: ideation and market validation, marketing capability, operational discipline, mentorship access, technical and team support, and financial sustainability. Students who manage to activate multiple layers simultaneously exhibit greater continuity and success in their ventures. This triangulation confirms that Indonesian HEIs nurture a highly motivated yet under-structured ecosystem, where student creativity thrives but institutional integration lags.

3.4. Implications for the Strategic Empowerment Model

The synthesis of findings identifies four strategic levers through which universities can transform fragmented initiatives into an integrated ecosystem for digital entrepreneurship development. These levers are:

a. establishing structured ideation-to-MVP pipelines that embed market-testing stages within academic projects;

b. assigning mentors-of-record supported by peer feedback circles to ensure continuous guidance;

c. organizing modular "capability clinics" that provide just-in-time skill acquisition aligned with real venture milestones; and

d. implementing micro-grant schemes and digital resource credits to bridge funding and tool-access gaps.

These institutional levers form the conceptual foundation for the Strategic Empowerment Model for Digital Entrepreneurship Ecosystems (SEM-DE) presented in the following section.

3.5. Strategic Empowerment Model for Digital Entrepreneurship Ecosystems

3.5.1. Rationale

Integrating the quantitative and qualitative findings, Indonesian universities display a promising yet fragmented support landscape. The Strategic Empowerment Model (SEM-DE) is proposed to convert dispersed initiatives into an integrated developmental pipeline for student-led digital ventures, aligned with Society 5.0 and national innovation goals.

3.5.2. Core Principles

The core principles of the Strategic Empowerment Model for Digital Entrepreneurship (SEM-DE) serve as its conceptual foundation, translating empirical findings into an actionable institutional framework. As summarized in Table 3, the model integrates four interrelated dimensions: inclusivity, which broadens access to entrepreneurial opportunities across disciplines and regions [1]; iterative learning, which promotes experimentation and continuous validation based on the Lean Startup and innovation-management principles of [11]; ecosystem integration, which aligns curricular, co-curricular, and incubation programs to strengthen the entrepreneurial university structure [4]; and strategic empowerment, which enhances students' self-efficacy through mentoring and access to micro-resources, reflecting Sen's capability approach. Together, these principles ensure that SEM-DE is both theoretically grounded and practically applicable within Indonesia's higher education ecosystem.

Table 3. Core Principles

Dimension	Strategic Objective	Theoretical Anchor
Inclusivity	Ensure access for students across disciplines and regions.	Entrepreneurship Education Equity [1]
Iterative Learning	Embed rapid experimentation and market validation.	Lean Startup [11]
Ecosystem Integration	Connect curricular, co-curricular, and incubator initiatives.	Entrepreneurial University Framework [4]
Strategic Empowerment	Strengthen self-efficacy through micro-resources and mentoring.	Capability Approach

3.5.3. Model Structure (L1 – L4 Levers)

The SEM-DE framework operationalizes four interlinked institutional levers, each targeting a key ecosystem gap identified in the findings. The model structure can be seen on Table 4.

a. Structured Ideation-to-MVP Pipeline focuses on converting creative uncertainty into validated prototypes through a five-stage process: trend scanning, idea sprint, user interview, MVP testing, and refinement.

b. Mentor-of-Record and Peer Cells provide continuous, personalized guidance by pairing each team with faculty and industry mentors, supported by weekly peer review.

c. Capability Clinics and Tool Access supply targeted micro-skills—such as SEO, analytics, automation, and no-code development—delivered through short, practical bootcamps.

d. Micro-Grants and Tool Credits address resource inequities by providing milestone-based seed funding (IDR 1–5 million) and digital-platform credits for ads or cloud tools.

Together, these mechanisms foster sustained engagement, iterative learning, and measurable innovation outcomes.

Table 4. Model Structure (L1 – L4 Levers)

Lever	Operational Focus	Institutional Mechanism	Expected Outcome
L1. Structured Ideation → MVP Pipeline	Transform creative uncertainty into testable prototypes.	5-stage cycle → Trend Scan → Idea Sprint → User Interview → MVP Test → Pitch Refine.	Increased innovation rate and validated ideas.
L2. Mentor-of-Record & Peer Cells	Guarantee continuous guidance and social capital.	Assign faculty + industry mentor per team; weekly peer-review circles.	Reduced drop-out and stronger mentorship quality.
L3. Capability Clinics & Tool Access	Provide micro-skills (SEO, ads, analytics, no-code).	Short bootcamps integrated into incubator milestones; industry guest coaches.	Enhanced technical and marketing literacy.
L4. Micro-Grants & Tool Credits	Bridge funding and resource gaps for early validation.	Competitive small grants (IDR 1–5 M) + ad/tool credits; milestone-based disbursement.	Improved sustainability and experimentation rates.

3.5.4. Implementation Pathway for HEIs

Universities seeking to adopt SEM-DE should integrate the model through four progressive steps:

a. aligning entrepreneurship policy within existing innovation and MBKM frameworks;

b. connecting business incubators with academic departments to ensure cross-disciplinary participation;

c. monitoring outcomes through mixed-method key performance indicators such as the number of MVPs launched, mentoring sessions, and venture survival rates; and

d. sustaining the cycle via annual showcases and alumni–investor networks that reinvest resources and mentorship into new cohorts.

4. Conclusion

This study explored the digital entrepreneurship ecosystem in Indonesian higher education by combining quantitative survey analysis (N = 173) and qualitative thematic inquiry from student interviews. The results reveal that while students demonstrate

strong motivation and self-efficacy in pursuing digital ventures, they face interconnected structural challenges—including limited mentorship access, funding constraints, technical capability gaps, and time management issues. The mixed-method triangulation highlights that institutional support mechanisms exist but are fragmented, with uneven access to incubators, communities, and mentoring resources. The proposed Strategic Empowerment Model (SEM-DE) synthesizes these findings into four actionable levers (L1–L4) that collectively bridge creativity, capability, and capital. By aligning entrepreneurship education, innovation capacity building, and micro-support systems, SEM-DE provides a holistic blueprint for sustainable digital entrepreneurship ecosystems in higher education.

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