

Generative AI and Digital Entrepreneurship Business Models: A Systematic Literature Review (2020–2026)

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ABSTRACT

Purpose – This research focuses on exploring how Generative Artificial Intelligence (GenAI) is reshaping business models in digital entrepreneurship and intends to compile existing evidence through a systematic review of the literature.

Design/methodology/approach – This study employed a Systematic Literature Review (SLR) following the PRISMA 2020 guidelines. Articles published between 2020 and 2026 were collected from Scopus and Google Scholar. After the screening process, 10 eligible studies were analyzed using thematic analysis and synthesized through the integration of Timmons' Entrepreneurial Model and Dynamic Capabilities Theory.

Finding/Results – The review identified five major themes: democratization of innovation, structural business model transformation, the enablement–dependence paradox, ethical dilemmas, and the evolution of entrepreneurial cognition and skills. The reviewed studies suggest that GenAI enhances opportunity recognition, accelerates business model innovation, and improves value creation.

Originality/Value – This study proposes an integrated conceptual framework that illustrates how GenAI may transform digital entrepreneurship business models by linking entrepreneurial elements with dynamic capabilities. Rather than offering conclusive or generalizable claims, the findings provide preliminary theoretical propositions for future research and indicative practical implications for startups, SMEs, and policymakers in leveraging GenAI for sustainable innovation.

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1. Introduction

Advances in digital technology have spurred the emergence of new forms of entrepreneurship that rely on the use of digital platforms and artificial intelligence to create value. In the context of increasingly digitized competition, the ability to integrate technology into business models has become a strategic factor that determines the success and sustainability of a business, while also enabling the creation of new business models that are more responsive to market dynamics (Nambisan, 2017). In this ecosystem, business model transformation is no longer merely a strategic choice but a prerequisite for the survival of startups and small and medium-sized enterprises (SMEs) to remain competitive in the era of technological disruption (Amit & Zott, 2021). The acceleration of this transformation is becoming increasingly evident with the emergence of artificial intelligence (AI) as the primary driver of data-driven business model innovation (Haefner et al., 2021; Sjödin et al., 2021).

As we enter the post-2022 era, the emergence of Generative Artificial Intelligence (GenAI), particularly systems based on Large Language Models (LLMs) such as GPT-4 and similar models, marks a new inflection point in business technology innovation. Unlike conventional AI, which focuses on data analysis and prediction, GenAI is defined as a subfield of AI capable of generating new content including text, code, images, and strategies based on patterns learned from existing data (Kusetogullari et al., 2025; M. Mariani & Dwivedi, 2024). This generative capability enables creative automation and personalization at scale, opening up opportunities previously out of reach for AI technology (V. Gupta, 2024; Haefner & Gassmann, 2023). Recent reports note that the adoption of GenAI within organizations has increased significantly, reaching over 70% in 2024, indicating a structural shift in how companies create and capture value (Kanbach et al., 2024).

For clarity and consistency, this review uses AI as the broader parent category of computational technologies, of which GenAI is a generative subset; LLMs refer to the underlying technical architecture (e.g., transformer-based language models) on which most contemporary GenAI tools, including GPT-4, are built. Where a cited study refers broadly to "AI" rather than "GenAI" specifically, this review preserves that study's original terminology and scope rather than assuming equivalence with GenAI.

The relevance of GenAI to innovation in digital entrepreneurial business models manifests in three main dimensions. First, GenAI reconfigures the logic of value creation from a linear value chain into a more intelligent and adaptive value network (Amit & Zott, 2021; Åström et al., 2022). Second, GenAI optimizes the efficiency of resource allocation through the automation of previously labor-intensive business processes, thereby enabling startups to compete with large companies (Sjödin et al., 2021). Third, GenAI transforms team collaboration patterns from conventional professional division of labor toward adaptive human-machine collaboration (Xu et al., 2026). An empirical study by (Sjödin et al., 2021) of six leading manufacturing companies identified three critical AI capabilities data pipelines, algorithm development, and the democratization of AI that directly drive business model innovation through a co-evolutionary process.

Although research on AI and business models has advanced rapidly, there is a significant gap in the literature. First, a comprehensive understanding of the specific mechanisms by which GenAI transforms the components of digital entrepreneurial business models ranging from value proposition and value creation to value capture remains very limited. (Kusetogullari et al., 2025), in the first systematic review to explicitly integrate GenAI with entrepreneurship, found that existing research focuses more on general operational efficiency, while critical

issues such as digital maturity, the contextual variability of AI integration, and the mechanisms of GenAI-based business model innovation in the context of digital entrepreneurship have received insufficient attention. Similarly, a recent bibliometric study of the Scopus database shows a surge in publications on AI and business model innovation since 2022; however, the focus on the startup and SME segments remains very limited compared to studies on large corporations (Mariani et al., 2023).

The second gap is methodological in nature. Although the systematic review by Kusetogullari et al. (2025) has provided an initial thematic map using unsupervised machine learning techniques, the study did not explicitly follow the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol. In fact, adherence to the PRISMA protocol is a methodological prerequisite that determines the credibility, transparency, and reproducibility of the literature synthesis process in systematic review research (Page et al., 2021). A PRISMA-based systematic review specifically mapping the role of GenAI in the transformation of digital entrepreneurship business models for the post-ChatGPT era (2022–2026) is not yet available in the literature. Moreover, unlike Kusetogullari et al. (2025), which offers a broad, data-driven thematic map generated through unsupervised machine learning without an explicit theoretical lens, this study advances a theory-driven synthesis that explicitly maps GenAI mechanisms onto Timmons' entrepreneurial elements and the sensing, seizing, transforming dimensions of Dynamic Capabilities Theory a conceptual integration that has not yet been undertaken in the GenAI entrepreneurship literature.

This study addresses this gap by integrating two complementary theoretical frameworks. First, Timmons' Theory of the Elements of Entrepreneurship (Timmons & Spinelli, 2007) is used to understand how GenAI reconfigures the three core elements of entrepreneurship: opportunity identification, resource integration, and team decision-making. Recent empirical studies validate the relevance of this framework in the context of GenAI, where these three elements have been shown to act as partial mediators between GenAI adoption and iterative business model innovation (Xu et al., 2026). Second, Dynamic Capabilities Theory (Teece, 2007, 2018) is adopted to explain the organizational capacities required for companies to sense, seize, and transform opportunities generated by GenAI. In this context, AI-enabled dynamic capabilities serve as a strategic construct that enables startups to continuously integrate and reconfigure AI-based competencies (Soluk et al., 2021).

This study contributes to the literature in three ways. First, it presents a PRISMA-based systematic review that specifically focuses on the role of GenAI in the transformation of digital entrepreneurship business models during the 2020–2026 period. Second, it develops an integrative conceptual framework that links Timmons' Theory of the Elements of Entrepreneurship and Dynamic Capabilities Theory to explain the mechanisms of GenAI-based business model transformation. Third, it offers a future research agenda and strategic implications for startups, SMEs, and policymakers in building a digital entrepreneurship ecosystem that is adaptive to GenAI developments. Given that the final corpus comprises only ten eligible studies, this review is best positioned as an early-stage, concept-building synthesis of an emerging research stream, rather than a comprehensive or generalizable map of the GenAI entrepreneurship field. Its primary value lies in offering a structured theoretical lens and testable propositions to guide subsequent empirical and review work as the literature matures.

2. Literature Review & Hypothesis Development

2.1 Timmons' Theory of the Elements of Entrepreneurship

The Theory of Entrepreneurial Elements, formulated by Timmons, states that a business's success is determined by an entrepreneur's ability to balance three core elements: opportunity, resources, and team (Timmons & Spinelli, 2007). Although this theory was developed before the era of artificial intelligence, it remains important for illustrating how new technologies can enhance the entrepreneurial process, particularly in a digital business environment. In Timmons' view, technology is not seen as an end in itself, but as a tool that supports entrepreneurs in identifying new opportunities, maximizing the use of resources, and improving the effectiveness of group decision-making.

Recent research reveals that Generative Artificial Intelligence (GenAI) plays a crucial role in strengthening these three aspects. (Haefner & Gassmann, 2023) found that GenAI's ability to generate data-driven insights enables companies to identify market opportunities more quickly than with traditional methods. This finding is supported by Gupta et al. (2024), who demonstrate that the use of Large Language Models (LLMs) can help organizations identify unmet customer needs through extensive data analysis. A synthesis of these two studies indicates that GenAI serves not only as an analytical tool but also as a means to explore opportunities that expand the potential for entrepreneurship in identifying new sources of value.

2.2 Dynamic Capabilities Theory

Dynamic Capabilities Theory (DCT) posits that an organization's competitive advantage is determined not only by its existing resources but also by its ability to continuously integrate, build, and reconfigure those resources in response to environmental changes (Teece, 2007, 2018). In his subsequent work, (Teece, 2007, 2018) states that dynamic capabilities consist of three key dimensions: sensing, seizing, and transforming. These three dimensions are crucial in describing how companies use GenAI to build digital entrepreneurial business models.

Sensing capabilities refer to an organization's ability to identify opportunities and threats originating from the external environment. In the context of GenAI, Warner & Wäger (2019) explain that artificial intelligence-powered technologies enhance an organization's ability to conduct market scanning, analyze trends, and identify changes in consumer behavior in real time. The second dimension of seizing relates to an organization's capacity to transform identified opportunities into economic value. Soluk et al. (2021) found that digital companies with a high level of technological maturity are better able to transform technology into business model innovations that create value for customers. Transformational dimension refers to an organization's capacity to change its processes, structures, and business models to remain aligned with changes in the environment. Åström et al. (2022) identified that the use of AI triggers a fundamental transformation in the ways organizations create, deliver, and capture value.

Overall, dynamic capabilities theory explains that the benefits of GenAI for digital entrepreneurial business models do not come about on their own. The positive impact of GenAI is determined by an organization's ability to identify new opportunities, capitalize on those opportunities to drive meaningful innovation, and continuously adapt its resources and business processes. Consequently, this provides a strategic explanation for why companies that implement GenAI are able to achieve varying levels of business model innovation.

2.3 The Relationship Between Generative Artificial Intelligence and Digital Entrepreneurship Business Models

Recent literature indicates that generative artificial intelligence has become one of the most transformative technologies in the development of digital entrepreneurial business models. (Mariani & Dwivedi, 2024) state that GenAI's ability to automatically generate content, code, analyses, and recommendations enables organizations to create new value that was previously difficult to obtain through conventional methods. In line with this, (V. Gupta, 2024) demonstrates that GenAI accelerates innovation by reducing technical barriers and the cost of experimentation in the development of digital products and services.

In the context of business models, Sjödin et al. (2021) found that the use of AI drives changes in three key elements of business models: value proposition, value creation, and value capture. The study indicates that AI provides opportunities for companies to offer more tailored value propositions, improve efficiency in value creation processes, and create new revenue models based on data and digital services.

Research specifically examining GenAI also shows similar results. Kanbach et al. (2024) reveal that companies that adopt GenAI in their business processes can accelerate business model innovation through cognitive automation, increased creativity within the organization, and the development of more personalized services. In their systematic review, Kusetogullari et al. (2025) state that GenAI has the potential to transform the entire value creation process in digital entrepreneurship, from identifying opportunities to creating new revenue models.

Based on various previous studies, emerging literature shows that GenAI plays a role in transforming business models in digital entrepreneurship. Through its ability to generate insights, automate processes, and drive innovation, preliminary evidence indicates that GenAI helps companies enhance value creation and develop more adaptive value-capture mechanisms; this evidence is especially tentative for startups, SMEs, and platform-dependent entrepreneurship, where firm-level conditions vary widely. However, the existing literature remains limited in comprehensively explaining how GenAI transforms business models, particularly in the context of startups and SMEs with varying levels of digital maturity (Kusetogullari et al., 2025; Mariani et al., 2023). Therefore, this study is important for contributing to the understanding of GenAI's role in the transformation of digital entrepreneurial business models through the integration of Timmons' Theory of Entrepreneurial Elements and Dynamic Capabilities Theory. The research findings are expected to enrich the digital entrepreneurship literature while providing practical implications for startups, SMEs, and policymakers in optimizing the use of GenAI to create sustainable competitive advantages.

2.4 Integrating Timmons' Theory and Dynamic Capabilities Theory

Sections 2.1 and 2.2 explore Timmons' Theory and Dynamic Capabilities Theory (DCT) individually, this research views the two frameworks as complementary rather than opposing perspectives that function at distinct yet interconnected levels of analysis. Timmons' Theory functions mainly at the micro, individual level, detailing how entrepreneurs recognize opportunities, gather resources, and form teams. DCT mainly functions at the meso, organizational level, detailing how companies perceive environmental shifts, capitalize on opportunities by restructuring resources, and evolve their structures and processes over time. In this research, dynamic capabilities (sensing, seizing, and transforming) are presented as the connection between these two tiers: individual-level opportunity recognition, resource mobilization, and team-building by entrepreneurs based on Timmons' three elements are

viewed as inputs that organizational dynamic capabilities transform into outcomes at the business-model level. GenAI is believed to operate on both fronts at once, enhancing personal entrepreneurial potential while providing organizations with new capabilities to sense, seize, and transform. This integrated positioning, rather than being presented for the first time in the Discussion, is methodically applied to the thematic findings outlined in Section 4.

3. Methodology

This study employs the Systematic Literature Review (SLR) method, guided by the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines developed by Page et al. (2021). This method was chosen because it facilitates a systematic, clear, and reproducible process of identifying, selecting, evaluating, and synthesizing the literature. Using this method, the study aims to gain a comprehensive understanding of the role of Generative Artificial Intelligence (GenAI) in the evolution of digital entrepreneurship business models between 2020 and 2026.

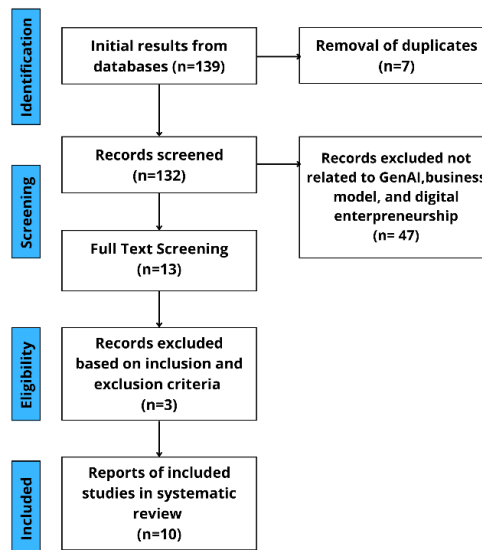
The literature search was conducted between 20 and 25 June 2026 using two databases: Scopus and Google Scholar. Scopus served as the primary database due to its broad indexing coverage and rigorous peer-review standards. At the same time, Google Scholar was used as a complementary source to capture relevant records that might not be indexed in Scopus, given its comparatively lower transparency and reproducibility as a search platform. For Google Scholar in particular, due to its absence of automatic deduplication and inconsistent indexing quality, results were organized by relevance (Google Scholar's standard ranking), and the initial two pages of results were examined. At this stage, no forward or backward citation chasing (snowballing) was conducted; thus, the 17 records obtained from Google Scholar represent only the direct keyword search results from the platform. Google Scholar records were compared with Scopus results in the identification phase to eliminate duplicates. Moreover, records were considered low-quality and discarded before the screening stage if they satisfied any of the following criteria: the author's identity was not clearly ascertainable, the full text was unavailable, the article was in a language other than English, or the content was obviously irrelevant to the research focus on GenAI, business models, or digital entrepreneurship. The same search strategy was applied to both databases, combining three keyword clusters connected with the Boolean operator AND: (1) "Generative AI" OR "Generative Artificial Intelligence"; (2) "Business Model"; and (3) "Digital Entrepreneurship" OR "Entrepreneurship" OR "Startup". The search was limited to English-language articles published between 2020 and 2026. The inclusion and exclusion criteria used in this study are as follows.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Articles published between 2020 and 2026	Articles published before 2020
Articles in English	Articles in languages other than English
Discussing GenAI, business model innovation, digital entrepreneurship, startups, or digital-based SMEs	Articles that focus solely on AI without any connection to business models or digital entrepreneurship
Available in full text	The full text of the article is not available
Indexed in Scopus, Google Scholar	Not indexed in the database being used
A unique article that appears only once in the search results	Duplicate articles found in more than one database

The article selection process in PRISMA 2020 consists of four main stages: identification, screening, eligibility, and inclusion. During the identification stage, all articles retrieved from the search are collected and reviewed to remove duplicates. Next, the screening stage involves reviewing titles, abstracts, and keywords to assess their relevance to the established research focus. Articles that pass this stage are then further evaluated through a full-text review during the eligibility stage. The final stage is inclusion, which involves identifying the articles that meet all criteria for analysis in this study. The entire selection process is documented using the PRISMA 2020 flowchart to ensure transparency in the literature review process.

Figure 1. Flow Diagram PRISMA SLR



Based on the PRISMA flow diagram, the initial search had **139 articles** from two databases: **122 articles** from Scopus and **17 articles** from Google Scholar. Next, during the identification stage, all collected articles were reviewed to remove **7 duplicate articles**, resulting in **132 articles** that proceeded to the screening stage. In this stage, the titles, abstracts, and keywords were reviewed to assess the articles' relevance to the research focus on Generative Artificial Intelligence (GenAI), business models, and digital entrepreneurship. The screening results showed that **47 articles** were irrelevant to the research topic and were therefore excluded from the selection process. A total of **13 articles** that met the initial criteria then proceeded to the full-text screening stage to evaluate the suitability of the article content based on the inclusion criteria. Based on the evaluation results, **3 articles** were deemed not to meet the criteria and were excluded from the analysis. Therefore, **10 articles** met all requirements and were selected for inclusion in the systematic literature review. The database distribution (Scopus vs. Google Scholar) was recorded at the identification stage; from the screening stage onward, records from both databases were pooled and processed collectively, consistent with common SLR reporting practice once duplicates are resolved. Three articles were excluded at the full-text screening stage, two were excluded for focusing on AI in general rather than generative AI specifically, and one was excluded for not substantively addressing business model or digital entrepreneurship outcomes. Each step of the selection process was conducted systematically and documented in accordance with the PRISMA 2020 guidelines.

Data from the selected articles were analyzed using thematic analysis. The analysis involved identifying core themes related to the role of GenAI in transforming digital entrepreneurship business models, then grouping them according to patterns of findings that emerged in the

literature. The results were synthesized narratively by integrating previous research findings into a conceptual framework that links Timmons' Theory of the Elements of Entrepreneurship and Dynamic Capabilities Theory. This approach enabled the study to yield a deeper understanding of the mechanisms of business model change triggered by the use of GenAI in the context of digital entrepreneurship.

4. Result and Discussion

4.1 Descriptive Analysis

The descriptive analysis aims to present an overview of the characteristics of the articles that met all inclusion criteria in the PRISMA selection process, namely 10 articles ($n = 10$). This overview includes the distribution of publications by year of publication, the characteristics and research methods used, the research context, the distribution of the countries of origin of the studies, and overall trends in the field of research. The results of this descriptive analysis serve as the basis for an initial mapping prior to conducting a more in-depth content analysis in the following section.

It is important to justify the relatively small size of the final corpus ($n = 10$). This yield is consistent with the current state of the GenAI entrepreneurship literature, which remains a nascent and rapidly evolving research area: as the descriptive analysis below shows, no eligible studies were published before 2023, and academic attention has only accumulated in the roughly three years following the widespread adoption of tools such as ChatGPT in late 2022. Given this short window, a limited number of studies meeting rigorous PRISMA inclusion criteria is to be expected rather than indicative of an incomplete search. Consequently, this review is best characterized as an early-stage, concept-building review that maps the initial contours of an emerging field, rather than a comprehensive systematic literature review capable of generating generalizable conclusions across the broader GenAI-entrepreneurship domain; the following descriptive and thematic findings should be read accordingly.

In terms of temporal distribution, the ten articles analyzed were published between 2023 and 2026 because no studies published between 2020 and 2022 met all inclusion criteria. The highest number of publications appeared in 2024, with 4 articles, followed by 2026 with 3 articles, 2025 with 2 articles, and 2023 with 1 article. This distribution pattern indicates that academic attention to the relationship between Generative Artificial Intelligence and the transformation of new digital entrepreneurial business models has grown significantly since two years after the launch of ChatGPT in late 2022, in line with the increasing adoption of generative technology by business actors, academics, and educational institutions.

Table 2. Characteristics of the Articles Analyzed ($n = 10$)

No	Author (Year)	Journal Quality	Study Type	Gen AI	Dig. Ent.	Bus. Model
1	Nzembayie & Urbano (2026)	Technology in Society (Scopus)	Case Study on the Abductive Mixed Method	High	High	High
2	Devadiga & Aithal (2026)	Poornaprajna Int'l J. of Management (Scholar)	Exploratory analysis/secondary data	High	High	Medium

3	Zavrazhnyi et al. (2024)	Економіка Розвитку Систем (Scholar)	Scientometric and analytical analysis	High	Medium	High
4	Fang et al. (2025)	Prosiding ICIEAI 2025 (ACM)	Quantitative survey (SEM)	Medium	Medium	Medium
5	Lecocq et al. (2024)	Journal of Business Models (Scopus)	Speculative perspectives and prompt testing	High	Medium	High
6	Kirchner-Krath et al. (2026)	Journal of Small Business Management (Scopus)	Qualitative (thematic, clustering, co-occurrence)	High	High	Medium
7	Kanbach et al. (2024)	Review of Managerial Science (Scopus)	Scoping review (qualitative content analysis)	High	Medium	High
8	Duong et al. (2025)	Social Enterprise Journal (Scopus)	Quantitative survey (SEM)	High	High	Medium
9	V. Gupta (2024)	<i>Systems</i> (MDPI) (Scopus)	Quantitative (PLS-SEM)	High	High	Medium
10	Winkler et al. (2023)	Entrepreneurship Education and Pedagogy (Scopus)	Editorial/Contextual Framework	Medium	Medium	Low

Note: High/Medium/Low are relevance ratings for GenAI, digital entrepreneurship, and business model transformation and reflect the extent to which each study substantively addresses that construct as a primary (High), secondary (Medium), or peripheral (Low) focus.

Methodological rigor across the ten studies varies considerably and is reflected in the Study Type column above. The highest-rigor contributions are the quantitative studies employing SEM or PLS-SEM (Duong et al., 2025; Fang et al., 2025; V. Gupta, 2024), two of which report relatively large samples and the multi-method qualitative case studies (Kirchner-Krath et al., 2026; Nzembayie & Urbano, 2026). By contrast, the speculative/prompt-testing study (Lecocq et al., 2024) and the editorial/contextual framework (Winkler et al., 2023) are conceptual, non-empirical contributions, included for their theoretical relevance rather than methodological rigor. This variation in rigor further supports the study's positioning as an early-stage, concept-building review rather than a synthesis of methodologically uniform evidence.

Based on their research characteristics and designs, the 10 articles exhibit considerable methodological diversity. Quantitative approaches based on structural equation modeling (SEM) or partial least squares-SEM predominate, with three articles (30 percent): the studies by Fang et al. (2025), Duong et al. (2025), and V. Gupta (2024), all of which examined the relationships among variables through large-scale surveys with a sample size ranging from 482 to 986 respondents. Qualitative approaches were used in two articles: a mixed-methods abductive case study by Nzembayie & Urbano (2026) and a thematic analysis accompanied by clustering and co-occurrence analysis by Kirchner-Krath et al. (2026). Two other articles employed a literature review approach: a scoping review with qualitative content analysis by Kanbach et al. (2024) and a scientometric and analytical review by Zavrazhnyi et al. (2024). The remaining studies consist of an exploratory analysis based on secondary data by Devadiga & Aithal (2026), a speculative perspective accompanied by prompt testing by Lecocq et al. (2024), and an editorial article based on a contextual framework by Winkler et al. (2023). This methodological diversity indicates that research on GenAI in the context of business models

and digital entrepreneurship is still in its early stages of development, featuring a relatively balanced combination of conceptual, qualitative, and quantitative approaches.

Based on their geographic distribution, the studies analyzed originated from Europe (Ireland, Spain, Ukraine, Portugal, France, Germany, the United Kingdom, the Netherlands, and Estonia), Asia (India, China, and Vietnam), and North America (the United States). Germany is the country with the highest level of involvement, both as a single location and as part of multinational studies, appearing in three of the ten articles analyzed. This pattern indicates that interest in the topics of GenAI and digital entrepreneurship is relatively widespread globally, although the Scopus-indexed literature on these topics is still dominated by contributions from researchers in developed European countries.

Research trends show a shift from conceptual and editorial studies in the early years of the observation period toward empirical studies employing a wider variety of methods in subsequent years, including the use of large-scale structural equation modeling and multi-method case studies. This year-over-year increase in the number of publications and methodological diversity indicates that the field of study on the role of Generative Artificial Intelligence in the transformation of digital entrepreneurial business models is entering a phase of maturation, with the involvement of an increasingly broad range of disciplines, ranging from strategic management and entrepreneurship to education and information systems.

4.2 Thematic Analysis

A thematic analysis was conducted to group the findings from the ten selected articles into key themes that illustrate how Generative Artificial Intelligence (GenAI) plays a role in transforming digital entrepreneurship business models. Based on a synthesis of consensus, differences, and developments in the literature across studies, five main themes were identified: the democratization of innovation, the structural transformation of business models, the empowerment-dependence paradox, ethical dilemmas and dual-mission tensions, and the evolution of entrepreneurial cognition and skills. These five themes are interrelated and collectively explain the mechanisms through which GenAI is changing the way startups create, deliver, and capture value. Given the limited size of the final corpus ($n = 10$), these themes should be interpreted as preliminary and exploratory patterns rather than firmly established findings. The strength of evidence varies considerably across themes, ranging from themes supported by a single study to those corroborated by half of the included corpus, as summarized in Table 3.

Table 3. Theme by Evidence Matrix

No	Theme	Supporting Studies	No. of Studies	Evidence Strength
1	Democratization of Innovation	Devadiga & Aithal (2026); Duong et al. (2025); Kanbach et al. (2024)	3/10	Moderate
2	Structural Transformation of Business Model	Devadiga & Aithal (2026); Lecocq et al. (2024); Zavrzhnyi et al. (2024)	3/10	Moderate
3	Enablement Dependence-Paradox	Kirchner-Krath et al. (2026); Nzembayie & Urbano (2026)	2/10	Emerging
4	Ethical Dilemmas & Dual Mission Tension	Devadiga & Aithal (2026); Kirchner-Krath et al. (2026); Zavrzhnyi et al. (2024)	3/10	Moderate

5	Evolution of Entrepreneurial Cognition & Skills	Duong et al. (2025); Fang et al. (2025); Gupta (2024); Kanbach et al. (2024); Winkler et al. (2023)	5/10	Strong
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Note: Evidence strength classification, Emerging = supported by 2 studies; Moderate = supported by 3 studies; Strong = supported by ≥ 5 studies. Given the overall corpus size ($n = 10$), even themes classified as "strong" should be read as indicative rather than conclusive.

The reasoning behind these thresholds appears to be based on the proportion of the total corpus ($n = 10$) represented by the evidence supporting each theme. A theme supported by 2 studies is regarded as an early or "emerging" pattern due to its limited replication across the literature reviewed. A theme supported by 3 studies is considered to have moderate support, indicating somewhat broader, yet still limited, convergence. Themes supported by 5 or more studies are classified as having strong support, as agreement across at least half of the included studies suggests a more robust and potentially generalizable trend. However, this rationale is not clearly articulated in the paper, and the classification of themes supported by exactly 4 studies remains unspecified.

4.2.1 Theme 1: Democratization of Innovation and the Reduction of Barriers to Entry

This theme arises from GenAI's ability to provide access to high-level capabilities such as programming, complex ideation, and content production that were previously available only to well-established companies with substantial resources. Studies by Devadiga & Aithal (2026), Kanbach et al. (2024), and Duong et al. (2025) consistently support this theme. All three studies agree that GenAI serves to "level the playing field" by democratizing access to knowledge and enabling individual entrepreneurs to undertake tasks that previously required an entire team. Kanbach et al. (2024) underscore this through findings regarding the near-zero marginal cost of content and the shift in human roles from content creators to content curators/editors. In line with this, Duong et al. (2025) show that this ease of access also fosters intentions toward digital social entrepreneurship among Vietnamese students, while Devadiga & Aithal (2026) highlight the acceleration of opportunity recognition and ideation processes through the GenAI-Entrepreneurship Integration Model (GEIM).

Although all three studies agree on the general effects of democratization, there are differences in their contextual focus: Kanbach et al. (2024) emphasize leveling across industry sectors (software engineering, healthcare, and finance), while Duong et al. (2025) focus on inclusivity for aspiring entrepreneurs in developing countries who can now access world-class business advice at very low cost. The evolving literature on this topic reflects a shift in perspective, from viewing GenAI merely as a tool to seeing it as an "AI co-founder" that accelerates the process of launching new ventures. In terms of its contribution to business model transformation, this theme primarily strengthens the element of value creation by reducing the costs and time required to start a business, while simultaneously expanding the base of digital entrepreneurs capable of participating in the innovation ecosystem.

4.2.2 Theme 2: Structural Transformation of the Business Model

This theme is based on the observation that GenAI is not merely a tool for boosting productivity, but rather drives a reconfiguration of how companies create, deliver, and capture value. Studies by Lecocq et al. (2024), Zavrazhnyi et al. (2024), and Devadiga & Aithal (2026) serve as the primary references for this theme. All three generally categorize the impact of GenAI into three components of the business model: value proposition (new offerings), value

creation (new capabilities and processes), and value capture (new revenue models and cost structures).

The differences among the three studies lie in the proposed integration mechanisms. Lecocq et al. (2024) developed a specific design process called “IDEATe” to help entrepreneurs design business models iteratively, while Zavrzhnyi et al. (2024) emphasize the use of technical techniques such as Retrieval-Augmented Generation (RAG) to ensure the relevance and precision of GenAI outputs in specific business contexts. Devadiga & Aithal (2026) propose the GEIM model as an integrative framework that links business model innovation with the creation of new revenue streams. Developments in the literature on this topic reveal a trend toward “zooming design” that is, the ability of entrepreneurs to quickly shift between designing business architecture at the macro level and fine-tuning configuration details at the micro level with the help of GenAI. This theme’s contribution to business model transformation is the most direct, as it explicitly explains the mechanisms of change across all three core components of the business model while offering methodological tools for practitioners to redesign their business value propositions and value streams.

4.2.3 Theme 3: The Enablement-Dependence Paradox

This theme arises from the finding that when start-ups become ‘platform-dependent’, they derive direct power from cutting-edge generative models such as OpenAI’s GPT, but at the same time become vulnerable to changes in governance, pricing policies, or the unilateral discontinuation of models by platform providers. The studies by Nzembayie & Urbano (2026) and Kirchner-Krath et al. (2026) serve as the primary references for this theme.

Both studies agree that the greater the empowerment a business derives from a GenAI platform, the greater its level of dependence becomes, leading the business to sacrifice differentiation in favour of high exposure to the policy and technical decisions of the platform owner. Nzembayie & Urbano (2026) introduce the concept of platform-dependent entrepreneurship (PDE) alongside the phenomena of “the removal of choice as a form of control” and the “cascade of trust erosion” that occur during platform crises. Meanwhile, Kirchner-Krath et al. (2026) highlight how this dependence risks creating “strategic inertia”, particularly amongst environmental start-ups that rely on generic AI capabilities to address specific sustainability issues. This theme’s contribution to the transformation of business models lies in its assertion that the sustainability of GenAI-based business models is determined not only by technological capabilities, but also by the accompanying platform risk management strategies.

4.2.4 Theme 4: Ethical Dilemmas and the Tension of a Dual Mission

This theme has emerged because the use of GenAI gives rise to negative externalities, such as high energy consumption and algorithmic bias, which directly conflict with the objectives of social and environmental entrepreneurs. Studies by Kirchner-Krath et al. (2026), Zavrzhnyi et al. (2024) and Devadiga & Aithal (2026) serve as the main references for this theme.

All three studies generally agree that algorithmic bias, privacy risks and uncertainties surrounding intellectual property rights constitute the most pressing ethical barriers to the adoption of GenAI for digital entrepreneurship. However, the focus of each study differs: Kirchner-Krath et al. (2026) conceptualize the phenomenon of ‘mission drift’ the tendency for hybrid ventures to shift towards purely economic optimization due to minimal human involvement in overseeing the scale of operations, whilst Zavrzhnyi et al. (2024) highlight that various ethical issues surrounding the integration of GenAI with RAG remain inadequately addressed. Devadiga & Aithal (2026) add the dimension of performance gaps

(benefit disparities) as another form of equity issue in the utilization of GenAI. This theme's contribution to the transformation of business models lies in its assertion that the sustainability of GenAI-based business models, particularly those of dual-mission enterprises, requires explicit ethical governance mechanisms to ensure that the creation of economic value does not come at the expense of the social and environmental values that lie at the heart of such enterprises' business propositions.

4.2.5 Theme 5: The Evolution of Cognition and Entrepreneurial Skills

This theme has emerged alongside a shift like entrepreneurial work from 'doing' to 'designing', thereby necessitating a new understanding of the psychological processes underlying individuals' decisions to adopt GenAI. Studies by Fang et al. (2025), Duong et al. (2025), Gupta (2024), Kanbach et al. (2024), and Winkler et al. (2023) serve as the primary references for this theme.

Fang et al. (2025) and Duong et al. (2025) both applied the Stimulus-Organism-Response (SOR) framework and found that the use of GenAI enhances digital entrepreneurial self-efficacy and perceived feasibility, both of which are key drivers of entrepreneurial intention. Gupta (2024) expanded on these findings with a three-stage adoption model, demonstrating that entrepreneurial experience rather than demographic variables such as age or education has a greater influence on the intention to switch technologies. Meanwhile, Kanbach et al. (2024) define a shift in the entrepreneur's role from 'creator' to 'editor' of content, whilst Winkler et al. (2023) highlight the implications of this shift for entrepreneurship education, including the need for ethical and reflective upskilling. Developments in the literature on this theme indicate a shift in orientation from the "substitution" paradigm where AI replaces human roles towards the "augmentation" paradigm, in which humans and AI collaborate as complementary actors. This theme's contribution to business model transformation is fundamental, as it elucidates the cognitive prerequisites and skills that enable entrepreneurs to effectively utilize GenAI in redesigning their business models, whilst also serving as a bridge between technological capabilities and the organizational capacity to adopt them.

4.3 Discussion

4.3.1 Integration of Empirical Themes with Timmons' Elements of Entrepreneurship and the Dimensions of Dynamic Capabilities

As theorized in Section 2.4, Timmons' Theory and Dynamic Capabilities Theory (DCT) operate at different but connected levels of analysis, linked through the mechanism of dynamic capabilities. The five themes identified in the results section demonstrate complementary, rather than overlapping, relationships with the three core elements of Timmons' Theory and the three dimensions of Dynamic Capabilities Theory (DCT). Concerning the element of opportunity, Theme 1 (Democratization of Innovation) and Theme 5 (Evolution of Cognition and Entrepreneurial Skills) consistently affirm that GenAI accelerates the process of identifying and assessing business opportunities, in line with the 'sensing' function in DCT, which emphasizes an organization's capacity to scan and interpret environmental signals (Teece, 2007, 2018). This alignment demonstrates that the individual cognitive processes of entrepreneurs in recognizing opportunities (Timmons & Spinelli, 2007) and the organizational processes involved in sensing (Teece, 2007) actually operate at different levels of analysis yet are mutually reinforcing: GenAI enhances sensing at the organizational level whilst simultaneously expanding individuals' cognitive capacity to recognize opportunities, thereby enabling the two theoretical frameworks to fill the gaps in the levels of analysis that have hitherto been separate in the entrepreneurship literature.

Theme 2 (Structural Transformation of the Business Model) shows that GenAI enables entrepreneurs to recombine existing resources reducing content production costs to near zero (Kanbach et al., 2024) and providing iterative design tools such as the IDEATe process (Lecocq et al., 2024) in ways that correspond directly to the 'seizing' function in DCT, defined as an organization's capacity to mobilize and reconfigure resources to capture value from identified opportunities (Teece, 2007, 2018). This mechanism converts Timmons' notion of resource recombination (Timmons & Spinelli, 2007) into concrete business model outcomes, particularly strengthening the value creation component by lowering the cost and technical barriers associated with acquiring new capabilities.

Theme 3 (Enablement–Dependence Paradox) and Theme 4 (Ethical Dilemmas) reveal that GenAI reshapes team decision-making and collaboration patterns, shifting entrepreneurs' roles from creators to editors or curators of content (Kanbach et al., 2024), while simultaneously exposing ventures to governance risks tied to third-party platforms (Nzembayie & Urbano, 2026). These dynamics correspond to the 'transforming' function in DCT, which concerns an organization's capacity to continuously reconfigure its structures and processes in response to external change (Teece, 2007, 2018). In business model terms, this transforming capacity primarily affects the value capture component, since a venture's ability to sustain new revenue models depends on how effectively its team manages platform dependency and ethical governance risks over time. Table 4 synthesizes these three linkages by mapping specific GenAI functions onto Timmons' entrepreneurial elements, the corresponding DCT dimensions, and the business model components they most directly influence.

Table 4. Connection GenAI functions, Timmons' elements, dynamic capabilities, and business model components

GenAI Function	Timmons' Element	DCT Dimension	Business Model Component
Data-driven insight generation and ideation support	Opportunity	Sensing	Value Proposition
Automated content/process production and iterative design tools (e.g. IDEATe)	Resources	Seizing	Value Creation
Human, AI collaboration and platform governance adaptation	Team	Transforming	Value Capture

Note: These linkages represent the dominant/primary pathway for each GenAI function; secondary or cross-cutting effects on other business model components are discussed narratively in the text

4.3.2 Consensus, Contradictions and Conceptual Tensions Across Studies

Generally speaking, there is a strong consensus amongst the studies analyzed that GenAI acts as a democratizing force that lowers barriers to entry and accelerates the 'sensing-seizing' cycle in the digital entrepreneurship process. This consensus is reflected in the common findings of Devadiga & Aithal (2026), Kanbach et al. (2024), Duong et al. (2025), Fang et al. (2025), and Gupta (2024); whilst employing different methods and population contexts, these studies all confirm that GenAI enhances self-efficacy, accelerates ideation, and broadens the participation of new entrepreneurs within the digital ecosystem.

However, this consensus faces a rather fundamental conceptual contradiction when compared with the findings of Nzembayie & Urbano (2026) and Kirchner-Krath et al. (2026). These two studies, which employ a long-term qualitative approach to platform ecosystems and

environmental entrepreneurs, actually highlight the dark side of such empowerment: the erosion of entrepreneurs' autonomy, strategic inertia, and the potential for mission drift. Another conceptual tension arises in the way each theme interprets the role of humans in the entrepreneurial process. Theme 1 and Theme 5 tend to interpret the shift in the human role from creator to editor as a positive and empowering form of augmentation, whilst Theme 3 and Theme 4 interpret a similar shift as an indication of a loss of strategic control. This contradiction suggests that the impact of GenAI on the team elements in Timmons' Theory is ambivalent, depending on the extent to which organizations possess sufficient transforming capabilities to manage human–AI relationships in a balanced manner, rather than on the technology itself.

4.3.3 Theoretical Implications and Contributions of the Research

These findings have several important theoretical implications. Firstly, Timmons' Theory of Entrepreneurial Elements needs to be expanded to accommodate the presence of GenAI not merely as a supporting tool, but as a co-creative partner that helps shape design choices and decision-making processes across its three core elements. This extension is important because Timmons's fundamental assumption that opportunities, resources and teams are entirely under human control and judgement is no longer sufficient to explain the context of GenAI-based digital entrepreneurship. Secondly, the Dynamic Capabilities Theory framework also requires refinement in the 'seizing' and 'transforming' dimensions to explicitly include platform governance risk as a variable influencing the success of dynamic capabilities. (Teece, 2007, 2018) initial formulation assumes that organizations have full control over reconfigured resources, whilst the findings in Theme 3 indicate that, in the context of GenAI, the processes of 'seizing' and 'transforming' take place under conditions of structural dependence on third parties beyond the organization's control.

The main contribution of this research lies in the integration of these two theoretical frameworks to demonstrate that the success of digital entrepreneurs in balancing opportunities, resources and teams (Timmons) is in fact mediated by organizational capacity to sense, seize and transform (DCT) the available GenAI capabilities. In other words, Timmons' elements operate at the micro-individual level, whilst the DCT dimensions operate at the meso-organizational level, and the interaction between the two determines the extent to which GenAI-based business model transformation can proceed sustainably without compromising the entrepreneur's autonomy or social and environmental mission.

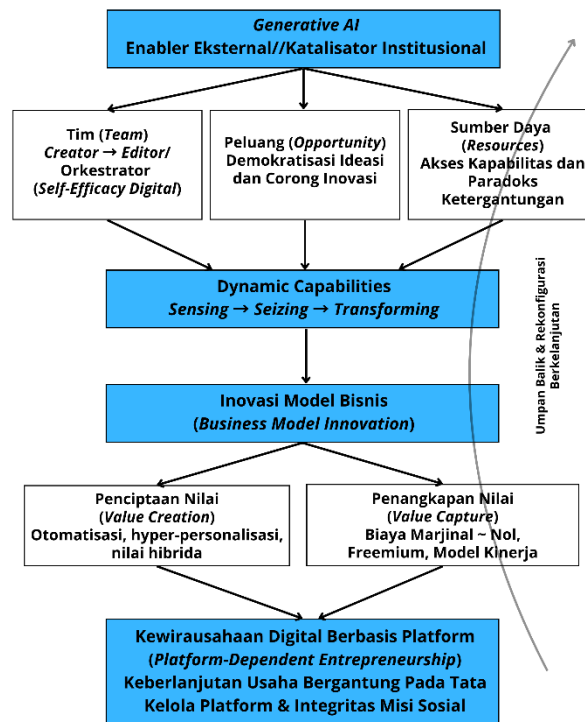
4.3.4 Balancing Opportunities and Risks: Boundary Conditions for GenAI-Enabled Digital Entrepreneurship

Although the themes mentioned highlight how GenAI boosts opportunity identification, resource reassembly, and value generation, this research warns against viewing GenAI as a universally advantageous tool for startups and SMEs. The reviewed evidence indicates that the risks are just as significant as the opportunities. Platform dependency arises as businesses become dependent on proprietary GenAI systems managed by outside vendors, making them vulnerable to changes in governance, fluctuations in pricing, and the diminishing of entrepreneurial independence (Kirchner-Krath et al., 2026; Nzembayie & Urbano, 2026). The incorporation of GenAI outputs into commercial products brings data privacy risks and uncertainties regarding intellectual property, especially when retrieval-augmented methods utilize external or proprietary content without explicit rights clearance (Zavrazhnyi et al., 2024). Algorithmic bias and the uneven distribution of benefits among entrepreneurs with varying degrees of digital access and literacy complicate assertions of democratization

(Devadiga & Aithal, 2026). Moreover, GenAI outputs are intrinsically prone to hallucination and factual inaccuracies, a constraint of generative language models that directly impacts entrepreneurial choices based on AI-produced market analysis or strategic suggestions. Collectively, these risks suggest that unequal access to sophisticated, high-quality GenAI tools could perpetuate or even increase existing gaps between well-funded and resource-limited entrepreneurs, rather than creating a more equitable environment.

4.4 Proposed Conceptual Framework

Figure 2. Conceptual Framework for the Role of GenAI in the Transformation of Digital Entrepreneurship Business Models



Based on a synthesis of the five themes identified through thematic analysis, and the integration of Timmons' Theory of the Elements of Entrepreneurship and Dynamic Capabilities Theory (DCT), this study proposes a conceptual framework, termed here the AI-Augmented Digital Entrepreneurship Ecosystem, referring to the integrated system of GenAI-enabled entrepreneurial elements, dynamic capabilities, and business model outcomes discussed throughout this review. This framework positions Generative Artificial Intelligence (GenAI) as both an enabler and a catalyst for the transformation of digital entrepreneurial business models. Within this framework, GenAI influences Timmons' micro-elements team, opportunity and resources by enhancing entrepreneurial self-efficacy through the role of the AI co-founder, accelerating the identification of opportunities through the democratization of ideation, and lowering barriers to entry, whilst simultaneously giving rise to a paradox of platform dependency. These influences translate into organizational change through the dynamic capabilities of sensing, seizing, and transforming, which enable organizations to recognize opportunities, mobilize resources, and reconfigure business processes on an ongoing basis. This process generates Business Model Innovation (BMI) through the transformation of value creation and value capture such as automation, hyper-personalization, and revenue model innovation, which ultimately shapes a new character of

digital entrepreneurship that is platform-dependent. This framework demonstrates that GenAI-based business model transformation is a dynamic and cyclical process, in which changes to the business model continuously drive the development of organizational capabilities in tandem with technological evolution.

In theory, this framework bridges the gap between the micro-level perspective of Timmons' Theory and the meso-level perspective of DCT by positing dynamic capabilities as the linking mechanism, whilst simultaneously expanding both theories through the recognition of GenAI as an external actor that influences the direction of business model transformation and introduces the risk of platform dependency. Consequently, the proposed framework provides a conceptual foundation that can be tested in future research through both quantitative approaches and longitudinal studies.

5. Conclusion and Suggestion

Based on an early-stage, concept-building synthesis of ten eligible studies, this review suggests that Generative Artificial Intelligence (GenAI) is emerging as a driver of business model transformation in digital entrepreneurship, with the reviewed literature pointing toward expanded opportunity recognition, improved resource efficiency, and increased human–AI collaboration in value creation. The review identified five dominant themes: the democratization of innovation, structural business model transformation, the empowerment–dependence paradox, ethical dilemmas, and the evolution of entrepreneurial cognition and skills. As these themes rest on a small and heterogeneous corpus, they should be treated as preliminary and indicative rather than confirmed or generalizable patterns; the reviewed studies nonetheless indicate that while GenAI appears to create substantial opportunities for business model innovation, its successful adoption also requires strategic management of platform dependence, governance, and ethical risks.

Theoretically, this study contributes to the literature by integrating **Timmons' Entrepreneurial Model** and **Dynamic Capabilities Theory** into a unified conceptual framework that explains the mechanisms through which GenAI transforms digital entrepreneurship business models across individual and organizational levels. This framework extends existing entrepreneurship theory by positioning GenAI as an external enabler that simultaneously creates opportunities and introduces platform-related constraints.

Practically, the reviewed studies offer preliminary guidance that may help entrepreneurs, start-ups, SMEs, and policymakers in developing AI-enabled business models while balancing innovation, organizational capabilities, and responsible AI governance. Future research is encouraged to empirically validate the proposed framework across different industries and institutional contexts. Given that this review synthesizes only ten studies within an emerging research stream, its conclusions should be regarded as indicative rather than definitive, offering a foundation for future, more comprehensive systematic reviews as the GenAI-entrepreneurship literature matures.

6. Limitations and Future Research

This study has several limitations that should be considered when interpreting the findings. First, the review included only ten eligible studies published between 2020 and 2026, reflecting the relatively early stage of research on Generative Artificial Intelligence (GenAI) in digital entrepreneurship. The limited number of studies may restrict the comprehensiveness of the synthesis and reduce the generalizability of the findings. Second, the reviewed studies were

heterogeneous in terms of research contexts, populations, methodologies, and theoretical perspectives, making direct comparison across studies challenging. Third, this study relied exclusively on secondary data obtained through a systematic literature review and therefore did not empirically validate the proposed conceptual framework. Finally, given the rapid evolution of GenAI technologies, some findings may become less representative as new tools, governance models, and entrepreneurial practices emerge.

Future research should focus on empirically testing and refining the conceptual framework proposed in this study. Quantitative studies may examine the relationships among entrepreneurial elements, dynamic capabilities, and business model innovation in different organizational contexts, while qualitative and longitudinal studies could provide deeper insights into how platform dependence, governance mechanisms, and ethical challenges evolve over time. Future studies are also encouraged to investigate the role of GenAI across diverse industries, including non-technology SMEs and social enterprises, as well as across different cultural and regulatory environments. In addition, comparative research examining closed and open-source AI ecosystems may improve understanding of how platform governance influences entrepreneurial outcomes. Such efforts would contribute to a more comprehensive understanding of the long-term implications of GenAI for digital entrepreneurship and business model transformation.

Declaration of AI and AI-assisted technologies in the writing process (if author[s] utilize AI)

During the preparation of this work, the author(s) used ChatGPT (OpenAI) to assist in maintaining the structure and clarity of the manuscript during the writing process. The author(s) also used Rayyan AI to support the screening and selection of studies during the systematic literature review process. In addition, DeepL Translator was used to assist with language translation and linguistic refinement of the manuscript. After using these tools, the author(s) carefully reviewed, verified, and edited all outputs as necessary and take full responsibility for the content of this publication.

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