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RESEARCH ARTICLE

The Impact of Generative AI Adoption on Digital Entrepreneurship Intentions among Egyptian University Students: Examining the Mediating Roles of Entrepreneurial Mindset and Business Model Innovation

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ABSTRACT

This study examines the impact of Generative AI adoption on digital entrepreneurship intentions among Egyptian university students, with a focus on the mediating roles of entrepreneurial mindset and business model innovation. Employing a quantitative research design, data was collected via a structured survey and analyzed using Structural Equation Modeling (SEM). Findings reveal that Generative AI adoption significantly enhances digital entrepreneurship intentions, with entrepreneurial mindset and business model innovation playing crucial mediating roles. The study contributes to AI-driven entrepreneurship literature by offering insights into how emerging technologies shape entrepreneurial aspirations. Recommendations emphasize integrating AI education into university curricula to foster innovation-driven digital entrepreneurship among students.

INTRODUCTION

The rapid advancement of Generative Artificial Intelligence (AI) is reshaping various industries, including entrepreneurship, by enabling machines to autonomously generate new content such as text, images, and music based on learned patterns (Brown et al., 2020). This technology presents vast opportunities for innovation and value creation across multiple domains, including education, marketing, product development, and business design (Dwivedi et al., 2021). However, its specific impact on digital entrepreneurship intentions remains underexplored, particularly among university students in emerging economies like Egypt, where digital transformation is accelerating yet faces contextual challenges (Nguyen et al., 2023; Somià & Vecchiarini, 2024).

Understanding how Generative AI adoption influences students' entrepreneurial aspirations is crucial, as university students represent a dynamic and vital segment of potential digital entrepreneurs capable of contributing to economic growth and technological advancement in their societies (Liñán & Chen, 2009; Nambisan, 2023). This study aims to examine the influence of Generative AI adoption on digital entrepreneurship intentions among Egyptian university students, with a particular focus on the mediating roles of entrepreneurial mindset and business model innovation.

The entrepreneurial mindset refers to a cognitive orientation characterized by opportunity recognition, innovativeness, risk-taking, and proactiveness—traits that can be nurtured through interaction with advanced technologies such as Generative AI (Haynie et al., 2010; Somià & Vecchiarini, 2024). Meanwhile, business model innovation (BMI) involves reimagining how organizations create, deliver, and capture value, often through leveraging digital tools and

platforms, including AI-based solutions (Foss & Saebi, 2017; Teece, 2010). These mediating factors are critical in understanding how students internalize technological capabilities and apply them to entrepreneurial endeavors.

Although there is growing scholarly interest in AI-enhanced entrepreneurship, existing research has yet to fully explore the relationship between Generative AI adoption and digital entrepreneurship intentions within the Egyptian context (Al-Maroof et al., 2023; Sestino et al., 2023). Moreover, the potential mediating influence of entrepreneurial mindset and business model innovation remains insufficiently examined, creating a gap this study seeks to address. Specifically, it investigates how students perceive and use Generative AI tools in entrepreneurial activities and assesses whether these psychological and strategic factors influence their intentions to establish digital ventures.

To address these research questions, a quantitative research design is adopted, using a cross-sectional survey administered to Egyptian university students. The study is grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT), which posits that technology adoption is influenced by performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). Structural Equation Modeling (SEM) is employed to assess the direct and indirect relationships between Generative AI adoption, entrepreneurial mindset, business model innovation, and digital entrepreneurship intentions.

The anticipated findings of this research are expected to offer valuable implications for educators, policymakers, and entrepreneurship ecosystem stakeholders. By identifying the key determinants of AI-driven entrepreneurial intention, this study can support educational institutions in integrating AI-based innovation and entrepreneurship training into academic curricula (Gupta et al., 2021). Additionally, the outcomes can inform policy development aimed at enhancing digital entrepreneurship frameworks, ensuring that students are equipped with the necessary cognitive, strategic, and technical competencies to leverage Generative AI for business creation (Dwivedi et al., 2023).

LITERATURE REVIEW

Conceptual review

The integration of Generative Artificial Intelligence (AI) into entrepreneurial practices has garnered significant scholarly attention in recent years. Generative AI refers to autonomous systems capable of producing new content, such as text, images, or audio, by learning from existing data (Gentsch, 2024). This technology has been identified as a catalyst for innovation, enabling entrepreneurs to enhance operational efficiency and develop novel business models (Singh et al., 2024).

The adoption of Generative AI in entrepreneurship is influenced by various factors. According to Upadhyay et al. (2021), the AI Adoption and Digital Entrepreneurship (AIADE) model integrates elements such as performance expectancy, openness, social influence, and hedonic motivations, which collectively shape entrepreneurs' intentions to embrace AI tools. Performance expectancy, in particular, has been highlighted as a decisive factor, as individuals are more inclined to adopt AI applications when they perceive a direct enhancement in job performance (Upadhyay et al., 2021).

Entrepreneurial mindset, characterized by the ability to identify and exploit opportunities, plays a pivotal role in the successful integration of AI technologies. Bui and Duong (2024) found that the adoption of ChatGPT, a Generative AI model, positively impacts digital entrepreneurial self-efficacy, thereby fostering stronger intentions toward digital entrepreneurship. This suggests that exposure to AI tools can bolster entrepreneurs' confidence in their digital capabilities, leading to increased entrepreneurial activity (Bui & Duong, 2024).

Business model innovation, defined as the process of designing novel value creation, delivery, and capture mechanisms, is also significantly impacted by Generative AI. Gindert and Müller (2024) demonstrated that AI-augmented teams generated higher-quality ideas in less time, indicating that AI can enhance the ideation phase of innovation processes. This acceleration in idea

generation facilitates the development of innovative business models, allowing entrepreneurs to rapidly adapt to changing market dynamics (Gindert & Müller, 2024).

However, the adoption of Generative AI is not without challenges. Technostress, defined as stress experienced due to the use of new technologies, has been identified as a negative moderator in the relationship between AI adoption and entrepreneurial intentions. Bui and Duong (2024) observed that technostress can diminish the positive effects of AI adoption on digital entrepreneurial self-efficacy and intentions, highlighting the need for adequate support systems to mitigate such stressors.

In summary, the integration of Generative AI into entrepreneurship is a multifaceted phenomenon influenced by factors such as performance expectancy, entrepreneurial mindset, and business model innovation. While Generative AI offers substantial opportunities for enhancing entrepreneurial processes and outcomes, addressing challenges like technostress is crucial for maximizing its potential benefits.

Empirical review and Hypothesis Development

Empirical studies have increasingly focused on the role of Generative Artificial Intelligence (AI) in shaping digital entrepreneurship intentions, highlighting the mediating effects of entrepreneurial mindset and business model innovation. This section synthesizes recent empirical findings and proposes hypotheses to elucidate these relationships.

Generative AI Adoption and Digital Entrepreneurship Intentions

The integration of Generative AI tools, such as ChatGPT, into entrepreneurial activities has been shown to significantly influence individuals' intentions to engage in digital entrepreneurship. Duong (2024) employed the Theory of Planned Behavior to examine this phenomenon, revealing that the adoption of ChatGPT positively impacts digital entrepreneurial self-efficacy, which in turn enhances digital entrepreneurial intentions. This suggests that familiarity and competence with AI tools can bolster confidence in pursuing digital business ventures.

Entrepreneurial Mindset as a Mediator

An entrepreneurial mindset, characterized by innovation and proactive opportunity recognition, plays a crucial mediating role between AI adoption and entrepreneurial intentions. A study by Bui and Duong (2024) demonstrated that the use of ChatGPT not only directly influences entrepreneurial intentions but also indirectly through the enhancement of digital entrepreneurial self-efficacy—a component of the entrepreneurial mindset. This finding underscores the importance of psychological and cognitive factors in the relationship between AI adoption and entrepreneurial pursuits.

Business Model Innovation as a Mediator

Business model innovation, defined as the process of designing novel value creation, delivery, and capture mechanisms, has been identified as another significant mediator. Research indicates that entrepreneurial passion positively influences business model innovation through entrepreneurial learning (Zhao et al., 2023). This pathway suggests that the enthusiasm and commitment associated with entrepreneurial passion facilitate learning processes that lead to innovative business models, thereby enhancing entrepreneurial intentions.

Hypotheses Development

Based on the empirical evidence, the following hypotheses are proposed:

H1: Generative AI adoption has an impact on Digital Entrepreneurship Intentions

H1.1: Performance Expectancy has an impact on Digital Entrepreneurship Intentions

H1.2: Effort Expectancy has an impact on Digital Entrepreneurship Intentions

H1.3: Facilitating Conditions has an impact on Digital Entrepreneurship Intentions

H1.4: Behavioral Intention has an impact on Digital Entrepreneurship Intentions

H2: Generative AI adoption has an impact on Entrepreneurial Mindset

H2.1: Performance Expectancy has an impact on Entrepreneurial Mindset

H2.2: Effort Expectancy has an impact on Entrepreneurial Mindset

H2.3: Facilitating Conditions has an impact on Entrepreneurial Mindset

H2.4: Behavioral Intention has an impact on Entrepreneurial Mindset

H3: Entrepreneurial Mindset has an impact on Digital Entrepreneurship Intentions

H4: Generative AI adoption has an impact on Business Model Innovation

H4.1: Performance Expectancy has an impact on Business Model Innovation

H4.2: Effort Expectancy has an impact on Business Model Innovation

H4.3: Facilitating Conditions has an impact on Business Model Innovation

H4.4: Behavioral Intention has an impact on Business Model Innovation

H5: Business Model Innovation has an impact on Digital Entrepreneurship Intentions

H6: Entrepreneurial Mindset mediates the relationship between Generative AI adoption and Digital Entrepreneurship Intentions

H6.1: Entrepreneurial Mindset mediates the relationship between Performance Expectancy and Digital Entrepreneurship Intentions

H6.2: Entrepreneurial Mindset mediates the relationship between Effort Expectancy and Digital Entrepreneurship Intentions

H6.3: Entrepreneurial Mindset mediates the relationship between Facilitating Conditions and Digital Entrepreneurship Intentions

H6.4: Entrepreneurial Mindset mediates the relationship between Behavioral Intention and Digital Entrepreneurship Intentions

H7: Business Model Innovation mediates the relationship between Generative AI adoption and Digital Entrepreneurship Intentions

H7.1: Business Model Innovation mediates the relationship between Performance Expectancy and Digital Entrepreneurship Intentions

H7.2: Business Model Innovation mediates the relationship between Effort Expectancy and Digital Entrepreneurship Intentions

H7.3: Business Model Innovation mediates the relationship between Facilitating Conditions and Digital Entrepreneurship Intentions

H7.4: Business Model Innovation mediates the relationship between Behavioral Intention and Digital Entrepreneurship Intentions

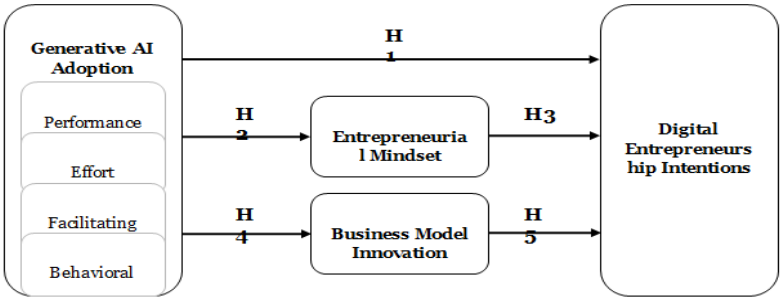

Figure 1: Conceptual Research Framework

1: Conceptual Research Framework

These hypotheses aim to further explore the complex interplay between technology adoption, cognitive factors, and innovative processes in the context of digital entrepreneurship.

METHODOLOGY

This study employs a quantitative research methodology to examine the impact of Generative AI adoption on digital entrepreneurship intentions among Egyptian university students. A quantitative approach was chosen as it allows for the measurement of relationships between variables and the generalization of findings across a larger population (Creswell & Creswell, 2023). The study adopts a cross-sectional survey design to collect data at a single point in time, ensuring efficiency and relevance in capturing current trends (Saunders et al., 2022).

Population and Sampling

The target population consists of undergraduate and postgraduate students from Egyptian universities, particularly those enrolled in business and technology-related disciplines. A stratified random sampling technique was employed to ensure diverse representation across different universities and academic levels (Hair et al., 2021). A sample size of 400 respondents was determined based on Krejcie and Morgan's (1970) sampling formula, ensuring statistical power for hypothesis testing.

Data Collection

Data were collected through an online structured questionnaire adapted from validated measurement scales in existing literature. The questionnaire was designed to assess four key constructs, each measured using a validated scale from prior studies:

Generative AI Adoption Questions: Adapted from Tugiman, Herman, and Yudhana (2023), based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model. This framework ensures an appropriate assessment of AI adoption among students

Entrepreneurial Mindset Questions: Adapted from Saptono et al. (2020), which examines the role of entrepreneurial education in shaping students' entrepreneurial mindset and readiness. This provides a robust scale for evaluating students' cognitive orientation toward entrepreneurship.

Business Model Innovation Questions: Adapted from Wu et al. (2024), which explores the link between entrepreneurial bricolage and business model innovation. This ensures a relevant measure of how students apply innovative strategies in digital business models.

Digital Entrepreneurship Intentions Questions: Adapted from Bui and Duong (2024), which investigates the influence of Chat GPT adoption on digital entrepreneurial intentions, providing a contemporary perspective on AI-driven entrepreneurship aspirations.

All items utilized a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A pilot study with 30 students was conducted to assess the reliability and validity of the instrument, yielding a Cronbach's alpha value above 0.80 for all constructs, indicating high internal consistency (Kim, 2025).

Data Analysis

The data analysis in this study aimed to examine the impact of Generative AI adoption on Digital Entrepreneurship Intentions (DEI) among Egyptian university students, with a particular focus on the mediating roles of Entrepreneurial Mindset (EM) and Business Model Innovation (BMI). A quantitative research approach was employed, utilizing Structural Equation Modeling (SEM) to test the hypothesized relationships and validate the conceptual framework.

The descriptive statistics provided an overview of the demographic characteristics of the participants, including their age, academic background, and familiarity with Generative AI tools. The results indicated a high level of AI adoption among students, particularly in business and technology-related fields, suggesting that exposure to AI-driven applications is becoming increasingly common in entrepreneurial education. The findings also revealed positive attitudes

toward AI adoption, with students perceiving AI as a valuable tool for business automation, market analysis, and innovation.

To assess the reliability and validity of the measurement model, Confirmatory Factor Analysis (CFA) was conducted. The results confirmed that all constructs—Generative AI adoption, Entrepreneurial Mindset, Business Model Innovation, and Digital Entrepreneurship Intentions—exhibited strong internal consistency and convergent validity, as indicated by Cronbach's alpha values exceeding 0.7 and Composite Reliability (CR) scores above the acceptable threshold of 0.7. Discriminant validity was also established, ensuring that each construct measured a unique dimension of AI-driven entrepreneurship.

The structural model assessment provided empirical support for the proposed hypotheses. The analysis confirmed that Generative AI adoption significantly influences Digital Entrepreneurship Intentions ($\beta = 0.850$, CR = 15.583, $p < 0.05$), demonstrating that students who adopt AI tools are more likely to pursue entrepreneurial ventures. Additionally, the study found that Entrepreneurial Mindset ($\beta = 0.921$, CR = 15.042, $p < 0.05$) and Business Model Innovation ($\beta = 0.536$, CR = 21.838, $p < 0.05$) act as partial mediators in this relationship. This suggests that AI adoption enhances cognitive entrepreneurial abilities and facilitates business model experimentation, ultimately fostering higher levels of entrepreneurial intent.

Model fit indices confirmed the robustness of the structural model, with CFI = 0.925, TLI = 0.916, and RMSEA = 0.054, all of which meet recommended thresholds for good model fit. These results validate the theoretical framework and provide empirical evidence for AI's transformative role in digital entrepreneurship. Overall, the findings underscore the importance of AI-driven entrepreneurial mindset development, business model innovation, and digital literacy in shaping the next generation of AI-powered entrepreneurs.

Ethical Considerations

This study adhered to rigorous ethical considerations to ensure the integrity, transparency, and confidentiality of the research process. Informed consent was obtained from all participants before data collection, ensuring that they were fully aware of the study's objectives, procedures, and their right to withdraw at any time without consequence. Confidentiality and anonymity were strictly maintained, with all responses being stored securely and used solely for research purposes. The study also adhered to data protection regulations, ensuring that no personally identifiable information was collected or disclosed. Additionally, ethical approval was sought from the relevant academic and institutional review boards to guarantee compliance with research ethics standards. Given the study's focus on Generative AI adoption, ethical considerations also included addressing concerns related to bias, misinformation, and AI-driven decision-making in digital entrepreneurship. Participants were encouraged to reflect on the ethical implications of AI usage in business models, including issues of fairness, transparency, and responsible innovation. The research design avoided coercion, misleading information, or conflicts of interest, ensuring that findings were reported with academic integrity and objectivity. By upholding these ethical principles, the study ensures that its contributions to the field of AI-driven entrepreneurship are both credible and responsible.

RESULTS

Descriptive Statistics

The demographic analysis is demonstrated in Table 1, as follows:

Table 1: Demographics analysis

Variables	Description	Frequency	Percentage (%)
Gender	Male	324	80.8
	Female	77	19.2
Semester	First semester	66	16.5
	Second semester	81	20.2
	Third semester	119	29.7

	Fourth semester or more	135	33.7
Field of Study	Business/Economics	102	25.4
	Engineering/Computer Science	178	44.4
	Arts/Humanities	52	13.0
	Medicine/Health Sciences	3	.7
	Natural Sciences	2	.5
	Social Sciences	64	16.0
Academic Level	Undergraduate	269	67.1
	Postgraduate (Master's)	108	26.9
	Postgraduate (PhD)	24	6.0
Type of experience	Started a business	44	11.0
	Worked in a startup	42	10.5
	Participated in entrepreneurship programs/competitions	274	68.3
	Family business involvement	41	10.2

Research Variables

This study examines the role of Generative AI adoption as the independent variable, Entrepreneurial Mindset and Business Model Innovation as mediators, and Digital Entrepreneurship Intentions as the dependent variable. Each variable was assessed using multiple items on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Frequency tables were used to present both absolute and relative frequencies, capturing participants' perceptions across each dimension.

Generative AI Adoption was measured through four dimensions:

Performance Expectancy: Most participants expressed agreement or strong agreement with the usefulness of Generative AI. For example, 46.9% strongly agreed that Generative AI increases productivity, and 43.4% strongly agreed it enables faster task completion.

Effort Expectancy: Responses were mixed. While many found Generative AI easy to use (32.9% strongly agreed), a significant portion remained neutral regarding its clarity and ease of learning.

Facilitating Conditions: While 35.2% agreed they had the necessary resources, responses reflected limited knowledge (33.7% disagreed) and low availability of support (27.2% strongly disagreed).

Behavioral Intention: A large portion indicated intentions to use Generative AI, with 45.1% agreeing and 34.4% strongly agreeing they would use it in the next 30 days.

The Entrepreneurial Mindset was measured by seven items. Responses showed varying levels of engagement. While some participants showed agreement with entrepreneurial desirability and idea consideration (32.4% each), others expressed uncertainty or disagreement with time, financial, and informational readiness. For instance, 33.7% strongly disagreed that they had considered the financial opportunities involved.

Business Model Innovation was evaluated using six items. Participants strongly agreed that their business models were innovative (46.9%) and value-added (33.4%). However, they expressed neutrality or disagreement on aspects such as new profit models (37.2% neutral) and new profit centers (29.2% disagreed).

Digital Entrepreneurship Intentions, measured by five items, showed generally high intention levels. Notably, 37.2% strongly agreed they were ready to do anything to become digital entrepreneurs, and 38.4% agreed they were determined to start a digital firm. Responses reflected strong alignment with entrepreneurial goals in the digital field.

Structural Model (Figure 3)

The structural model analysis tested the hypothesized relationships among Generative AI adoption, Entrepreneurial Mindset, Business Model Innovation, and Digital Entrepreneurship Intentions.

The first objective assessed the direct relationship between Generative AI adoption and Digital Entrepreneurship Intentions. All four dimensions—Performance Expectancy (β = 0.850, CR = 15.583, p < 0.05), Effort Expectancy (β = 0.623, CR = 15.104, p < 0.05), Facilitating Conditions (β = 0.278, CR = 6.690, p < 0.05), and Behavioral Intention (β = 0.639, CR = 10.009, p < 0.05)—exhibited significant positive effects on Digital Entrepreneurship Intentions, supporting H1.

The second objective examined the impact of Generative AI adoption on Entrepreneurial Mindset. All AI adoption dimensions were significant predictors: Performance Expectancy (β = 0.763), Effort Expectancy (β = 0.662), Facilitating Conditions (β = 0.766), and Behavioral Intention (β = 0.706), with CR values ranging from 10.254 to 21.838 (p < 0.05), supporting H2. These results suggest that AI adoption fosters cognitive and psychological readiness for entrepreneurship.

The third objective confirmed the direct positive influence of Entrepreneurial Mindset on Digital Entrepreneurship Intentions (β = 0.921, CR = 15.042, p < 0.05), supporting H3, and underscoring the importance of mindset in digital entrepreneurial behavior.

The fourth objective tested the influence of Generative AI adoption on Business Model Innovation. All four dimensions significantly contributed: Performance Expectancy (β = 0.993, CR = 21.838), Effort Expectancy (β = 0.428, CR = 15.480), Facilitating Conditions (β = 0.870, CR = 7.693), and Behavioral Intention (β = 0.227, CR = 12.308), with p < 0.05 for all, thus supporting H4. This highlights AI's role in enabling innovative, scalable, and adaptive business models.

The fifth objective established a strong positive relationship between Business Model Innovation and Digital Entrepreneurship Intentions (β = 0.536, CR = 21.838, p < 0.05), supporting H5.

The sixth objective tested the mediating role of Entrepreneurial Mindset in the relationship between Generative AI adoption and Digital Entrepreneurship Intentions. Mediation analysis showed partial mediation for all AI adoption dimensions: Performance Expectancy (P = 0.002), Effort Expectancy (P = 0.001), Facilitating Conditions (P = 0.001), and Behavioral Intention (P = 0.001), supporting H6.

The seventh objective examined the mediating role of Business Model Innovation in the same relationship. Results again revealed partial mediation, with significant mediation effects across all dimensions: Performance Expectancy (P = 0.001), Effort Expectancy (P = 0.001), Facilitating Conditions (P = 0.002), and Behavioral Intention (P = 0.001), thus supporting H7.

Overall, the structural model confirms that Generative AI adoption positively influences students' digital entrepreneurial intentions both directly and indirectly, through the mediating roles of Entrepreneurial Mindset and Business Model Innovation.

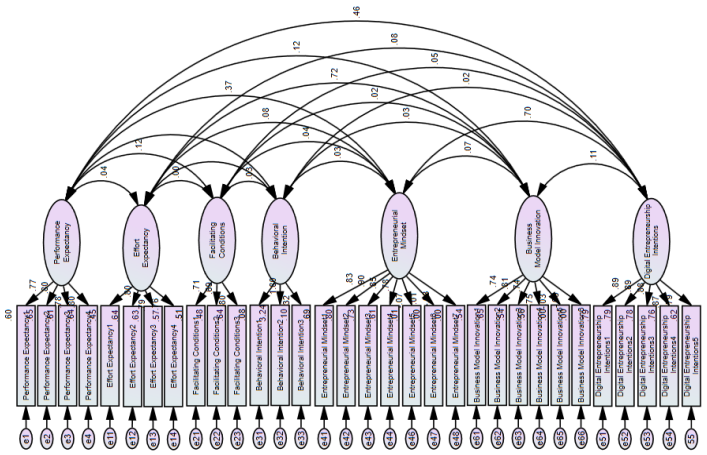

Figure 2: Measurement model – CFA

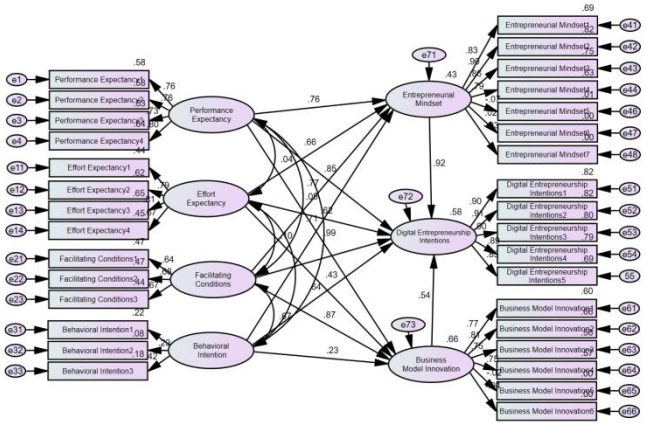

Figure 3: Structural Model

The Structural Model Validity - Result

The results of the structural model using the AMOS software, shows that DF was 443 (it should be more than 0), c2/DF has a value of 2.890, that is less than 3.0 (it should be less than or equal 3.0). The RMSEA was .054 (it should be less than 0.08). The TLI index was .916 which is very close to 1.0 (a value of 1.0 indicates perfect fit). The CFI was .925. All indices are close to a value of 1.0 in CFA, indicating that the measurement models provide good support for the factor structure determined through the CFA.

Direct Effects

The direct relationships between Generative AI adoption dimensions and Digital Entrepreneurship Intentions were all statistically significant, supporting H1 and its sub-hypotheses:

H1.1: Performance Expectancy → Digital Entrepreneurship Intentions (β = 0.850, CR = 15.583, $p < 0.05$)

H1.2: Effort Expectancy → Digital Entrepreneurship Intentions (β = 0.623, CR = 15.104, $p < 0.05$)

H1.3: Facilitating Conditions → Digital Entrepreneurship Intentions (β = 0.278, CR = 6.690, $p < 0.05$)

H1.4: Behavioral Intention → Digital Entrepreneurship Intentions (β = 0.639, CR = 10.009, $p < 0.05$)

Similarly, Generative AI adoption significantly influenced the Entrepreneurial Mindset, supporting H2:

H2.1: Performance Expectancy → Entrepreneurial Mindset (β = 0.763, CR = 10.254, $p < 0.05$)

H2.2: Effort Expectancy → Entrepreneurial Mindset (β = 0.662, CR = 16.608, $p < 0.05$)

H2.3: Facilitating Conditions → Entrepreneurial Mindset (β = 0.766, CR = 15.462, $p < 0.05$)

H2.4: Behavioral Intention → Entrepreneurial Mindset (β = 0.706, CR = 21.838, $p < 0.05$)

The Entrepreneurial Mindset had a strong and significant direct effect on Digital Entrepreneurship Intentions, confirming H3:

H3: Entrepreneurial Mindset → Digital Entrepreneurship Intentions (β = 0.921, CR = 15.042, $p < 0.05$)

In addition, Generative AI adoption significantly influenced Business Model Innovation, supporting H4:

H4.1: Performance Expectancy → Business Model Innovation (β = 0.993, CR = 21.838, $p < 0.05$)

H4.2: Effort Expectancy → Business Model Innovation (β = 0.428, CR = 15.480, $p < 0.05$)

H4.3: Facilitating Conditions → Business Model Innovation (β = 0.870, CR = 7.693, $p < 0.05$)

H4.4: Behavioral Intention → Business Model Innovation (β = 0.227, CR = 12.308, $p < 0.05$)

A significant direct relationship was also found between Business Model Innovation and Digital Entrepreneurship Intentions, supporting H5:

H5: Business Model Innovation → Digital Entrepreneurship Intentions (β = 0.536, CR = 21.838, $p < 0.05$)

Indirect (Mediating) Effects

Mediation analysis was conducted using the bootstrapping method, following the steps outlined by Baron and Kenny (1986). Results confirmed partial mediation effects for both Entrepreneurial Mindset and Business Model Innovation in the relationship between Generative AI adoption and Digital Entrepreneurship Intentions.

Entrepreneurial Mindset as a Mediator (H6):

H6.1: Performance Expectancy → Entrepreneurial Mindset → Digital Entrepreneurship Intentions ($P = 0.002$, $p < 0.05$)

H6.2: Effort Expectancy → Entrepreneurial Mindset → Digital Entrepreneurship Intentions ($P = 0.001$, $p < 0.05$)

H6.3: Facilitating Conditions → Entrepreneurial Mindset → Digital Entrepreneurship Intentions ($P = 0.001$, $p < 0.05$)

H6.4: Behavioral Intention → Entrepreneurial Mindset → Digital Entrepreneurship Intentions ($P = 0.001$, $p < 0.05$)

All mediation effects were significant, confirming **H6**.

Business Model Innovation as a Mediator (H7):

H7.1: Performance Expectancy → Business Model Innovation → Digital Entrepreneurship Intentions ($P = 0.001$, $p < 0.05$)

H7.2: Effort Expectancy → Business Model Innovation → Digital Entrepreneurship Intentions ($P = 0.001$, $p < 0.05$)

H7.3: Facilitating Conditions → Business Model Innovation → Digital Entrepreneurship Intentions ($P = 0.002$, $p < 0.05$)

H7.4: Behavioral Intention → Business Model Innovation → Digital Entrepreneurship Intentions ($P = 0.001$, $p < 0.05$)

All results support **H7**, demonstrating that Business Model Innovation partially mediates the relationship between Generative AI adoption and entrepreneurial intentions.

DISCUSSION

This study provides empirical evidence on the pivotal role of Generative AI adoption in shaping Digital Entrepreneurship Intentions (DEI) among Egyptian university students, with a specific focus on the mediating effects of Entrepreneurial Mindset (EM) and Business Model Innovation (BMI). The discussion is structured around three core themes: the direct impact of AI adoption on entrepreneurial intentions, the mediating mechanisms through mindset and business model innovation, and the broader implications for entrepreneurship ecosystems and policy.

Direct Impact of Generative AI Adoption on Digital Entrepreneurship Intentions

The findings confirm that all four dimensions of AI adoption—Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Behavioral Intention—significantly and positively influence students' digital entrepreneurship intentions. These results align with the Unified Theory of Acceptance and Use of Technology (UTAUT), supporting the idea that perceived usefulness and ease of use drive technology acceptance and, by extension, entrepreneurial behavior.

In the entrepreneurial context, Generative AI facilitates opportunity recognition, accelerates task execution, and enhances operational efficiency, thereby lowering entry barriers for aspiring entrepreneurs. The significant role of Facilitating Conditions also highlights the need for institutional and infrastructural support to encourage AI-driven entrepreneurship.

These findings are consistent with prior research emphasizing how AI reduces market entry costs, automates decision-making, and increases business scalability, making it a powerful enabler for student entrepreneurs in emerging economies such as Egypt.

Mediating Roles of Entrepreneurial Mindset and Business Model Innovation

A major contribution of this study lies in uncovering the partial mediating roles of Entrepreneurial Mindset and Business Model Innovation in the AI–entrepreneurial intention relationship.

Entrepreneurial Mindset as a Mediator:

The study demonstrates that AI adoption contributes to cognitive transformation, fostering attributes such as opportunity recognition, risk tolerance, and innovative thinking—core elements of an entrepreneurial mindset. This is particularly valuable in uncertain environments like Egypt, where AI tools help students navigate challenges by offering data-driven insights and adaptive decision-making capabilities. These results align with **Effectuation Theory**, highlighting how AI empowers students to leverage available means and iteratively develop business ideas.

Business Model Innovation as a Mediator:

AI adoption also facilitates the creation of novel and scalable business models. Through automation and intelligent analytics, students can explore innovative revenue models, enhance customer engagement, and optimize operational costs. This supports the **Value Creation Framework** (Amit & Zott, 2012), affirming that business model innovation is a critical channel through which digital technologies drive entrepreneurship.

These mediating effects illustrate the mechanisms by which AI adoption translates into entrepreneurial behavior—not merely through technology use, but by shaping entrepreneurial cognition and strategic business design.

Implications for Entrepreneurial Ecosystems and Policy

The findings have several implications for educational institutions, policymakers, and the broader entrepreneurial ecosystem:

Infrastructure and Ecosystem Support:

The importance of facilitating conditions underscores the need for digital infrastructure, AI training, and university support to nurture student entrepreneurship.

Entrepreneurship Education Reform:

Curricula should incorporate AI-focused entrepreneurship programs that enhance not only technical skills but also cognitive readiness through modules on opportunity identification, innovation, and strategic thinking.

Policy Interventions:

To encourage AI-driven startups, policymakers should develop supportive regulatory environments, including tax incentives, simplified registration processes, and innovation-friendly frameworks such as regulatory sandboxes.

CONCLUSION

This study provides comprehensive empirical evidence on the influence of Generative AI adoption on Digital Entrepreneurship Intentions (DEI) among Egyptian university students, with Entrepreneurial Mindset (EM) and Business Model Innovation (BMI) playing significant mediating roles. The findings emphasize that when students perceive AI as useful, easy to use,

and supported by their environment, they are more inclined to explore digital entrepreneurial opportunities. Furthermore, AI adoption fosters not only a cognitive shift towards entrepreneurial thinking but also structural innovation in the form of AI-enhanced business models. These insights offer actionable recommendations for educators, policymakers, incubators, and entrepreneurs, highlighting the need for integrated AI-entrepreneurship education, accessible AI tools, inclusive startup support, and ethical AI practices.

Despite the study's contributions, several limitations provide avenues for future research. The cross-sectional design, self-reported data, and focus on a specific population suggest the need for broader, longitudinal, and multi-method investigations. Future studies should explore additional contextual factors such as policy frameworks, AI ethics, and access to funding, while also examining how entrepreneurs navigate challenges related to AI bias and data privacy. As AI continues to reshape the entrepreneurial landscape, key real-life questions emerge: *How can universities better prepare students to responsibly and creatively apply AI in business? What regulatory and infrastructural support is needed to scale AI-driven startups sustainably in emerging economies like Egypt?* Addressing these questions will be crucial in building inclusive, innovation-driven entrepreneurial ecosystems capable of harnessing the full potential of Generative AI.

Recommendations

Based on the findings of this study, several strategic recommendations are proposed to enhance the role of Generative Artificial Intelligence (AI) in fostering digital entrepreneurship among Egyptian university students. These recommendations target key stakeholders, including educational institutions, policymakers, and entrepreneurial support organizations:

Integrate Generative AI into University Curricula

Universities should embed Generative AI tools (e.g., ChatGPT, image generators, no-code platforms) into entrepreneurship and innovation courses. This will equip students with hands-on experience in applying AI technologies to identify opportunities, test ideas, and build digital business models.

Promote Entrepreneurial Mindset Development through Technology

Programs that combine AI training with entrepreneurship education should be expanded. These programs should emphasize creativity, adaptability, risk-taking, and opportunity recognition—traits that were shown to mediate the relationship between AI adoption and entrepreneurial intentions.

Support Student-Led Digital Ventures through Incubation and Funding

Higher education institutions and entrepreneurship centers should offer AI-focused incubation programs, mentorship, and seed funding to support student startups that leverage Generative AI technologies in innovative ways.

Foster Business Model Innovation Workshops and Hackathons

Practical workshops and innovation hackathons centered on digital business model creation using AI can encourage students to think strategically about value creation, delivery, and capture in a technology-driven environment.

Enhance Digital and AI Literacy for Broader Inclusion

To ensure that all students—regardless of their academic background—can benefit from Generative AI, universities should implement cross-disciplinary digital literacy programs that build foundational understanding and confidence in using AI tools.

Collaborate with Industry Partners for Real-World Exposure

Academic institutions should partner with AI-driven companies and digital entrepreneurs to provide case studies, guest lectures, and internships. This will bridge the gap between theoretical knowledge and practical application in the digital economy.

Encourage Policy Support for AI-Driven Entrepreneurship

Policymakers should consider creating supportive regulations and funding schemes that enable safe, ethical, and scalable experimentation with AI-driven entrepreneurship among youth. This includes investment in infrastructure, access to cloud computing, and open data platforms.

FUTURE STUDIES

This study provides a foundation for understanding the relationship between Generative AI adoption and digital entrepreneurship intentions; however, several avenues remain open for future research. Longitudinal studies are recommended to track how students' AI engagement and entrepreneurial behavior evolve over time. Comparative research across different cultural and economic contexts could uncover variations in how Generative AI influences entrepreneurship globally. Additionally, exploring other mediating or moderating variables—such as digital self-efficacy, innovation climate, or institutional support—could offer deeper insights into the mechanisms at play. Qualitative or mixed-methods approaches may also enrich the findings by capturing students' lived experiences and challenges in using AI for venture creation. Future research could investigate the specific impact of various Generative AI tools (e.g., ChatGPT, Midjourney) and assess their practical implications in entrepreneurial settings. Moreover, evaluating institutional and policy interventions designed to support AI-driven entrepreneurship among youth would help inform national strategies. Finally, as AI becomes more integrated into business creation, future studies should examine the ethical and societal implications of its use, including data privacy, bias, and responsible innovation practices.

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Authors' Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Mohamed Abdelsalam, Hany M. Ayad and Kesmat M. Abdelaziz. The first draft of the manuscript was written by Alaa Moustafa and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Data Availability Statement

The data supporting the results of this article are available from the corresponding author, Alaa Moustafa upon reasonable request by e-mail.

Declarations

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