EJSIT
European Journal of Science, Innovation and Technology
ISSN: 2786-4936
www.ejsit-journal.com
Volume 6 | Number 3 | 2026

# Digital Entrepreneurship by University Students: Insights from a Systematic Literature Review

Wiam MOUKRIM and Aaziz OULMOUDNE
LAREFMO (Laboratory of Research in Economics, Finance, Management and Organizations), Faculty of Legal, Economic and Social Sciences, UIZ
Agadir-Morocco

## ABSTRACT

This paper aims to identify the key challenges and research trends related to digital entrepreneurship within the context of university students through a systematic literature review. Specifically, it seeks to explore the barriers, opportunities, and thematic orientations associated with students' engagement in digital entrepreneurial activities.

To achieve this objective, a systematic literature review was conducted using the Scopus database, resulting in a final sample of 119 peer-reviewed articles. In addition, bibliometric and text mining analyses were performed using VOSviewer software (version 1.6.20) to identify thematic structures and research patterns within the selected literature.

The findings reveal four major research clusters: (1) behavioral and psychological determinants of entrepreneurial intention, (2) entrepreneurship education and learning processes, (3) strategic opportunities and digital technologies, and (4) creativity, innovation, and self-perception. These clusters highlight the multidimensional nature of digital entrepreneurship among university students.

This study contributes to the literature by providing a structured overview of existing research, identifying key gaps, and proposing directions for future research and policy development.

**Keywords:** Digital entrepreneurship; University students; Entrepreneurship challenges; Systematic literature review; Bibliometric analysis; Higher education

## I. INTRODUCTION

Universities play a crucial role in regional development as centers of knowledge creation, innovation, and human capital formation. In recent years, the rapid advancement of digital technologies has significantly transformed the economic landscape, reshaping traditional business models and creating new entrepreneurial opportunities. In this context, digital entrepreneurship has emerged as a key driver of innovation and economic growth.

Digital entrepreneurship refers to the creation of new ventures and value through the use of digital technologies (Nambisan, 2017). It enables individuals to develop scalable and flexible business models, access global markets, and innovate rapidly. University students, in particular, represent a strategic population for the development of digital entrepreneurship due to their exposure to knowledge, technology, and innovation ecosystems.

Digital technologies such as social media platforms, artificial intelligence, e-commerce systems, and cloud computing have transformed the entrepreneurial environment by facilitating communication, reducing operational barriers, and increasing access to international markets. However, despite these opportunities, university students continue to face numerous obstacles when engaging in digital entrepreneurship.

Previous studies have highlighted several challenges, including limited access to financial resources, insufficient technical knowledge, lack of entrepreneurial support, and psychological barriers such as fear of failure and low entrepreneurial self-confidence (Bosma et al., 2020).

Despite the increasing academic interest in digital entrepreneurship, important questions remain unresolved regarding the determinants of success, the role of higher education institutions, and the strategic capabilities required to support student entrepreneurs.

This study therefore aims to provide a comprehensive overview of the existing literature on digital entrepreneurship in higher education by identifying key themes, research trends, and research gaps. To achieve this objective, a systematic literature review combined with bibliometric and text mining analyses was conducted.

The article is structured as follows. The second section presents the literature review related to entrepreneurship and digital entrepreneurship. The third section explains the methodological approach adopted in this study. The fourth section presents and discusses the findings of the bibliometric analysis. Finally, the last section concludes the study by outlining limitations and future research directions.

## II. LITERATURE REVIEW

As industrialization began to take shape in the early 1840s, people and organizations began to establish new kinds of businesses. This gave rise to the term "entrepreneurship," which was later adopted in business terminology in the 1980s (Stevenson, 1983). As a theoretical concept, entrepreneurship can be defined as the process by which new organizations are created. An entrepreneur is the person who founded a new company (Gartner, 1989). In other words, an entrepreneur is a person who develops a company plan or market niche to meet their requirements and wants (Garfield, 1986; Gartner, 1985). Many people want to start their own business because they want freedom, independence, and wealth, all of which can be attained through entrepreneurship. Due to the qualities of invention and adaptation they see in their smaller and frequently more successful competitors, large corporations want to become more "entrepreneurial" themselves (Stevenson, 1983).

Digitalization is not a new phenomenon in the business world. Thanks to the use of digital technology, including the Internet, she has turned traditional businesses into digital ones during the past ten years. This gave rise to the concept of "digital entrepreneurship," which is described as a "subcategory of entrepreneurship in which some or all of the physical components of a traditional organization have been digitalized." Despite being perceived as a recent phenomenon, it has existed since the beginning of the 1990s (Hull et al., 2007).

The majority of organizational challenges across various segments cannot be solved just by digitization. However, digital entrepreneurship enables other businesses to overcome these obstacles more quickly and become more resilient (Khlystova et al., 2023).

As used in previous works (Hassan, Rahman & Paul, 2023 ; Mariani M., 2019 ; Satalkina & Steiner, 2020 ; Zaheer et al., 2019 ; Kraus et al., 2019 ;), we have adopted the systematic literature review (SLR) methodology, used in a variety of studies on digital entrepreneurship to offer insights into the latest developments in this field (Zaheer et al., 2019).

Some studies have compiled the literature on digital entrepreneurship in order to provide an updated summary of the main topics and approaches covered in the relevant research. Based on the findings of these systematic reviews, researchers have proposed research cards that highlight future opportunities for academics working in this field (Kraus et al., 2019; Nambisan et al., 2019; von Briel, Davidsson & Recker, 2021). Using a structured approach, another study identified the primary categories of digital entrepreneurship and distinguished it from other economic activities (Satalkina & Steiner, 2020; Elia, Margherita & Passiante, 2020).

Understanding the nature of the entrepreneurial landscape and the barriers it faces has been the primary goal of most ongoing research studies related to entrepreneurship (Nambisan, 2017; McKelvie et al., 2011). Despite earlier studies, current research seeks to emphasize the significance of digital entrepreneurship, often neglecting the terminology and conceptual frameworks of this field.

This study aims to provide a systematic review of the literature on digital entrepreneurship specifically within the context of university students. When comparing the key characteristics of existing reviews, we find that most prior studies (Satalkina & Steiner, 2020; Zaheer et al., 2019; Kraus et al., 2019) did not focus on education or students. This study distinguishes itself by focusing on the experiences and obstacles encountered by university students in their entrepreneurial journeys by using the Scopus database as the sole source of relevant articles.

In summary, while the evolution of entrepreneurship and the emergence of digital entrepreneurship have been widely studied, there remains a gap in the literature regarding how these dynamics apply specifically to university students. Prior systematic reviews have rarely addressed this population, despite the growing role of higher education institutions in fostering entrepreneurial mindsets. To address this gap, the present study conducts a focused systematic literature review centered on digital entrepreneurship in educational settings, particularly among university students. By leveraging the Scopus database and employing bibliometric and text mining techniques, this research aims to identify the major themes, challenges, and research trends that shape this field.

The remainder of this paper is organized as follows: Section 3 describes the methodological approach, including the data extraction process and preliminary results from the bibliometric analysis. Section 4 presents and discusses the key findings. Finally, Section 5 concludes with a summary of insights and future research directions.

## III. MATERIALS AND METHODS

To achieve the objectives of this study, we adopted the PRISMA methodology (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which is widely recognized for structuring and presenting systematic reviews in a transparent and reproducible manner (Moher et al., 2009). This approach involves four key stages: identification, screening, eligibility, and inclusion. Its primary advantage lies in ensuring that the literature review process is rigorous, systematic, and minimizes bias, thereby providing a clear audit trail for study selection (Page et al., 2021).

In addition, this study applies advanced bibliometric and text mining techniques through the VOSviewer software version 1.6.20 (Van Eck & Waltman, 2010) to analyze and visualize patterns in the selected body of literature. This methodological approach allows for the identification of emerging trends, recurring themes, and key methodological orientations in research on digital entrepreneurship, particularly within the context of students and education. It provides a structured lens through which to explore the challenges and opportunities faced by student entrepreneurs while proposing future research directions and targeted questions (Future Research Questions, or FRQs) to guide further inquiry. By bridging the academic exploration of digital entrepreneurship with its practical implications in educational settings, this study positions itself as a critical resource for understanding what has been accomplished, what is currently being explored, and what remains to be investigated in fostering digital entrepreneurial skills and innovation among students.

To identify relevant articles, we developed a detailed search matrix combining carefully selected keywords and subject-area filters. The search strategy focused on terms related to "digital entrepreneurship," "university students," and "higher education," using the Scopus database as the sole source due to its comprehensive indexing of peer-reviewed literature and its suitability for bibliometric analysis (Falagas et al., 2008). The results obtained from the database were then processed through the PRISMA flow to ensure transparency in the inclusion and exclusion process.

**3-1. Data Extraction**

To ensure a systematic and transparent selection of relevant literature, this study follows the PRISMA methodology (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), a widely adopted framework for conducting rigorous literature reviews (Moher et al., 2009; Page et al., 2021). The process consists of four main stages: **identification**, **screening**, **eligibility**, and **inclusion**.

Each of these steps was applied as follows:

- **Identification**:

A comprehensive search strategy was developed using a keyword matrix designed to capture relevant studies on digital entrepreneurship in higher education. The search was conducted in the **Scopus** database, known for its wide coverage of peer-reviewed literature and suitability for bibliometric analysis (Falagas et al., 2008).

The following keyword matrix was used to construct the search strategy:

("Digital Entrepreneurship" OR "Online Entrepreneurship" OR "E-Entrepreneurship" OR "Internet Entrepreneurship" OR "Technology-based Entrepreneurship" OR "Digital Startups" OR "Tech Startups" OR "Digital Business Models" OR "Innovation in Digital Business") AND ("students" OR "University Students" OR "Higher Education Students" OR "Undergraduate Students" OR "Graduate Students")

Additional filters were applied to refine the results:

- **Search Fields**: TITLE-ABS-KEY* (Authors, Year, Title, Abstract, Keywords),
- **Subject Areas**: Business, Management and Accounting (BUSI); Social Sciences (SOCI); Computer Science (COMP); Economics, Econometrics and Finance (ECON); Engineering (ENGI); and Decision Sciences (DECI),
- **Document Type**: Articles only (DOCTYPE: “ar”),
- **Language**: English (LANGUAGE: "English").

*TITLE-ABS-KEY:

( ("Digital Entrepreneurship" OR "Online Entrepreneurship" OR "E-Entrepreneurship" OR "Internet Entrepreneurship" OR "Technology-based Entrepreneurship" OR "Digital Startups" OR "Tech Startups" OR "Digital Business Models" OR "Innovation in Digital Business" ) AND ( students OR "University Students" OR "Higher Education Students" OR "Undergraduate Students" OR "Graduate Students" ) ) AND ( LIMIT-TO ( SUBJAREA , "BUSI" ) OR LIMIT-TO ( SUBJAREA , "SOCI" ) OR LIMIT-TO ( SUBJAREA , "COMP" ) OR LIMIT-TO ( SUBJAREA , "ECON" ) OR LIMIT-TO ( SUBJAREA , "ENGI" ) OR LIMIT-TO ( SUBJAREA , "DECI" ) ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( LANGUAGE , "English") ).

This search yielded an initial dataset of **449 documents** published until November 2024.

- **Screening**:

To refine the dataset, additional filters were applied based on subject areas relevant to the topic. The distribution of articles by discipline was as follows:

- ✓ **Business, Management, and Accounting**: 121 articles
- ✓ **Social Sciences**: 112 articles
- ✓ **Computer Science**: 80 articles
- ✓ **Economics, Econometrics, and Finance**: 64 articles
- ✓ **Engineering**: 47 articles
- ✓ **Decision Sciences**: 25 articles

- **Eligibility:**

The results were then limited to documents meeting the following inclusion criteria:

1. Journal articles only,
2. Written in English,

3. Directly related to digital entrepreneurship within the context of students or higher education.

After applying these criteria and reviewing titles and abstracts, 330 records were removed due to duplication, irrelevance, or non-compliance with the inclusion parameters, and **119 relevant articles** were selected for the Systematic Review.

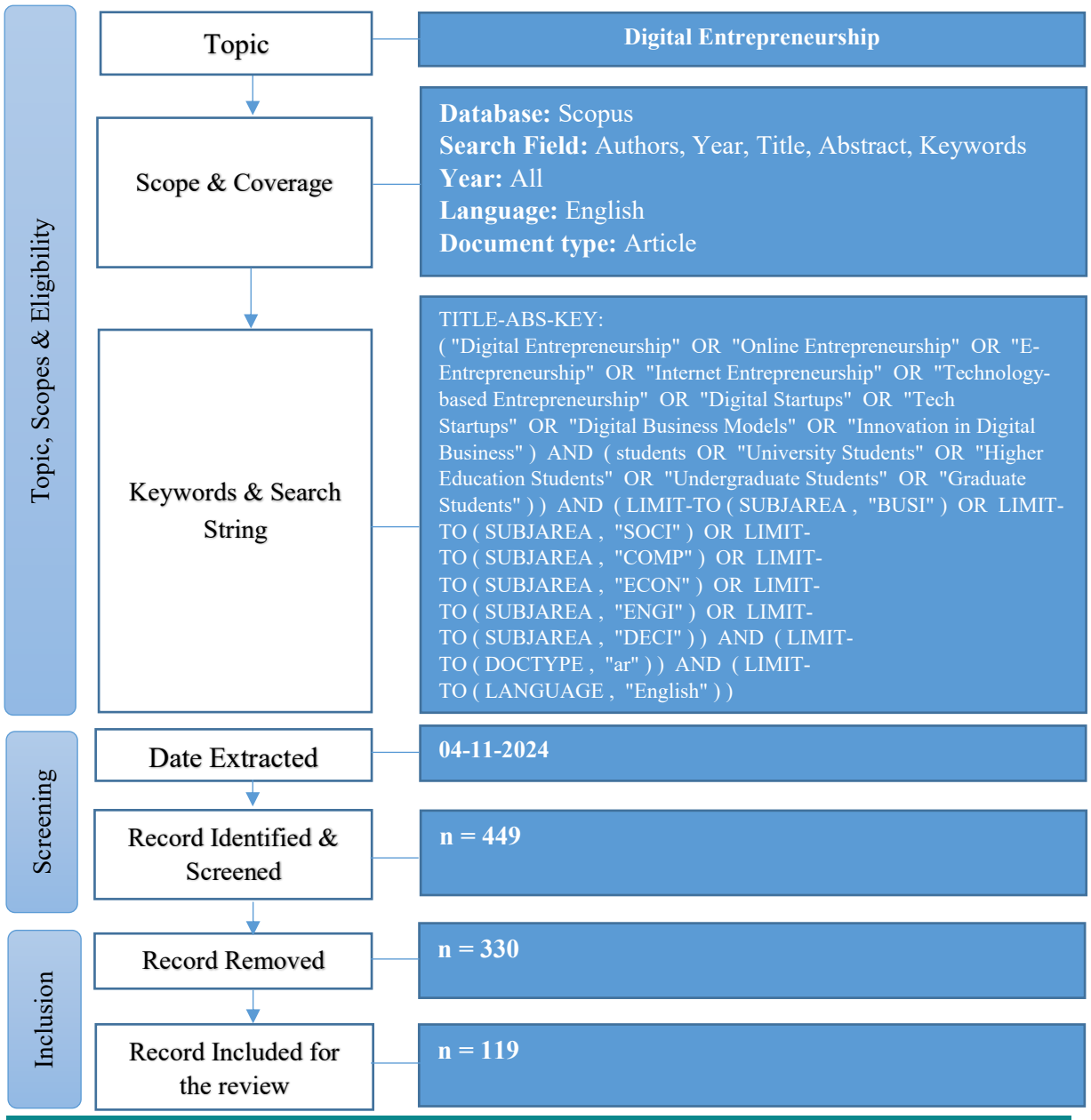
- **Inclusion:**

The final set of articles was validated for relevance and quality, then exported in BibTeX and CSV formats. These were later processed through **VOSviewer** software version 1.6.20 for bibliometric mapping and text mining. The classification included article titles, authors, publication years, and keywords, forming the foundation for the analysis presented in the following sections.

By adhering to this structured process, the study ensures methodological transparency and builds a solid foundation for identifying key research themes, trends, and gaps in the field of digital entrepreneurship among university students.

### 3-2. Results

**Table 1: Systematic Analysis Process: Digital Entrepreneurial**

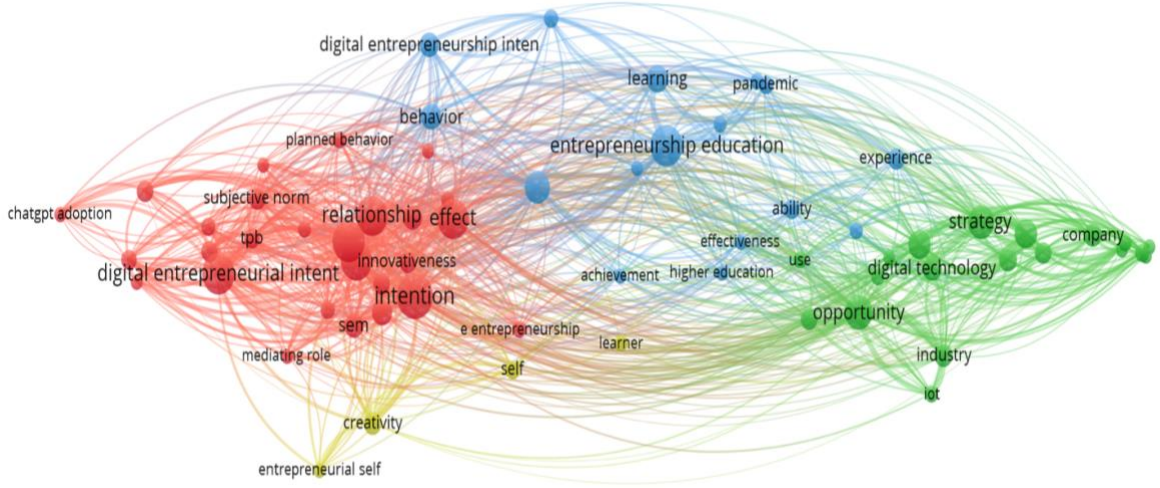


## IV. RESULTS AND DISCUSSION

To gain deeper insights into the conceptual landscape of digital entrepreneurship within the context of higher education, we conducted a keyword co-occurrence analysis using VOSviewer version 1.6.20. This method enabled the visualization of semantic relationships between frequently used keywords in the selected body of literature. The resulting bibliometric map revealed four major thematic clusters, each representing a distinct research focus.

These clusters reflect how scholars have approached the study of digital entrepreneurship among university students, ranging from psychological and behavioral determinants to institutional educational practices, strategic and technological dimensions, and individual-level traits such as creativity and self-perception. Each cluster is identified by a unique color and constellation of interconnected keywords, providing a structured view of the prevailing discourse in the field.

In the sections that follow, we present a detailed interpretation of each cluster. For each, we highlight the central themes, the key research issues addressed, and the underlying challenges or gaps evident in the literature. This thematic breakdown offers a comprehensive understanding of how digital entrepreneurship is conceptualized in academic research and helps uncover emerging areas for further investigation.




**Cluster 1: Red Cluster - Digital Entrepreneurial Intent and Behavioral Aspects**

- **Core Themes:** This cluster focuses on **behavioral and psychological factors** influencing digital entrepreneurial intent among students. Keywords such as "intention," "relationship effect," "behavior," "subjective norm," and "tpb" (Theory of Planned Behavior) suggest that the cluster emphasizes how personal attitudes, perceptions, and behavioral theories impact students' desire to pursue digital entrepreneurship.
- **Key Topics and Problem Areas:** This cluster highlights problematics related to students' **motivation and readiness** to engage in digital entrepreneurship. The Theory of Planned Behavior (TPB) and related behavioral theories seem prominent, indicating that students' digital entrepreneurial intent is shaped by perceived behavioral control, subjective norms, and attitudes.
- **Interpretation:** The red cluster suggests that **psychological factors and motivational drivers** play a significant role in influencing students' digital entrepreneurship. Studies in this area might explore barriers like lack of confidence, perceived difficulty, and social expectations in fostering digital entrepreneurship.

**Cluster 2: Blue Cluster - Education and Learning in Digital Entrepreneurship**

- **Core Themes:** This cluster is centered around **entrepreneurship education, learning, and self-development** in digital entrepreneurship for students. Keywords such as "entrepreneurship education," "learning," "pandemic," and "ability" indicate that this cluster emphasizes the role of education, especially under the influence of the COVID-19 pandemic, in shaping students' entrepreneurial skills.
- **Key Topics and Problem Areas:** The focus here is on **curriculum and pedagogy**, specifically how higher education institutions can better support digital entrepreneurship learning. The pandemic's inclusion hints at a potential shift in educational approaches, such as the integration of online and hybrid models, which may either facilitate or complicate students' journey into digital entrepreneurship.
- **Interpretation:** The blue cluster underscores the importance of **entrepreneurial education as a foundation** for digital entrepreneurship. The pandemic has accelerated the need for educational systems to adapt, possibly leading to a gap between what is taught and the digital entrepreneurial skills needed in a rapidly evolving digital economy.

**Cluster 3: Green Cluster - Opportunities and Strategic Perspectives in Digital Entrepreneurship**

- **Core Themes:** This cluster is focused on **strategic thinking and opportunities** related to digital entrepreneurship. Keywords such as "opportunity," "strategy," "digital technology," and "company" highlight a strategic and technological outlook on digital entrepreneurship.
- **Key Topics and Problem Areas:** The green cluster deals with the **identification and exploitation of digital opportunities** and the strategic use of digital technologies in entrepreneurship. It points to the challenges students might face in recognizing digital opportunities or leveraging technology effectively for competitive advantage.
- **Interpretation:** The green cluster suggests that **opportunity identification and strategic capability** are critical for students aspiring to succeed in digital entrepreneurship. Problem areas could include difficulties in recognizing valuable opportunities or in developing strategic insights and technological skills necessary for a digital business environment.

**Cluster 4: Yellow Cluster - Creativity, Innovation, and the Role of Self-perception**

- **Core Themes:** This cluster is related to **innovation, creativity, and self-perception** in digital entrepreneurship. Keywords like "creativity," "entrepreneurial self," "self," and "innovativeness" indicate that this cluster centers around personal attributes and creativity as critical factors for success in digital ventures.
- **Key Topics and Problem Areas:** This cluster reflects the **importance of self-belief, creativity, and innovation** in fostering an entrepreneurial mindset. The emphasis on "self" and "creativity" suggests that students may face challenges in building a strong entrepreneurial identity and cultivating the creativity necessary for innovative digital business models.
- **Interpretation:** The yellow cluster highlights **personal attributes like creativity and self-confidence** as foundational for digital entrepreneurship. Problematic areas here could involve students' self-perception and their confidence in generating innovative ideas, as well as the institutional support for nurturing these traits.

In summary, the keyword co-occurrence analysis has revealed four distinct but interrelated research clusters, each contributing to a more comprehensive understanding of digital entrepreneurship in higher education. The red cluster underscores the importance of behavioral and psychological factors that influence students' entrepreneurial intent, as highlighted by models such as the Theory of Planned Behavior (Ajzen, 1991; Liñán & Chen, 2009). The blue cluster emphasizes the foundational role of education and the evolving

pedagogical strategies required to nurture digital entrepreneurial skills, particularly in response to shifts brought on by the COVID-19 pandemic (Maritz et al., 2020; Nabi et al., 2017). The green cluster brings attention to the strategic use of digital technologies and opportunity recognition as core elements of digital entrepreneurship (Nambisan, 2017; Kraus et al., 2019). Finally, the yellow cluster highlights the critical influence of creativity, innovation, and self-perception in shaping entrepreneurial identity and innovative capacity (Zampetakis, 2008; Obschonka et al., 2012).

Taken together, these clusters reflect the multidimensional nature of digital entrepreneurship among students. They demonstrate that fostering digital entrepreneurship requires not only technical and strategic capabilities, but also personal motivation, educational support, and a nurturing environment for creativity and self-efficacy. This analysis provides a valuable foundation for identifying current research trends and formulating targeted directions for future inquiry, as outlined in the next section.

## V. CONCLUSIONS, LIMITATIONS AND FUTURE RESEARCH

This article has provided a structured bibliometric analysis of the literature on digital entrepreneurship (DE) in higher education, revealing four major thematic clusters: behavioral intent, educational frameworks, strategic opportunity recognition, and the role of creativity and self-perception. Together, these clusters reflect the multifaceted nature of digital entrepreneurship among university students and highlight several gaps that require further scholarly exploration (Nambisan, 2017; Kraus et al., 2019; Nabi et al., 2017).

Based on these findings, we propose the following **Future Research Questions (FRQs)** to guide upcoming academic investigations and help shape more responsive educational and policy interventions:

1. **Behavioral and Motivational Dimensions**
   - What are the key psychological and social barriers that prevent students from translating digital entrepreneurial intent into action?
   - How do perceived behavioral control and subjective norms influence digital entrepreneurship differently across cultural or institutional contexts? (Ajzen, 1991; Liñán & Chen, 2009)
2. **Entrepreneurship Education and Pedagogy**
   - How can entrepreneurship education be redesigned to better align with the dynamic demands of the digital economy?
   - What pedagogical models and learning environments most effectively foster digital entrepreneurial skills among students? (Nabi et al., 2017; Maritz et al., 2020)
3. **Strategic Thinking and Opportunity Recognition**
   - How do students identify and evaluate digital entrepreneurial opportunities?
   - What digital tools and strategic frameworks can enhance students' ability to transform ideas into viable digital ventures? (Nambisan, 2017; Kraus et al., 2019)
4. **Creativity, Identity, and Self-Perception**
   - How does entrepreneurial self-perception influence students' engagement in digital innovation processes?
   - What institutional mechanisms best support the development of creativity and self-efficacy in student entrepreneurs? (Zampetakis, 2008; Obschonka et al., 2012)

These research questions highlight theoretical gaps in the current literature while proposing actionable directions for advancing both academic inquiry and institutional practice. They encourage a holistic perspective that considers cognitive, pedagogical, strategic, and personal dimensions of digital entrepreneurship.

In conclusion, this article contributes to the ongoing efforts to map and understand the evolving field of digital entrepreneurship in higher education. By identifying dominant themes,

underexplored areas, and future research directions, it provides a solid foundation for scholars, educators, and policymakers seeking to foster the next generation of digital entrepreneurs.

## REFERENCES

Abaddi, S. (2024). GPT revolution and digital entrepreneurial intentions. Journal of Entrepreneurship in Emerging Economies, 16(6), 1903-1930. https://doi.org/10.1108/JEEE-07-2023-0260

Ahamat, A. (2023). Online entrepreneurship learning: a case study of a technical public university. International Journal of Technology Enhanced Learning, 15(2), 105-122. https://doi.org/10.1504/IJTEL.2023.130088

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Akhter, A., Islam, K. A., Karim, M. M., & Latif, W. B. (2022). Examining determinants of digital entrepreneurial intention: A case of graduate students. Problems and perspectives in Management, 20(3), 153. https://doi.org/10.21511/ppm.20(3).2022.13

Al-Ayed, S. (2024). Effect of digital opportunity recognition on students' digital entrepreneurial intentions and behavior. Problems and Perspectives in Management, 22(1), 673. https://doi.org/10.21511/ppm.22(1).2024.53

Aloulou, W., Ayadi, F., Ramadani, V., & Dana, L. P. (2024). Dreaming digital or chasing new real pathways? Unveiling the determinants shaping Saudi youth's digital entrepreneurial intention. International Journal of Entrepreneurial Behavior & Research, 30(2-3), 709-734. https://doi.org/10.1108/IJEBR-10-2022-0942

Alzahrani, S., & Bhunia, A. K. (2024). A serial mediation model of the relationship between digital entrepreneurial education, alertness, motivation, and intentions. Sustainability, 16(20), 8858. https://doi.org/10.3390/su16208858

Alzamel S. (2021). The moderating role of resource accessibility to the theory of planned behaviour components: A study of e-entrepreneurship intention among saudi women; [Moderatorska rola dostępności zasobów w teorii planowanych komponentów zachowania:Badanie intencji e-przedsiębiorczości wśród kobiet saudyjskich]., 24(1), 30-44. https://doi.org/10.17512/pjms.2021.24.1.02

Alzougool, B. (2024). Predictors of Digital Entrepreneurial Intention in Kuwait. Informing Science, 27. https://doi.org/10.28945/5339

Atuahene-Gima K.; Amuzu J. (2019). Farmcrowdy: digital business model innovation for farming in Nigeria., 9(2), 1-22. https://doi.org/10.1108/EEMCS-03-2019-0065

Batool, H., Rasheed, H., Malik, M. I., & Hussain, S. (2015). Application of partial least square in predicting e-entrepreneurial intention among business students: evidence from Pakistan. Journal of Innovation and Entrepreneurship, 4(1), 6. https://doi.org/10.1186/s13731-015-0019-3

Blankesteijn M.; Bossink B.; van der Sijde P. (2021). Science-based entrepreneurship education as a means for university-industry technology transfer., 17(2), 779-808. https://doi.org/10.1007/s11365-019-00623-3

Bosma, N., Hill, S., Ionescu-Somers, A., Kelley, D., Levie, J., & Tarnawa, A. (2020). Global Entrepreneurship Monitor 2019/2020 Global Report. Global Entrepreneurship Research Association, London Business School. https://www.gemconsortium.org/file/open?fileId=50443

Boyd S.; Ronnie L. (2021). Closed Loop: the art of succession planning., 11(4), 1-25. https://doi.org/10.1108/EEMCS-05-2021-0142

Brodie J.; Osowska R. (2021). Supporting entrepreneurship students' sense of belonging in online virtual spaces., 35(4), 353-359. https://doi.org/10.1177/0950422221999264

Chen, L., & Ifenthaler, D. (2023). Investigating digital entrepreneurship competence in an online practical training program. The International Journal of Management Education, 21(3), 100894. https://doi.org/10.1016/j.ijme.2023.100894

Chiromo S.J.; Khosa R.M.; Kalitanyi V. (2024). Online entrepreneurship teaching and learning approaches: A South African conceptual perspective., 163-180. https://doi.org/10.17159/2520-9868/i93a08

Darmanto, S., Darmawan, D., Ekopriyono, A., & Dhani, A. (2022). Development of digital entrepreneurial intention model in Uncertain Era. Uncertain Supply Chain Management, 10 (3), 1091-1102. https://doi.org/10.5267/j.uscm.2022.7.050

Dubin D.; Xiaoxia W. (2020). Human-computer system design of entrepreneurship education based on artificial intelligence and image feature retrieval., 39(4), 5927-5939. https://doi.org/10.3233/JIFS-189067

Duong C.D. (2024). ChatGPT adoption and digital entrepreneurial intentions: An empirical research based on the theory of planned behaviour., 12(2), 129-142. https://doi.org/10.15678/EBER.2024.120208

Duong C.D.; Le T.T.; Dang N.S.; Do N.D.; Vu A.T. (2024). Unraveling the determinants of digital entrepreneurial intentions: do performance expectancy of artificial intelligence solutions matter?., 31(7), 1327-1356. https://doi.org/10.1108/JSBED-02-2024-0065

Duong C.D.; Nga Ngo T.V.; Thu Nguyen T.P.; Tran N.M.; Pham H.T. (2024). Digital entrepreneurial education and digital entrepreneurial intention: A moderated mediation model., 10. https://doi.org/10.1016/j.ssaho.2024.101178

Elia, G., Margherita, A., & Passiante, G. (2020). Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process. Technological Forecasting and Social Change, 150, 119791. https://doi.org/10.1016/j.techfore.2019.119791

Elnadi, M., & Gheith, M. H. (2023). The role of individual characteristics in shaping digital entrepreneurial intention among university students: Evidence from Saudi Arabia. Thinking Skills and Creativity, 47, 101236. https://doi.org/10.1016/j.tsc.2023.101236

Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and weaknesses. The FASEB Journal, 22(2), 338–342. https://doi.org/10.1096/fj.07-9492LSF

Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation. Academy of Management Review, 10(4), 696–706. https://doi.org/10.5465/amr.1985.4279094

Gartner, W. B. (1989). "Who is an entrepreneur?" Is the wrong question. Entrepreneurship Theory and Practice, 13(4), 47–68. https://doi.org/10.1177/104225878901300406

Garfield, C. A. (1986). Peak performers: The new heroes of American business. William Morrow & Company.

Gillani S.M.A.H.; Senin A.B.A.; Bode J.; Muniba; Gillani S.M.A.H. (2022). Bibliometric Analysis of Digital Entrepreneurial Education and Student Intention; Reviewed and Analyzed by VOSViewer from Google Scholar., 16(13), 48-65. https://doi.org/10.3991/ijim.v16i13.30619

González-Calatayud V.; Prendes-Espinosa M.P.; Solano-Fernández I.M. (2022). Instrument for analysing digital entrepreneurship competence in higher education, 28(1). https://doi.org/10.30827/relieve.v28i1.22831

Hamilton C.; Crawford G.P.; Suuberg E.M. (2005). A technology-based entrepreneurship course., 21(2 PART 1), 239-256.

Hassan, A., Rahman, M., & Paul, J. (2023). Digital entrepreneurship research: A systematic review. Journal of Business Research, 156, 113507. https://doi.org/10.1016/j.jbusres.2022.113507

Herani R.; Pranandari A. (2024). Promote or inhibit? Examining the influence of youth digital advocacy on digital social entrepreneurship., 20(5), 654-677. https://doi.org/10.1108/SEJ-11-2023-0136

Hull, C. E. K., Hung, Y. T. C., Hair, N., Perotti, V., & DeMartino, R. (2007). Taking advantage of digital opportunities: A typology of digital entrepreneurship. International Journal of Networking and Virtual Organisations, 4(3), 290–303. https://doi.org/10.1504/IJNVO.2007.015166

Jami Pour, M., Hosseinzadeh, M., & Moradi, M. (2024). IoT-based entrepreneurial opportunities in smart transportation: a multidimensional framework. International Journal of Entrepreneurial Behavior & Research, 30(2-3), 450-481. https://doi.org/10.1108/IJEBR-06-2022-0574

Khlystova, O., & Kalyuzhnova, Y. (2023). The impact of the creative industries and digitalization on regional resilience and productive entrepreneurship. The Journal of Technology Transfer, 48(5), 1654–1695. https://doi.org/10.1007/s10961-023-10020-2

Kollmann, T. (2006). What is e-entrepreneurship? Fundamentals of company founding in the net economy. International Journal of Technology Management, 33(4), 322–340. https://doi.org/10.1504/IJTM.2006.009247

Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2019). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. International Journal of Entrepreneurial Behavior & Research, 25(2), 353–375. https://doi.org/10.1108/IJEBR-06-2018-0425

Li S.; Bu Y.; Zhang Z.; Huang Y. (2024). Digital entrepreneurship intention and digital entrepreneurship behavior: the mediating role of managing learning and entrepreneurship education., 66(2-3), 195-212. https://doi.org/10.1108/ET-05-2023-0176

Liguori E.W.; Winkler C.; Zane L.J.; Muldoon J.; Winkel D. (2021). COVID-19 and necessity-based online entrepreneurship education at US community colleges., 28(6), 821-830. https://doi.org/10.1108/JSBED-09-2020-0340

Liñán, F., & Chen, Y.-W. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. Entrepreneurship Theory and Practice, 33(3), 593–617. https://doi.org/10.1111/j.1540-6520.2009.00318.x

Malik A.; Onyema E.M.; Dalal S.; Lilhore U.K.; Anand D.; Sharma A.; Simaiya S. (2023). Forecasting students' adaptability in online entrepreneurship education using modified ensemble machine learning model., 19. https://doi.org/10.1016/j.array.2023.100303

Mariani M. M., & Borghi, M. (2019). Industry 4.0: A bibliometric review of its managerial intellectual structure and potential evolution in the service industries. Technological Forecasting and Social Change, 149, 119752. https://doi.org/10.1016/j.techfore.2019.119752

Marzo-Navarro M.; Berné-Manero C. (2023). Analysing cross-cutting competencies learning in an online entrepreneurship context., 28(5), 5551-5565. https://doi.org/10.1007/s10639-022-11359-z

McGowan P.; Cooper S. (2012). Taking technological opportunities to the market: The role of university-based business plan competitions in supporting high technology commercialisation., 9, 23-37. https://doi.org/10.1108/s1876-0228(2012)0000009005

McKelvie, A., Haynie, J. M., & Gustavsson, V. (2011). Unpacking the uncertainty construct: Implications for entrepreneurial action. Journal of Business Venturing, 26(3), 273–292. https://doi.org/10.1016/j.jbusvent.2009.10.004

Millman C.; Li Z.; Matlay H.; Wong W. (2010). Entrepreneurship education and students' internet entrepreneurship intentions: Evidence from Chinese HEIs., 17(4), 569-590. https://doi.org/10.1108/14626001011088732

Millman C.; Wong W.-C.; Li Z.; Matlay H. (2009). Educating Students for E-Entrepreneurship in the UK, the USA and China., 23(3), 243-252. https://doi.org/10.5367/000000009788640224

Mir A.A.; Hassan S.; Khan S.J. (2023). Understanding digital entrepreneurial intentions: A capital theory perspective., 18(12), 6165-6191. https://doi.org/10.1108/IJOEM-05-2021-0687

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. PLoS Medicine, 6(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Muafi M.; Syafri W.; Prabowo H.; Nur S.A. (2021). Digital Entrepreneurship in Indonesia: A Human Capital Perspective., 8(3), 351-359. https://doi.org/10.13106/jafeb.2021.vol8.no3.0351

Nabi, G., Liñán, F., Fayolle, A., Krueger, N., & Walmsley, A. (2017). The impact of entrepreneurship education in higher education: A systematic review and research agenda. Academy of Management Learning & Education, 16(2), 277–299. https://doi.org/10.5465/amle.2015.0026

Nambisan, S. (2017). Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship. Entrepreneurship Theory and Practice, 41(6), 1029–1055. https://doi.org/10.1111/etap.12254

Nambisan, S., Wright, M., & Feldman, M. (2019). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. Research Policy, 48(8), 103773. https://doi.org/10.1016/j.respol.2019.03.018

Nguyen, P. N. D., & Nguyen, H. H. (2024). Examining the role of family in shaping digital entrepreneurial intentions in emerging markets. Sage Open, 14(1), 21582440241239493. https://doi.org/10.1177/21582440241239493

Nguyen, P. N. D., & Nguyen, H. H. (2024). Unveiling the link between digital entrepreneurship education and intention among university students in an emerging economy. Technological forecasting and social change, 203, 123330. https://doi.org/10.1016/j.techfore.2024.123330

Obschonka, M., Silbereisen, R. K., Cantner, U., & Goethner, M. (2015). Entrepreneurial self-identity: Predictors and effects within the theory of planned behavior framework. Journal of Business and Psychology, 30, 773–794. https://doi.org/10.1007/s10869-014-9385-2

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., & Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. BMJ, 372, n71. https://doi.org/10.1136/bmj.n71

Pham M.; Lam B.Q.; Le V.P.T. (2023). The e-entrepreneurial intention of students: The role of self-efficacy and education, 11(1), 127-143. https://doi.org/10.15678/EBER.2023.110107

Pham M.; Lam B.Q.; Thi Nguyen A.T.; Thi Dinh T.K.; Tran H.Y. (2024). How do environment and innovativeness affect digital entrepreneurial intention through education? An explanation from the social cognitive career theory, 10. https://doi.org/10.1016/j.ssaho.2024.101179

Pham M.; Nguyen A.T.T.; Tran D.T.; Mai T.T.; Nguyen V.T. (2023). The impact of entrepreneurship knowledge on students' e-entrepreneurial intention formation and the

moderating role of technological innovativeness, 12(1). https://doi.org/10.1186/s13731-023-00351-7

Primario, S., Rippa, P., & Secundo, G. (2022). Rethinking entrepreneurial education: The role of digital technologies to assess entrepreneurial self-efficacy and intention of STEM students. IEEE Transactions on Engineering Management, 71, 2829-2842. https://doi.org/10.1109/TEM.2022.3199709

Satalkina, L., & Steiner, G. (2020). Digital entrepreneurship and its role in innovation systems: A systematic literature review as a basis for future research avenues for sustainable transitions. Sustainability, 12(7), 2764. https://doi.org/10.3390/su12072764

Shimoli S.M.; Cai W.; Abbas Naqvi M.H.; Lang Q. (2020). Entrepreneurship success traits. Do Kenyans possess the desired entrepreneur personality traits for enhanced E-entrepreneurship? Case study of Kenyan students in the people's republic of China., 7(1). https://doi.org/10.1080/23311975.2020.1847863

Stevenson, Howard H. "A Perspective on Entrepreneurship." Harvard Business School Background Note 384-131, October 1983. (Revised April 2006.)

Syed R.T.; Alzahmi R.A.; Tariq U. (2024). Digital entrepreneurship education in universities through the lens of educators: evidence from the United Arab Emirates., 11(1). https://doi.org/10.1080/2331186X.2024.2409472

Tóth-Pajor, Á., Bedő, Z., & Csapi, V. (2023). Digitalization in entrepreneurship education and its effect on entrepreneurial capacity building. Cogent Business & Management, 10(2), 2210891. https://doi.org/10.1080/23311975.2023.2210891

Valdés-Cervantes V.H.; Reyes-Mercado P. (2022). Kapter: pursuing innovation and competitive advantage in the Mexican B2B ecosystem., 12(4), 1-21. https://doi.org/10.1108/EEMCS-04-2021-0126

Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. Scientometrics, 84(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

Vicente-Ramos W.; Idone-Cordova G.; Mendoza-Farro T. (2024). Educational support in digital entrepreneurship for university students in business programs: a university governance study., 13(4), 54-62. https://doi.org/10.22495/jgrv13i4art6

Von Briel, F., Davidsson, P., & Recker, J. (2018). Digital technologies as external enablers of new venture creation in the IT hardware sector. *Entrepreneurship Theory and Practice*, *42*(1), 47-69. https://doi.org/10.1177/1042258717732779

Wibowo A.; Narmaditya B.S.; Saptono A.; Effendi M.S.; Mukhtar S.; Mohd Shafiai M.H. (2023). Does Digital Entrepreneurship Education Matter for Students' Digital Entrepreneurial Intentions? The Mediating Role of Entrepreneurial Alertness., 10(1). https://doi.org/10.1080/2331186X.2023.2221164

Wibowo A.; Narmaditya B.S.; Suparno; Sebayang K.D.A.; Mukhtar S.; Shafiai M.H.M. (2023). How does digital entrepreneurship education promote entrepreneurial intention? The role of social media and entrepreneurial intuition., 8(1). https://doi.org/10.1016/j.ssaho.2023.100681

Widjaja S.U.M.; Wibowo A.; Narmaditya B.S.; Wardoyo C.; Saptono A. (2022). Identifying factors affecting entrepreneurship education and entrepreneurial intention among Indonesian university students., 10(3), 89-104. https://doi.org/10.15678/EBER.2022.100306

Xin, B., & Ma, X. (2023). Gamifying online entrepreneurship education and digital entrepreneurial intentions: An empirical study. Entertainment Computing, 46, 100552. https://doi.org/10.1016/j.entcom.2023.100552

Younis H.; Katsioloudes M.; Bakri A.A. (2020). Digital entrepreneurship intentions of Qatar university students motivational factors identification: Digital entrepreneurship intentions., 10(1), 56-74. https://doi.org/10.4018/IJEEI.2020010105

Zampetakis, L. A. (2008). The role of creativity and proactivity on perceived entrepreneurial desirability. Thinking Skills and Creativity, 3(2), 154–162. https://doi.org/10.1016/j.tsc.2008.07.002

Zhang C.; Rathakrishnan M. (2024). Constructing a digital transformation framework in entrepreneurship education: Based on systematic literature review and theory triangulation., 8(8). https://doi.org/10.24294/jipd.v8i8.5637

Zhang S. (2014). Successful internet entrepreneurs don t have to be college dropouts: A model for nurturing college students to become successful internet entrepreneurs., 10(4), 53-69. https://doi.org/10.4018/ijicte.2014100105

Zotov V.; Frolova N.; Prasolov V.; Kintonova A. (2021). The effectiveness of case studies in entrepreneurship education., 14(4), 1033-1046. https://doi.org/10.29333/iji.2021.14459a