Print ISSN: 2783-2813
Online ISSN: 2717-0446
Journal of Industry & University
Homepage: http://jiu.ir

An Analysis of Academic Entepreneurship in The Age of Digitalization Using The Meta-Synthesis Method

* Mohsen Mohammadi Khiyareh ** Amineh Zivari

* Associate Professor of Economics, Department of Administrative and Economic Sciences, Gonbad Kavous University, Gonbad Kavous, Iran.. m.mohamadi@gonbad.ac.ir
** PhD student in Entrepreneurship, Faculty of Entrepreneurship, University of Tehran, Tehran, Iran. amineh.z@ut.ac.ir

Received: 16.06.2025 Accepted: 07.09.2025

Abstract

This paper aims to provide a deep, multi-dimensional analysis of the "digital academic entrepreneurship" phenomenon within Iran's unique economic and institutional context. While global literature is rapidly exploring the intersection of digital transformation and academic entrepreneurship, a coherent understanding of the dimensions, drivers, barriers, and consequences of this phenomenon in a developing and sanctioned economy like Iran is notably absent. Adopting a qualitative, interpretive approach, this research utilizes the seven-step meta-synthesis methodology of Sandelowski and Barroso (2007) to systematically analyze and synthesize findings from prior studies. Through a comprehensive search of national and international databases and a rigorous screening process, a final selection of 32 relevant articles was chosen as the data for this study. The synthesized findings are categorized into three main themes derived from the Technology-Organization-Environment (TOE) theoretical framework: 1) Technological factors, including the dual role of digital platforms and the imperative for artificial intelligence fluency; 2) Organizational factors, focusing on the challenges of institutional adaptation in universities, the emergence of novel support structures, and the necessity of digital leadership; and 3) Environmental factors, which address the contradictory role of government policymaking, the profound impact of economic sanctions, and the emerging entrepreneurial culture among students. The results indicate that the success of digital academic entrepreneurship in Iran is not merely a technological issue but the product of a complex interplay between technological readiness, dynamic capabilities and structural transformation within universities, and an enabling environmental ecosystem. By presenting an integrated conceptual framework, this paper offers specific policy implications for academic leaders and national policymakers to strengthen the digital entrepreneurship ecosystem in the country.

Keywords: Academic Entrepreneurship, Digital Entrepreneurship, Digital Transformation, Meta-Synthesis, Technology-Organization-Environment (TOE) Framework.

Corresponding Author: Mohsen Mohammadi Khiyareh- M.mohamadi@gonbad.ac.ir

Introduction

The global economy is undergoing a profound revolution driven by digital transformation, a process that extends beyond mere technology adoption to fundamentally reshape industries, governance, and society. At the heart of this shift, universities, as historical bastions of knowledge creation, face a critical imperative: adapt to this new paradigm or risk irrelevance. The concept of the "entrepreneurial university," representing a "third mission" of active engagement in economic and social development, is no longer a strategic choice but a necessity for survival. However, the pervasive wave of digitalization is now catalyzing a fourth revolution, transforming the very nature of academic entrepreneurship itself. Technologies such as artificial intelligence (AI), big data analytics, and digital platforms are democratizing access to global markets and enabling entirely new business models. The confluence of these two macro-trends—the transition to the entrepreneurial university and the digital revolution—has given rise to the complex, multi-faceted phenomenon of "digital academic entrepreneurship."

This study addresses the problem of understanding this phenomenon within the unique and paradoxical context of Iran. On one hand, Iran possesses significant potential for a thriving digital economy, characterized by a large, young, and educated population, high smartphone penetration rates, and a growing e-commerce sector. National policy documents have consistently emphasized the need to transition towards a knowledge-based economy. On the other hand, the ecosystem is beset by profound structural challenges, including institutional bureaucracy, a persistent gap between academia and industry, and, most critically, a macroeconomic environment defined by instability and severe international sanctions. These sanctions function not only as trade barriers but as a "digital firewall," severing access for Iranian academic entrepreneurs to crucial global infrastructures, software services, payment gateways, and capital markets. This paradox—high internal potential versus severe external constraints—creates a significant research gap. While global literature on the topic is expanding, domestic studies are often descriptive and lack a coherent analytical framework to understand the complex dynamics at play.

Therefore, the purpose of this research is to fill this gap by developing an integrated conceptual framework that explains the constituent dimensions, enabling factors, and key challenges of digital academic entrepreneurship in Iran. The primary research question guiding this study is: What are the constructive dimensions, enabling factors, and key challenges of academic entrepreneurship in the digital era, considering the specific context of Iran? By synthesizing existing fragmented knowledge, this paper aims to provide actionable policy and managerial insights for stakeholders to foster a more robust and resilient digital innovation ecosystem.

Methodology

This research adopts a qualitative, interpretive paradigm to achieve a deep and holistic understanding of the nascent phenomenon of digital academic entrepreneurship. Given the scattered nature of existing knowledge, particularly within the Iranian context, a "meta-synthesis" methodology was selected as the most appropriate approach. Unlike meta-analysis, which statistically aggregates quantitative results, meta-synthesis focuses on the interpretive integration of findings from qualitative (and sometimes quantitative) studies to generate a new, more comprehensive conceptual framework or theory.

Specifically, the study employed the rigorous and systematic seven-step model proposed by Sandelowski and Barroso (2007). The process began with formulating guiding research questions to define the scope of the inquiry. This was followed by a systematic literature search conducted across prominent international databases (Scopus, Web of Science, Google Scholar) and key

national Iranian databases (SID.ir, Magiran) for the period 2010-2025. Search terms included combinations of "digital academic entrepreneurship," "university entrepreneurship and digitalization," and their Persian equivalents.

The initial search yielded 850 articles. A meticulous, multi-stage screening process was then implemented. First, 210 duplicates were removed. Next, a screening of titles and abstracts for relevance eliminated 450 articles, leaving 190 for full-text review. Finally, the full texts were assessed against strict inclusion and exclusion criteria, removing purely theoretical papers, short reports, and studies with low methodological quality. This process resulted in a final corpus of 32 core articles for synthesis. For each selected article, key information was extracted, and its quality was appraised using a checklist based on the Critical Appraisal Skills Programme (CASP) tool to ensure the credibility of the sources.

The core of the methodology was the analysis and synthesis of findings using a thematic analysis approach, guided by the Technology-Organization-Environment (TOE) framework. This involved: (1) Open coding of the findings from all 32 articles to identify initial descriptive codes; (2) Grouping these codes into more meaningful "basic themes"; and (3) Organizing these basic themes into three overarching "organizing themes" corresponding to the TOE framework (Technological, Organizational, and Environmental factors). To ensure rigor and minimize bias, the coding and screening processes were conducted in parallel by two researchers, and inter-coder reliability was confirmed using Cohen's Kappa coefficient, which yielded a strong agreement score of 0.78.

Findings

The in-depth synthesis of the 32 selected studies revealed three primary organizing themes, aligned with the TOE framework, that collectively define the landscape of digital academic entrepreneurship in Iran.

1. Technological Context The technological context presents a duality of empowerment and constraint. First, *digital platforms* (e.g., online marketplaces, social networks, crowdfunding sites) were consistently identified as powerful enablers that dramatically lower geographical and financial barriers to entry for academic entrepreneurs. In theory, these platforms allow a university spin-off in Iran to access global markets. However, the synthesis also uncovered the significant challenge of *platform dependency*. These ecosystems are often controlled by large tech firms that dictate terms, potentially eroding margins and exposing entrepreneurs to policy volatilities. This issue is acutely exacerbated in Iran, where sanctions block access to major international financial and commercial platforms, forcing entrepreneurs onto domestic alternatives that may lack the same scale and efficiency.

Second, a critical finding is the imperative to move *from basic digital literacy to fluency in Artificial Intelligence (AI) and data analytics*. The literature shows that mere competence in using standard digital tools is no longer sufficient for competitive advantage. Success in the modern era is increasingly tied to the ability to leverage machine learning algorithms for market analysis, product personalization, and operational optimization. The synthesized findings indicate a substantial gap in Iranian universities, where foundational IT education is present, but applied, strategic AI training for entrepreneurs remains nascent.

2. Organizational Context The analysis revealed that the most significant barriers to digital academic entrepreneurship are often internal to the universities themselves. The predominant challenge is the *slow adaptation of traditional university structures*. A recurring finding is the profound institutional inertia that hinders the agility required for digital innovation. University promotion and reward systems for faculty remain heavily skewed towards traditional academic

outputs, primarily peer-reviewed publications. Entrepreneurial activities, such as developing commercial software or launching a digital start-up, receive minimal weight, thus creating a powerful disincentive for academics to engage in commercialization.

This structural rigidity is compounded by a centralized, often inflexible bureaucracy that governs the higher education system in Iran, stifling bottom-up innovation. Furthermore, the synthesis highlighted a widespread *lack of digital leadership* within university management. This deficit manifests as a failure to articulate a clear digital vision, mobilize resources effectively, and cultivate a culture that embraces experimentation and tolerates failure—all of which are essential for fostering a vibrant entrepreneurial ecosystem.

3. Environmental Context The external environment in Iran is characterized by a series of profound contradictions. First, government policy and regulation are often inconsistent. While high-level policy documents express strong support for a knowledge-based economy, entrepreneurs on the ground face an unstable regulatory landscape and significant bureaucratic hurdles that increase the costs and risks of launching a venture.

The most dominant environmental factor identified is the impact of *international sanctions*. These sanctions create a pervasive state of isolation, restricting access to global capital, essential technologies, and international markets. This effectively places a ceiling on the growth and scalability of Iranian digital start-ups.

Despite these formidable barriers, a distinctly positive and powerful counter-trend was identified: the *emergence of a vibrant digital entrepreneurship culture among the new generation*. Students and young graduates, as "digital natives," possess a high degree of familiarity with digital tools and a growing inclination towards entrepreneurial careers. This demographic represents a vast reservoir of human capital and is arguably the most valuable asset of Iran's digital ecosystem. However, without adequate support from organizational and environmental structures, this immense potential is at risk of being squandered.

Conclusion

This meta-synthesis provides an integrated analysis of digital academic entrepreneurship in Iran, revealing a complex system shaped by the dynamic interplay of technological, organizational, and environmental forces. The most significant conclusion is that fostering this ecosystem is not a linear, technology-first problem. Rather, success hinges on coordinated, multi-level interventions. Investing in advanced technology (the 'T' context) will yield minimal results if it occurs within a sea of traditional bureaucracy (the 'O' context) and a disabling external environment (the 'E' context). The findings highlight a "capability paradox," where digital technologies simultaneously empower entrepreneurs to overcome local constraints while creating new dependencies and vulnerabilities.

While our findings align with global literature on the importance of digital leadership and the need for university reform, they uniquely underscore the overwhelming primacy of the context-specific environmental factors in Iran. Unlike in many developed ecosystems, where the environment is largely supportive, in Iran it acts as both a source of potential (its youth) and the greatest impediment (sanctions and instability). This reinforces the need to contextualize entrepreneurship theories and avoid universal policy prescriptions.

Based on these findings, we propose a multi-stakeholder action framework. For national policymakers, this entails shifting focus from internet penetration rates to infrastructure quality and reliability, creating stable and transparent regulations for digital businesses, and pursuing "scientific diplomacy" to forge channels for technological exchange. For university leaders, the imperative is

to fundamentally reform academic incentive structures to equally value entrepreneurial outputs alongside publications, invest in developing digital leadership capabilities among management, and embed practical digital entrepreneurship and data literacy skills across all academic disciplines. Ultimately, digital academic entrepreneurship is a strategic necessity for Iran's economic development. Unleashing the immense potential of its young and educated human capital depends entirely on the collective will to undertake these deep and systemic reforms.

References

1. Garcez, A., R. Silva, and M. Franco. "Digital Transformation Shaping Structural Pillars for Academic Entrepreneurship: A Framework Proposal and Research Agenda." *Education and Information Technologies*, vol. 27, no. 1, 2022, pp. 1159–82.
2. Jafari-Sadeghi, V., A. Garcia-Perez, E. Candelo, and J. Couturier. "Exploring the Impact of Digital Transformation on Technology Entrepreneurship and Technological Market Expansion: The Role of Technology Readiness, Exploration, and Exploitation." *Journal of Business Research*, vol. 124, 2021, pp. 100–11.
3. Rippa, P., and G. Secundo. "Digital Academic Entrepreneurship: The Potential of Digital Technologies on Academic Entrepreneurship." *Technological Forecasting and Social Change*, vol. 146, 2019, pp. 900–11.
4. Secundo, G., P. Rippa, and R. Cerchione. "Digital Academic Entrepreneurship: A Structured Literature Review and Avenue for a Research Agenda." *Technological Forecasting and Social Change*, vol. 157, 2020, p. 120118.
5. Tornatzky, L. G., and M. Fleischer. *The Processes of Technological Innovation*. Lexington Books, 1990.