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Framework for Evaluating Governmental Support in the Urban Entrepreneurship Ecosystem of Tehran Using a Qualitative Approach

ABSTRACT

Today, the world stands on the threshold of the Fifth Industrial Revolution. This new paradigm is based on the convergence of advanced technologies such as artificial intelligence, the Internet of Things, robotics, virtual and augmented reality, and biotechnologies. With the rapid evolution of the Industry 4.0 paradigm and the emergence of the Industry 5.0 landscape, there is an urgent need to examine and analyze the enabling or inhibiting factors of effective technology transfer processes. Technology transfer refers to the systematic movement of knowledge from individuals or organizations that have generated it to others, so that it may be utilized for producing new products or delivering innovative services. The present research was conducted with the aim of exploring the dimensions and key components affecting technology transfer within the Industry 5.0 framework, with a particular focus on the technological entrepreneurship approach. This is of critical importance, since technological entrepreneurship plays a pivotal role in advancing innovation and transforming scientific achievements into commercialized products and services. In this study, the qualitative Sandelowski and Barroso meta-synthesis method was employed. The process began with a systematic review of 457 initial articles, and eventually, 28 articles relevant to the research objectives were selected. Inclusion criteria comprised articles published in the field of technological entrepreneurship and Industry 5.0 during the period from 2017 to 2024. To assess the reliability of the findings, Cohen's Kappa coefficient (0.72) was applied, which indicates acceptable reliability. For validating the proposed model and enhancing its credibility, expert review techniques were used. Moreover, the results were confirmed and revised by domain experts. Based on the findings derived from the meta-synthesis, 55 components were identified and categorized into five main dimensions as influencing factors on technology transfer within the Industry 5.0 framework through a technological entrepreneurship lens. These dimensions include: (1) technological innovation ecosystems, comprising technological infrastructure, specialized human capital, and free flow of knowledge; (2) agile and flexible business models aligned with rapid technological changes; (3) collaborative partnerships among diverse actors of the innovation ecosystem; (4) digitalization of processes and data-driven decision-making; and (5) appropriate legal, policy, and supportive frameworks. The findings of this study highlighted the significance of adopting entrepreneurial strategies and approaches in order to facilitate and shape technology transfer processes within the Industry 5.0 landscape. Results indicated that success in technology transfer in this domain requires comprehensive attention to infrastructural, commercial, legal, and interactive factors within an integrated innovation ecosystem. By identifying and clarifying the key factors involved in successful technology transfer initiatives in Industry 5.0, this study provides insights and practical guidance for policymakers, technological entrepreneurs, and other stakeholders engaged in these processes. These findings can substantially contribute to strengthening technology transfer mechanisms and guiding innovative orientations in the forthcoming era of Industry 5.0.

Keywords: Technology, Technology Transfer, Entrepreneurship, Technological Entrepreneurship, Industry 5.0.

Introduction

Entrepreneurship has emerged as a cornerstone of economic and social development across diverse contexts, functioning as a primary driver of innovation, wealth creation, and employment. Contemporary societies, whether in advanced economies or developing regions, increasingly rely on entrepreneurial ecosystems that facilitate opportunity recognition, resource mobilization, and innovation diffusion. The concept of entrepreneurial ecosystems has become particularly salient in recent years, reflecting the complex interplay between government, private sector, educational institutions, and civil society in creating enabling conditions for entrepreneurial activity [1]. Governments play a crucial role in supporting these ecosystems through policy interventions, legal frameworks, and targeted investments designed to lower barriers and stimulate entrepreneurial capacity [2].

At the global level, entrepreneurial ecosystems have been conceptualized as networks of interdependent actors and factors that collectively support or hinder entrepreneurship. Audretsch [3] highlights the importance of establishing appropriate framework conditions in urban contexts to foster entrepreneurial vibrancy, while Spigel [4] underscores the relational dimensions of ecosystems, emphasizing the significance of social networks and cultural norms. In Iran, empirical studies confirm that entrepreneurial ecosystems are strongly shaped by institutional conditions and government policies [5, 6]. Moreover, the dynamics of these ecosystems are evolutionary, as evidenced by Mack [7], who demonstrates how ecosystems adapt over time to shifting technological, political, and social contexts.

A growing body of literature suggests that public policy is indispensable in addressing structural gaps within entrepreneurial ecosystems. Comparative reviews across the United States and Africa indicate that government policies are instrumental in removing obstacles to entrepreneurship and ensuring equitable resource distribution [2]. In China, paternalistic government care has been shown to significantly promote entrepreneurship, particularly by providing protection and resources to nascent entrepreneurs [8]. Similarly, in the Gulf Cooperation Council countries, governmental support has been identified as a moderating factor that strengthens the positive relationship between entrepreneurship and economic growth [9]. Thailand offers another case, where orchestrating university innovation and entrepreneurship ecosystems in collaboration with public and private stakeholders has proven effective in supporting innovative enterprises [10]. These diverse experiences collectively illustrate that the role of government is not merely facilitative but also strategic in shaping long-term entrepreneurial success.

One critical area of concern in entrepreneurial ecosystems is access to financial resources. In the United States, gaps in small business funding have been well documented, with alternative financial instruments required to fill systemic deficiencies [11]. Such gaps are particularly evident in emerging economies where capital markets are underdeveloped, requiring proactive state intervention. This resonates with Zajkowski [12], who reveals how perceptions of regional pro-entrepreneurial policies shift once entrepreneurs actually receive governmental support. The provision of finance, therefore, operates not only as a resource but also as a signal of institutional commitment and trust-building within the ecosystem.

Beyond financing, human capital development and education are fundamental to entrepreneurial ecosystem vitality. Universities, research institutions, and training organizations act as incubators of entrepreneurial talent, providing both technical expertise and soft skills necessary for innovation [13]. The conceptualization of university entrepreneurial marketing, for instance, demonstrates the importance of aligning academic outputs with entrepreneurial needs [13].

Moreover, applied research that directly informs industry practices can significantly strengthen innovation outcomes [14]. Case studies from Oman further reveal that fostering entrepreneurship requires context-sensitive educational interventions, emphasizing cultural and institutional adaptation [15].

At the theoretical level, the ecosystem perspective has been advanced through frameworks that highlight the structural, cultural, and institutional components of entrepreneurial environments. Stam [16] introduces metrics for measuring ecosystems, enabling more rigorous assessments of their efficiency and resilience. Spigel [17] similarly emphasizes the governance of entrepreneurial ecosystems through support programs and intermediary organizations. Brown [18] offers a critical review that conceptualizes ecosystems as complex adaptive systems, necessitating nuanced approaches to policy design. These theoretical contributions provide analytical tools for understanding how ecosystems operate in practice, especially in urban contexts where resource flows and institutional dynamics are highly concentrated [3].

In parallel, contemporary scholarship has turned attention to the transformative effects of digitalization and sustainability on entrepreneurship. The emergence of digital entrepreneurial ecosystems has created novel opportunities for inclusive participation, particularly among women. For example, digital infrastructures have been shown to increase female entrepreneurial activity by lowering entry barriers and enabling flexible business models [19]. Similarly, the acceptance of blockchain technology in financial institutions highlights how disruptive technologies reshape institutional trust and operational efficiency [20]. Broader global trends point toward the integration of sustainability into entrepreneurship, with ecosystems for sustainable entrepreneurship increasingly promoted as pathways to greener economies [21]. Entrepreneurial universities are likewise positioning themselves as key drivers of innovation, leveraging ecosystem principles to achieve institutional transformation [22]. These emerging paradigms reflect an ongoing shift toward technologically enabled, sustainability-oriented entrepreneurship.

The importance of culture and social capital in shaping entrepreneurial ecosystems should not be underestimated. Studies in Iran reveal that entrepreneurial activities are strongly mediated by local cultural contexts and institutional trust [23, 24]. Social networks, community support, and normative frameworks all play significant roles in shaping entrepreneurial intentions and outcomes [4]. For instance, cooperative structures rooted in traditional practices such as waqf and charitable activities can meaningfully contribute to ecosystem resilience and inclusivity [24]. These findings align with Pustovrh [25], who argues that open innovation mechanisms are increasingly critical in building supportive entrepreneurial ecosystems, particularly through collaborative approaches that transcend organizational boundaries.

Despite these advances, entrepreneurial ecosystems continue to face challenges related to governance, institutional inertia, and external shocks. Schumpeterian perspectives underscore the disruptive nature of entrepreneurship, highlighting that ecosystems must constantly adapt to cycles of creative destruction [26]. Yet, institutional structures are often slow to respond, resulting in mismatches between entrepreneurial needs and available supports. For instance, the lack of effective communication channels between entrepreneurs and policymakers can undermine the implementation of supportive initiatives [14]. Similarly, the prevalence of bureaucratic inefficiencies, corruption, or rigid regulatory environments can severely constrain entrepreneurial dynamism [23]. These constraints underscore the need for holistic frameworks that integrate policy, finance, education, technology, and social capital to sustain ecosystem vitality.

In the Iranian context, research on entrepreneurial ecosystems has expanded in recent years, with scholars exploring the factors that shape entrepreneurial environments at both national and urban levels. Davari [5] demonstrates the applicability

of Isenberg's model to Iran, identifying institutional support, market dynamics, and human capital as critical ecosystem components. Maysami [6] extends this by detailing the dimensions of technological entrepreneurship, underscoring the unique challenges faced by Iranian entrepreneurs in navigating rapidly changing technological landscapes. These studies confirm that entrepreneurial ecosystems in Iran require context-specific frameworks that address structural deficiencies, enhance institutional coordination, and promote innovation.

The case of Tehran, as the capital and most populous city in Iran, provides a particularly relevant setting for examining entrepreneurial ecosystems. As Zajkowski [12] notes in other regional contexts, the perception of governmental support can significantly influence entrepreneurial outcomes. Tehran's ecosystem is characterized by a complex interplay of municipal policies, private sector initiatives, and academic institutions, all of which must be coordinated to ensure effective resource allocation and innovation diffusion. However, challenges such as insufficient financing mechanisms, lack of coherent policy frameworks, and weak intellectual property protections persist, limiting the city's potential as a hub for entrepreneurial activity.

Given this background, the need for a systematic evaluation of governmental support within Tehran's urban entrepreneurial ecosystem becomes apparent. While global and regional studies provide valuable insights [2, 9, 10], there remains a gap in context-specific frameworks that capture the unique dynamics of Tehran. Addressing this gap is essential not only for advancing scholarly understanding but also for informing practical policy interventions that enhance entrepreneurial capacity. By integrating theoretical insights [16-18] with empirical findings [5, 6], this study seeks to contribute to the development of a comprehensive framework that evaluates governmental support mechanisms in Tehran's entrepreneurial ecosystem. The aim of this study is to design and validate a framework for evaluating governmental support in the urban entrepreneurship ecosystem of Tehran.

Methodology

This study is qualitative, exploratory in nature, and conducted using the grounded theory method. The data collection tool in this research was the semi-structured interview, and the sampling method was purposive. The target population of this study consisted of experts in urban entrepreneurship, and the participants were selected from municipal officials with entrepreneurial experience in different districts of the city, as well as influential entrepreneurs in Tehran. After 15 interviews, the researcher reached theoretical saturation, and based on the data-driven theory, open, axial, and selective coding were applied for data analysis. The data obtained were validated using the CVR table by 5 additional experts, and the findings were extracted.

Findings and Results

To achieve the objective of the article, namely designing a framework for governmental support in the urban entrepreneurship ecosystem of Tehran through semi-structured interviews, the following steps were taken:

Step One: Formulation of Research Questions

Main Question: What forms of governmental support are required in the urban entrepreneurship ecosystem of Tehran?

Sub-Questions: To guide participants toward the research domain and to ensure the completeness of responses, the following questions were considered:

1. Which of the following concepts are of greater importance among governmental supports in the urban entrepreneurship ecosystem of Tehran? Financial support, workforce supply, monitoring of law enforcement, intellectual property issues, infrastructure provision, educational support, and wealth creation?
2. From which constructs are these dimensions formed?

Step Two: Collection and Analysis of Qualitative Data

At this stage, the researcher first explained the title and objective of the study to each participant and obtained permission for audio recording under confidentiality terms. The main research question was presented, and when necessary, participants' responses were guided toward the main discussion through sub-questions. Each interview session lasted on average one and a half hours. Subsequently, the interviews were transcribed by the researcher and coded.

Table 1

Coding of Interviews with Experts

Selective Coding (Dimensions)	Axial Coding (Categories)	Open Coding (Initial Codes)
Education and Promotion (B)	Higher education and research	Distinguishing business from entrepreneurship in education (higher education)
Education and Promotion (B)	Mentorship	Coaching people from start to finish of entrepreneurship (mentorship)
Education and Promotion (B)	Primary and secondary education	Entrepreneurship education during school years (primary and secondary education)
Education and Promotion (B)	Mentorship	Step-by-step guidance at the initiation stage (mentorship)
Intellectual Property (C)	Value of ordinary ideas	The importance of ordinary people's ideas and the need for government support (value of ordinary ideas)
Education and Promotion (B)	Higher education and research	Failure of universities in creating effective entrepreneurship (higher education)
Supervision (D)	Private sector performance	Problems arising from governmental intervention (private sector performance)
Education and Promotion (B)	Higher education and research	Applied university research for industry (higher education and research)
Intellectual Property (C)	Elite ideas	Elites' ideas should be evaluated and supported (elite ideas)
Provision (A)	Physical infrastructure	Establishment of incubators and provision of necessary facilities (physical infrastructure)
Provision (A)	Licensing	Government facilitation of licensing procedures (licensing)
Provision (A)	Financial support	Joint investments with the private sector (financial support)
Provision (A)	Physical infrastructure	Necessity of information technology and internet access (physical infrastructure)
Education and Promotion (B)	Higher education and research	Science as a prerequisite for innovations (higher education)
Provision (A)	Information provision	Entrepreneurs' access to urban research results (information provision)
Provision (A)	Technology transfer	Availability of technologies and innovations (technology transfer)
Provision (A)	Financial support	Provision of capital for resilience (financial support)
Provision (A)	Organizational services	Provision of services for start-ups (organizations)
Intellectual Property (C)	Intellectual property registration	Business and ideas as intellectual property (registration)
Intellectual Property (C)	Intellectual property transactions and collateralization	Establishment of intellectual property markets
Intellectual Property (C)	Copyright	Protection of intellectual property (copyright)
Provision (A)	Financial support	Diversification of financing methods (financial support)

Education and Promotion (B)	Technical and vocational education	Vocational and technical training for youth
Provision (A)	Workforce supply	Supporting large businesses in finding workforce
Intellectual Property (C)	Intellectual property registration	Anonymous licensing for ideas/businesses
Intellectual Property (C)	Intellectual property transactions and collateralization	Collateralization of intellectual property in banks
Supervision (D)	Legal adequacy	Supportive/reformative bills in parliament
Provision (A)	Information provision	Investor database
Provision (A)	Resource mobilization	Marketing and demand creation (e.g., municipalities, media)
Supervision (D)	Private sector performance	Support for entrepreneurship centers
Provision (A)	Workforce supply	Linking universities to industries
Provision (A)	Physical infrastructure	Establishing entrepreneurship ecosystems/hubs
Provision (A)	Physical infrastructure	Hardware and technologies for entrepreneurs
Education and Promotion (B)	Promotion	Tax exemption/reduction for entrepreneurship
Provision (A)	Resource mobilization	Entrepreneurs' access to national resources
Provision (A)	Information provision	Awareness of entrepreneurship citywide
Supervision (D)	Organizational performance	Reduction of bureaucracy
Provision (A)	Organizational services	Recognition of entrepreneurs by government
Education and Promotion (B)	Promotion	Encouragement of youth entrepreneurship
Education and Promotion (B)	Wealth creation	Processes for transforming IP and businesses into wealth
Supervision (D)	Organizational performance	Combating administrative corruption
Education and Promotion (B)	Wealth creation	Reform of gross national income structure
Education and Promotion (B)	Promotion	Recognition benchmarks for entrepreneurs

Step Four: Validation

At this stage, the findings of the research were subjected to validation using the CVR table through consultation with 5 urban entrepreneurship experts.

Step Five: Presentation of Results

In the validation stage, the results were confirmed by experts. Consequently, the main dimensions of governmental support in the entrepreneurship ecosystem were identified as four, and the concepts amounted to 22, as reported in Table 2.

Table 2

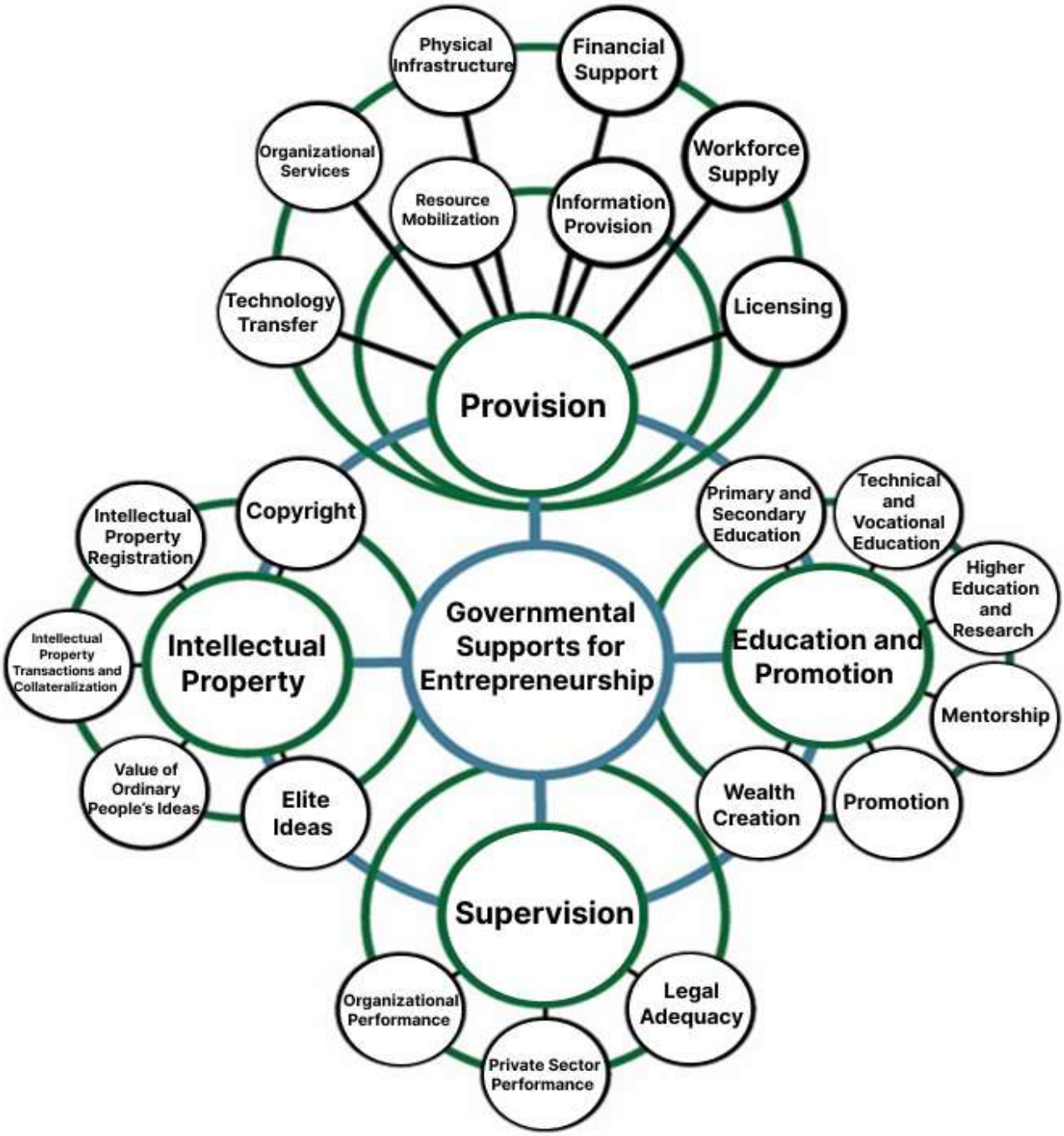
Dimensions and Concepts of Governmental Support for Entrepreneurship in the Urban Entrepreneurship Ecosystem

Dimensions of Governmental Support	Concepts in the Urban Entrepreneurship Ecosystem
Provision	Financial support, Workforce supply, Information provision, Licensing, Physical infrastructure, Organizational services, Resource mobilization, Technology transfer
Education and Promotion	Primary and secondary education, Technical and vocational education, Higher education and research, Mentorship, Promotion, Wealth creation
Intellectual Property	Intellectual property registration, Copyright, Intellectual property collateralization, Value of ordinary ideas, Elite ideas
Supervision	Supervision of organizational performance, Supervision of private sector performance, Legal adequacy

Findings indicate that governmental support for intellectual property—including registration, transaction, collateralization, and in fact its transformation into wealth—has gained greater importance. Experts believe that entrepreneurs show more interest in ecosystems where intellectual property is emphasized, supported, and protected. For the flourishing of Tehran's urban entrepreneurship ecosystem, policymakers must pay special attention to this issue and treat intellectual property as other forms of wealth, dedicating more effort to its registration, market development, and protection.

Figure 1

Framework for Evaluating Governmental Support in the Urban Entrepreneurship Ecosystem of Tehran



Discussion and Conclusion

The findings of this study identified four main dimensions of governmental support—provision, education and promotion, intellectual property, and supervision—as critical pillars in shaping the entrepreneurial ecosystem of Tehran. Within these dimensions, 22 specific concepts emerged, ranging from financial support and workforce provision to intellectual property protection and legal adequacy. These results underscore the multifaceted nature of entrepreneurship, where diverse elements converge to create either enabling or constraining conditions for entrepreneurial activity. The results resonate with the broader body of literature emphasizing that entrepreneurial ecosystems are inherently complex and rely on systemic interactions between actors, resources, and institutions [3, 4, 16].

One of the most salient findings of this research is the centrality of intellectual property rights as a governmental support mechanism. Experts highlighted the importance of intellectual property registration, transactions, collateralization, and protection as cornerstones for wealth creation within entrepreneurial ecosystems. This emphasis aligns with international evidence suggesting that entrepreneurs increasingly prefer ecosystems where intellectual property is effectively protected and leveraged as a form of wealth [12]. Moreover, in the Iranian context, the growing recognition of intellectual property as a tradable and collateralizable asset reflects global trends in entrepreneurial finance, where intangible assets are becoming crucial in attracting investment and reducing risk [11]. These findings mirror the broader argument that supportive legal and institutional frameworks are essential for fostering innovation and commercialization [8, 9].

Another critical dimension is financial support, which has been consistently identified as a bottleneck in entrepreneurial activity. The study's findings that financial diversification, access to resilience capital, and collaborative investment models are necessary align with prior research. For instance, Brown [11] documents the persistent funding gap for small businesses in the United States, demonstrating how inadequate financial provision can impede entrepreneurial growth. Ajayi-Nifise [2] similarly emphasizes the importance of government policies in providing equitable financial access across regions, particularly in Africa, where entrepreneurs often face systemic barriers. In the Iranian case, the call for diversified financial instruments echoes Maysami [6], who identified financing challenges as a core structural weakness of technological entrepreneurship ecosystems. These converging insights underscore that without robust financial support, entrepreneurial ecosystems struggle to achieve sustainability, regardless of other enabling conditions.

The role of education and promotion also emerged as a critical factor. Participants stressed the need for entrepreneurship education at multiple levels—primary and secondary schools, vocational training, and higher education—combined with mentorship and promotional activities. This mirrors international experiences where education has been positioned as a key driver of entrepreneurial culture and skill development. For example, Baporikar [15] highlights how entrepreneurship education tailored to local contexts can foster long-term resilience in Oman. Similarly, Khazai [13] illustrates how entrepreneurial marketing in universities is essential to link academic outcomes with entrepreneurial needs. In broader terms, ecosystem scholars argue that entrepreneurial education must be embedded within cultural and institutional structures to be effective [14, 17]. This study extends such arguments by demonstrating that in Tehran, systemic educational interventions supported by government policies are indispensable for building entrepreneurial competencies.

The findings also reaffirm the importance of supervision as a dimension of governmental support. Monitoring organizational performance, overseeing private sector activities, and ensuring legal adequacy were all identified as necessary to maintain fairness and efficiency within the ecosystem. This is consistent with international literature stressing the role of

governance and oversight in ecosystem sustainability [7]. For example, Cheng [8] shows how government paternalism in China ensures compliance and accountability, thereby fostering trust in entrepreneurial ecosystems. In the Iranian context, ensuring supervisory adequacy is particularly critical given the historical challenges of bureaucracy and administrative inefficiencies [23]. Effective supervision, therefore, acts not as a constraint but as an enabling mechanism that enhances confidence and reduces transaction costs for entrepreneurs.

An important contribution of this research is its demonstration that entrepreneurial ecosystems are not only about resource provision but also about the alignment of institutional, cultural, and social factors. This aligns with Spigel [4], who emphasizes relational factors such as trust, networks, and cultural norms in shaping entrepreneurial outcomes. The findings that ordinary people's ideas and elite ideas both require governmental recognition further extend this relational perspective. By acknowledging diverse sources of innovation—from grassroots initiatives to elite-driven projects—the ecosystem becomes more inclusive and adaptive. This is consistent with Kiakojouri [24], who stresses that cooperative and charitable structures in Iran can contribute to ecosystem inclusivity. The Tehran case thus highlights the need for policies that integrate both top-down and bottom-up entrepreneurial initiatives.

The digital transformation of entrepreneurship further contextualizes the findings. Huang [19] shows that digital entrepreneurial ecosystems significantly enhance female entrepreneurship by reducing entry barriers and increasing accessibility. The emphasis on technological infrastructure and knowledge flow in this study aligns with such global trends, indicating that Tehran's ecosystem must increasingly prioritize digital readiness. Moreover, the adoption of blockchain technologies in financial and public institutions, as discussed by Berenji [20], supports the argument that ecosystems evolve with emerging technologies, requiring adaptive policies. The Iranian context, therefore, must move beyond traditional resource provision and integrate digital and technological dimensions into ecosystem planning.

Sustainability also emerges as a relevant theme. The identification of wealth creation as a governmental support mechanism aligns with broader discussions on sustainable entrepreneurship. Leendertse [21] argues that ecosystems must increasingly align with green transitions, while Bielialov [22] demonstrates how innovation ecosystems can transform universities into entrepreneurial hubs. By situating wealth creation alongside education, intellectual property, and financial support, the findings suggest that Tehran's ecosystem must integrate sustainability-oriented entrepreneurship as a long-term strategy. This resonates with global shifts toward inclusive and sustainable growth models [25, 27].

The Iranian evidence also shows strong parallels with regional and international experiences. For instance, Saberi [9] highlights the moderating role of governmental support in fostering entrepreneurship across GCC countries, while Thawesaengskulthai [10] demonstrates the value of coordinated public-private partnerships in Thailand. Similarly, Davari [5] and Maysami [6] stress the importance of institutional frameworks and ecosystem components in the Iranian context. Together, these findings reinforce the conclusion that governmental support in Tehran must be multi-dimensional, strategically coordinated, and context-specific.

Overall, the results of this study confirm the systemic nature of entrepreneurial ecosystems and the necessity of comprehensive governmental support. By identifying the dimensions of provision, education and promotion, intellectual property, and supervision, this research provides a robust framework for evaluating policy effectiveness in Tehran. The findings align with global scholarship while also offering context-specific insights that can inform both theory and practice.

Despite its contributions, this study has several limitations that should be acknowledged. First, the qualitative nature of the research, relying on interviews with experts, limits the generalizability of findings. While theoretical saturation was achieved, the perspectives of a broader range of stakeholders—such as early-stage entrepreneurs, investors, and policymakers beyond Tehran—were not included. Second, the study is temporally bounded, focusing on conditions during the years 2017–2024, and may not capture rapidly evolving dynamics of digitalization and sustainability that are reshaping entrepreneurial ecosystems worldwide. Third, while the study employed systematic coding and validation procedures, qualitative interpretation inherently involves subjectivity, which may have influenced the categorization of concepts. Finally, the scope of the research was limited to Tehran, and while the findings may resonate with other Iranian cities or similar contexts, they cannot be directly extrapolated without additional empirical evidence.

Future research should extend this study by adopting mixed-method approaches that combine qualitative insights with quantitative validation. Longitudinal studies could capture how governmental support dimensions evolve over time, particularly in response to technological disruptions and global crises. Comparative studies across cities within Iran and in other developing economies would also provide valuable insights into the contextual variability of entrepreneurial ecosystems. Moreover, future research should examine the interplay between digital transformation and sustainability within entrepreneurial ecosystems, as emerging evidence suggests these domains will increasingly define the future of entrepreneurship. Expanding the scope to include perspectives from entrepreneurs themselves, especially women and youth, could yield richer and more inclusive insights. Finally, exploring the role of international collaborations and global value chains could add a transnational dimension to the understanding of urban entrepreneurial ecosystems.

For policymakers, the findings highlight the importance of designing integrated support frameworks that combine financial provision, educational interventions, intellectual property protection, and supervisory mechanisms. Municipal authorities should prioritize reducing bureaucratic barriers, facilitating licensing, and promoting collaboration between universities, industries, and entrepreneurs. Educational institutions should embed entrepreneurship education across levels and link research more closely with industry needs. Governments must also develop robust intellectual property markets and ensure adequate protection to attract both local and foreign investment. Finally, practical strategies should increasingly incorporate digital readiness and sustainability as central pillars, ensuring that Tehran’s entrepreneurial ecosystem remains competitive and adaptive in the global landscape.

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Authors’ Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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References

[1] J. Ughulu, "Entrepreneurship as a major driver of wealth creation," *International Journal of Economic Behavior and Organization,* vol. 13, no. 2, pp. 78-82, 2022, doi: 10.11648/j.ijebo.20221003.11.

[2] A. O. Ajayi-Nifise, "The role of government policy in fostering entrepreneurship: a USA and Africa review," *International Journal of Management & Entrepreneurship Research,* vol. 6, no. 2, pp. 352-367, 2024, doi: 10.51594/ijmer.v6i2.775.

[3] D. B. Audretsch, "Entrepreneurial ecosystems in cities: establishing the framework conditions," *The Journal of Technology Transfer,* vol. 42, pp. 1030-1051, 2017, doi: 10.1007/s10961-016-9473-8.

[4] B. Spigel, "The relational organization of entrepreneurial ecosystems," *Entrepreneurship theory and practice,* vol. 41, no. 1, pp. 49-72, 2017, doi: 10.1111/etap.12167.

[5] A. Davari, "The factors of entrepreneurial ecosystem in Iran based on Isenberg's model," *Journal of Entrepreneurship Development,* vol. 10, no. 1, pp. 101-120, 2017, doi: 10.1007/978-3-319-65903-9_1.

[6] A. Maysami, "The dimensions and components of technological entrepreneurship ecosystem in Iran," *Journal of Technology Development Management,* vol. 5, no. 4, pp. 9-42, 2018.

[7] E. Mack, "The evolutionary dynamics of entrepreneurial ecosystems," *Urban studies,* vol. 53, no. 10, pp. 2118-2133, 2016, doi: 10.1177/0042098015586547.

[8] H. Cheng, "Does government paternalistic care promote entrepreneurship in China? Evidence from the China employer-employee survey," *China Economic Journal,* vol. 10, no. 1, pp. 61-75, 2017, doi: 10.1080/17538963.2016.1274004.

[9] M. Saberi, "The moderating role of governmental support in the relationship between entrepreneurship and economic growth: A study on the GCC countries," *Journal of Entrepreneurship in Emerging Economies,* vol. 11, no. 2, pp. 200-216, 2019, doi: 10.1108/JEEE-10-2017-0072.

[10] N. Thawesaengskulthai, A. Chatmarathong, and J. Koiwanit, "Impact and Policy Supporting Thailand Innovation Driven Enterprise: Orchestrating University Innovation and Entrepreneurship Ecosystem With Public and Private Stakeholders," *Journal of Innovation and Entrepreneurship,* vol. 13, no. 1, 2024, doi: 10.1186/s13731-024-00371-x.

[11] G. W. Brown, "Filling the us small business funding gap," UNC Kenan Institute of Private Enterprise, 2020.

[12] R. Zajkowski, "Differences in perception of regional pro-entrepreneurial policy: does obtaining support change a prospect?," *Oeconomia Copernicana,* vol. 10, no. 2, pp. 359-384, 2019, doi: 10.24136/oc.2019.018.

[13] K. M. Khazai, "Conceptualizing university entrepreneurial marketing by quantitative approach," *INNOVATION & CREATIVITY IN HUMAN SCIENCE,* vol. 10, no. 4, pp. 21-62, 2021.

[14] M. Feyz, "Developing a model of communication skills for managers in the public sector," *Postmodern Openings,* no. 1Sup1, pp. 61-77, 2020, doi: 10.18662/po/11.1sup1/123.

[15] N. Baporikar, "Entrepreneurship in Sultanate of Oman: A case approach," in *Entrepreneurship: Concepts, methodologies, tools, and applications*: IGI Global, 2017, pp. 1852-1864.

[16] E. Stam, "Measuring entrepreneurial ecosystems," in *Entrepreneurial ecosystems: Place-based transformations and transitions*, 2018, pp. 173-197.

[17] B. Spigel, "Developing and governing entrepreneurial ecosystems: the structure of entrepreneurial support programs in Edinburgh, Scotland," *International Journal of Innovation and Regional Development,* vol. 7, no. 2, pp. 141-160, 2016, doi: 10.1504/IJIRD.2016.077889.

[18] R. Brown, "Looking inside the spiky bits: a critical review and conceptualisation of entrepreneurial ecosystems," *Small business economics,* vol. 49, pp. 11-30, 2017, doi: 10.1007/s11187-017-9865-7.

[19] Y. Huang, J. Zhang, Y. Xu, Y. Yuan, M. Zhang, and L. Huang, "Digital entrepreneurial ecosystem and female entrepreneurial activity," *Humanities and Social Sciences Communications,* vol. 12, no. 1, pp. 1-13, 2025, doi: 10.1057/s41599-024-04345-y.

[20] S. Berenji, "Designing a new behavioral model of blockchain technology acceptance in public banks," *Journal of System Management (JSM),* vol. 10, no. 1, pp. 225-236, 2024.

[21] J. Leendertse and F. V. Rijnsoever, "Greening pastures: Ecosystems for sustainable entrepreneurship," *Small Business Economics,* vol. 5, no. 3, pp. 1-22, 2025, doi: 10.1007/s11187-025-01040-3.

[22] T. Bielialov and E. Ashyrov, "Innovation Ecosystem as a Tool for Development of an Entrepreneurial University," *Economic Scope,* no. 198, pp. 3-8, 2025, doi: 10.30838/ep.198.3-8.

[23] B. Salehi Koocheh, "Presenting a Model of Organizational Insentience in the Red Crescent Society," *Sci J Rescue Relief,* vol. 13, no. 3, pp. 228-236, 2021, doi: 10.32592/jorar.2021.13.3.8.

[24] D. Kiakojouri, "Identifying the Dimensions and Components of the Cooperative Structure in Iran with the Approach of Waqf and Charity Affairs Based on Mixed Research," *Journal of Endowment & Charity Studies,* vol. 2, no. 1, pp. 185-202, 2024.

[25] A. Pustovrh, "The role of open innovation in developing an entrepreneurial support ecosystem," *Technological forecasting and social change,* vol. 152, p. 119892, 2020, doi: 10.1016/j.techfore.2019.119892.

[26] T. Mehmood, "Schumpeterian entrepreneurship theory: Evolution and relevance," *Academy of Entrepreneurship Journal,* vol. 25, no. 4, 2019.

[27] R. K. Kumar *et al.*, "Innovation dynamics within the entrepreneurial ecosystem: a content analysis-based literature review," *Humanities and Social Sciences Communications,* vol. 11, no. 1, p. 366, 2024/03/06 2024, doi: 10.1057/s41599-024-02817-9.