

Startup Visa and the Iranian Entrepreneurial Ecosystem: How Can Entrepreneurial Outflow Be Prevented?

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ABSTRACT

The objective of this study was to design a model for preventing the outflow of entrepreneurs through startup visas from the Iranian entrepreneurial ecosystem. This research was conducted using an exploratory sequential mixed-methods strategy in two qualitative and quantitative phases to identify the dimensions and components influencing this phenomenon and to develop the proposed model. In the qualitative phase, employing an interpretive paradigm and thematic analysis, semi-structured interviews were conducted with 10 experts (5 individuals holding a startup visa and 5 university faculty members). The qualitative statistical population consisted of entrepreneurs, ideators, startup visa holders, and scholars specializing in this field, selected through snowball sampling until theoretical saturation was reached. In the quantitative phase, a researcher-made questionnaire using a five-point Likert scale was distributed among 384 entrepreneurs, startup managers, and knowledge-based companies supported by the Science and Technology Park. Data analysis was performed using SMARTPLS and ISM software. The findings indicated that infrastructural deficiencies (35% of responses), lack of effective financial support (28% of responses), and legal and bureaucratic barriers (22% of responses) were the most significant reasons for entrepreneurs' inclination toward migration. Moreover, weaknesses in professional networking (12%) and the absence of targeted educational programs (3%) were identified as complementary factors. In the quantitative phase, the proposed model—comprising six dimensions of financial support, technological infrastructure, policymaking, education, networking, and entrepreneurial culture—was confirmed. The results suggest that designing an effective model to prevent entrepreneurial outflow requires strengthening technological infrastructure, improving financial support mechanisms, and reforming bureaucratic policies.

Keywords: Entrepreneurship; Startup Visa; Entrepreneurial Outflow; Entrepreneurial Ecosystem; Iran.

Introduction

Entrepreneurial ecosystems have become one of the foundational pillars of contemporary economic development, enabling countries to strengthen innovation capacity, accelerate value creation, and enhance global competitiveness. Over the past two decades, entrepreneurship research has increasingly emphasized the systemic nature of entrepreneurial activity, highlighting that the success of start-ups is embedded within a broader structure of actors, institutions, networks, and resources that collectively shape entrepreneurial behavior (1). This systemic view has redefined entrepreneurship not merely as an individual or organizational endeavor, but as an outcome of interactions among universities, government institutions, financial intermediaries, markets, and cultural norms (2).



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As global economies confront rapid technological change and socio-environmental pressures, the strategic significance of resilient entrepreneurial ecosystems has grown substantially.

Contemporary studies reveal that entrepreneurial ecosystems differ widely across regions depending on institutional frameworks, access to finance, human capital, market structures, and cultural attitudes toward entrepreneurship. Research focusing on emerging economies—particularly in Asia, Africa, and Latin America—demonstrates that institutional constraints, regulatory inefficiencies, and weak support infrastructures frequently hinder the development of sustainable entrepreneurial environments (3). These weaknesses often manifest in high failure rates of startups, insufficient resource mobilization, and discouraged entrepreneurial intentions. Scholars argue that strengthening institutional support mechanisms is essential for enhancing entrepreneurial performance and shaping the behavioral orientation of founders (4), particularly in contexts where market structures remain underdeveloped or volatile.

Recent studies have highlighted that entrepreneurial ecosystems can become catalysts for sustainable development by enabling knowledge spillovers, digital transformation, inclusive growth, and resilience in times of crisis (5). For example, digital technologies have been shown to contribute to the sustainability of entrepreneurial models by reducing operational barriers, promoting resource efficiency, and expanding access to markets (6). Similarly, sustainable urban development and infrastructural investments can create favorable local environments for entrepreneurship, facilitating collaboration among ecosystem actors and improving long-term entrepreneurial outcomes (7). Taken together, this body of evidence underscores the interdependence between ecosystem quality, sustainable entrepreneurial practices, and regional competitiveness.

The literature on entrepreneurial ecosystems also recognizes the importance of financial structures and funding mechanisms in determining start-up growth and survival. Access to capital, the diversity of financing instruments, and investor readiness remain critical considerations across national contexts (8). Nonetheless, research reveals that in many developing economies, financial markets remain fragmented, risk-averse, or overly bureaucratic, with negative consequences for entrepreneurial confidence and business formation (9). Studies on knowledge-based entrepreneurship have further shown that robust financial systems, combined with effective knowledge management processes, play an important role in enhancing entrepreneurial leadership and success (10). These findings point to the multidimensional nature of financial support systems and their interaction with broader institutional dynamics.

Another critical dimension of entrepreneurial ecosystems is their alignment with global sustainability agendas. Systematic reviews have demonstrated that the integration of sustainability principles within startup models is increasingly becoming a competitive necessity rather than an optional strategy (11). Startups are progressively expected to address societal challenges, adopt environmentally responsible technologies, and contribute to inclusive economic growth. The emergence of sustainability-oriented innovation ecosystems, rural entrepreneurship clusters, and agricultural startup ecosystems illustrates how different sectors and regions adapt global models to local needs (12-14). Furthermore, the role of universities in generating science-based ventures, commercializing research, and promoting entrepreneurial mindsets has become a central component of the ecosystem paradigm (15, 16).

Despite these advancements, significant research highlights persistent challenges facing entrepreneurs in developing countries. Empirical studies conducted in Africa, the Middle East, and South Asia consistently show that startup founders face institutional ambiguities, insufficient government support, and misalignment between policy

frameworks and entrepreneurial needs (17, 18). These constraints not only inhibit entrepreneurial performance but also contribute to increased frustration, psychological distress, and disengagement among founders. In some cases, such conditions lead to entrepreneurship-related migration or the pursuit of international opportunities. Such trends can undermine national innovation capacity and exacerbate brain drain.

Women's entrepreneurship also presents unique ecosystem challenges. Scholars find that gender roles, social expectations, and structural inequalities continue to limit the opportunities of women entrepreneurs, impacting wellbeing, startup formation, and long-term economic participation (19, 20). These findings emphasize the need to create inclusive ecosystem structures that support diverse entrepreneurial populations. Similarly, research on corporate entrepreneurship and psychological implications suggests that internal organizational ecosystems can shape entrepreneurial intention, risk tolerance, and creative behaviors among employees (21).

In Iran, entrepreneurial ecosystems have gained significant attention due to increasing economic complexities, technological gaps, regional disparities, and the rising need for diversification away from resource-dependent sectors. Several studies have examined the structural challenges of entrepreneurial development in Iran, identifying issues such as regulatory instability, fragmented policy frameworks, weak financial markets, and limited commercialization capacity within universities (22, 23). Research also indicates that Iran's entrepreneurial ecosystem suffers from gaps in institutional connectivity, mentor networks, and market-driven innovation processes (24). Furthermore, agricultural and rural entrepreneurship studies highlight infrastructural shortages and inefficiencies that limit growth and global market integration (25, 26). These collective findings emphasize both the potential and the fragility of Iran's entrepreneurial landscape.

An emerging concern within the Iranian context is the increasing trend of entrepreneurial outflow through international mobility schemes such as startup visas. Many countries have introduced startup visa programs to attract high-potential entrepreneurs, offering them access to funding, infrastructure, global markets, and supportive regulatory environments. While these programs are beneficial for host nations, they pose strategic risks for countries experiencing entrepreneurial migration. Qualitative evidence suggests that Iranian entrepreneurs often seek such pathways due to frustrations with bureaucratic complexity, inconsistent support programs, and limited opportunities for scaling ventures (27). Studies have also noted that entrepreneurs in Iran face significant psychological and social pressures imposed by unstable markets, economic uncertainty, and insufficient institutional buffering mechanisms (4, 21). These factors contribute to a decline in entrepreneurial optimism and an increase in outward mobility.

Given the increasing integration of innovation ecosystems with global value chains, the ability of countries to retain domestic entrepreneurs has become a critical competitiveness issue. Research shows that effective government intervention, targeted support frameworks, and clearly defined policy roadmaps can enhance ecosystem performance and reduce the likelihood of entrepreneurial exits (27, 28). Additionally, digital entrepreneurship models, business model innovation, and technological ecosystem development have been shown to reduce barriers to entrepreneurial success and contribute to long-term resilience (6, 13). However, without alignment between institutional policies, financial mechanisms, infrastructural development, and supportive cultural narratives, entrepreneurial ecosystems remain vulnerable.

Recent international studies reveal that ecosystem quality significantly influences entrepreneurial performance, behavioral orientation, and the ability to leverage digital innovation for competitive advantage (18, 20, 29). Evidence from developing regions suggests that institutional supports, networking structures, and access to global markets are among the strongest predictors of sustainable business performance (3, 4). In this regard, the Iranian context

presents a unique case for examining how policy mechanisms, socio-cultural factors, psychological support systems, financial incentives, and internationalization pathways collectively shape entrepreneurial decision-making.

Considering the increasing strategic relevance of entrepreneurship for national development, as well as the rising threat of entrepreneurial migration through startup visas, it becomes vital to investigate the foundational causes of entrepreneurial outflow and the ecosystem deficiencies that contribute to this trend. Moreover, the diverse and interdependent components of entrepreneurial ecosystems—ranging from regulatory frameworks to cultural identity—necessitate comprehensive and multi-dimensional modeling approaches (5, 8, 14). By integrating insights from global and local research, this study aims to contribute to a deeper understanding of the factors influencing entrepreneurial retention and the mechanisms necessary to sustain Iran's innovation potential.

Based on the gaps identified in the literature and the practical challenges facing Iran's entrepreneurial landscape, the aim of this study is to design a comprehensive model for preventing the outflow of entrepreneurs through startup visas from the Iranian entrepreneurial ecosystem.

Methods and Materials

Given that the objective of this research was to design a model for preventing the outflow of entrepreneurs—manifested through startup visas—from the Iranian entrepreneurial ecosystem, the research method was classified as exploratory—applied in terms of purpose; cross-sectional in terms of data collection timing; inductive—deductive from a philosophical standpoint; and survey—correlational in terms of data collection method and research nature. This study was conducted using an exploratory sequential mixed-methods strategy in two qualitative and quantitative phases to identify the dimensions and components influencing this phenomenon and to develop the proposed model.

In the qualitative phase, using an interpretive paradigm and thematic analysis, semi-structured interviews were conducted with 10 experts (5 startup visa holders and 5 university faculty members). The qualitative statistical population consisted of entrepreneurs, ideators, startup visa holders, and field-specific academics, selected through snowball sampling until theoretical saturation was reached. The data were validated using the strategies proposed by Gall et al. (1994), including researcher positioning, participant checking, and alignment with theoretical frameworks. Data analysis resulted in the extraction of basic themes, organizing themes, and a global theme, which served as the basis for designing a questionnaire consisting of 6 dimensions and 35 components across 211 items. The credibility of the qualitative data was evaluated and confirmed by 5 university professors and startup visa holders.

In the quantitative phase, the researcher-made questionnaire using a five-point Likert scale was distributed among 384 entrepreneurs, startup managers, and knowledge-based firms supported by the Science and Technology Park. The sample size was determined using Cochran's formula and simple random sampling. Questionnaire validity was confirmed through a Content Validity Ratio (CVR) of 0.79—higher than the acceptable threshold of 0.62—and a Content Validity Index (CVI) of 0.80—higher than the acceptable threshold of 0.79. Reliability was also confirmed using Cronbach's alpha of 0.737. Data analysis was carried out using SMARTPLS software, and the fit of the proposed model was examined through confirmatory factor analysis and structural equation modeling.

The qualitative statistical population of the present study included entrepreneurs and ideators with contributions in the entrepreneurship domain, as well as university faculty members in related fields. The sample size reached

theoretical saturation at 10 interviewees. Snowball sampling, a non-probability technique, was employed. The description of experts is presented in Table 1.

Table 1. Demographic Description of Experts

Row	Full Name	Position	Education	Work Experience	Startup Visa Holder
1	Mehdad Ankari	University Professor / Inventor	PhD in Chemistry	12 years	Yes
2	Mahbubeh Shadabi	Director, Hafezan Hayat Ab Company	PhD	10 years	Yes
3	Mohammad Ramezani Delshad	Entrepreneur / Manager, Hafezan Hayat Ab Company	M.Sc. in Power Engineering	10 years	Yes
4	Fazel Khorrami	Ideator / Hafezan Hayat Ab Company	M.Sc. in Civil Engineering	11 years	Yes
5	Yaser Sepehr	Entrepreneur / Ideator	PhD	12 years	Yes
6	Farzaneh Hedayati	Entrepreneur / Ideator	M.A. in Graphic Design	10 years	Yes
7	Elham Fazeli Visari	University Professor / Faculty Member, Entrepreneurship & Business	PhD	14 years	No
8	Mohammad-Ali Nasimi	University Professor / Faculty Member, Business Management – Marketing	PhD	23 years	No
9	Mousa Rahimi	University Professor / Faculty Member, Business Management	PhD	15 years	No
10	Sirus Keshavarz	University Professor / Member, Management Studies Center, Tarbiat Modares University	PhD	15 years	No

To ensure validity and reliability, Creswell's eight strategies for verifying the accuracy of findings were employed.

Findings and Results

In the analysis, the overarching themes for designing a model to prevent the outflow of entrepreneurs through startup visas from the Iranian entrepreneurial ecosystem are presented in Table 2.

Table 2. Model for Preventing the Outflow of Entrepreneurs through Startup Visas from the Iranian Entrepreneurial Ecosystem

Second-order organizing themes	First-order organizing themes	Basic themes
Policy and institutional empowerment	Stability of startup-related laws	Frequent changes in laws related to innovation Predictability of the legal and regulatory environment Existence of a long-term legal framework for startups Stability in investment and ownership regulations Transparency in the interpretation of laws by supervisory bodies Degree of conflict or overlap among various startup-related laws
	Stable supportive policies	Existence of long-term support programs from the government Continuity of budgets and support facilities Policymakers' support for different stages of startup growth Flexibility of policies in response to technological changes Regular access to support resources (financial, advisory, educational) Independence of support policies from changes of governments
	Intellectual property protection	Simple and rapid registration process for intellectual property Effective legal protection of inventions and brands Legal prosecution of intellectual property infringements Entrepreneurs' awareness of intellectual property rights

Stimulating economic and financial incentives	Reducing administrative bureaucracy	Existence of specialized institutions supporting IP Reasonable costs for registering and maintaining intellectual rights Reducing the stages of company registration and licensing Existence of a one-stop service window for startups Digitalization of administrative processes Transparency and speed in issuing licenses Reducing interventions and discretionary interpretations by administrative offices Easy access to government business-related services
	Alignment of macro-level policies	Alignment of innovation policies with economic policies Existence of a national roadmap for entrepreneurship and innovation Coherence in decision-making among innovation-governing institutions Constructive interaction between ministries and governmental organizations Integration of national development program objectives with startups
	National coordinating institutions	Consistency of trade, tax, and customs laws with startup needs Existence of a national institution for developing the entrepreneurial ecosystem A single reference body accountable for startup-related issues Coordination among governmental, private, and academic institutions Transparency of the mission and authority of policymaking institutions Interaction between central institutions and local ecosystems Capability to resolve disputes among ecosystem actors
	Access to capital	Diversity of financial resources for different growth stages Ease of obtaining bank loans and facilities Access to angel and venture capital investors Existence of non-traditional financing institutions (fintech, crowdfunding) Appropriate interest rates for innovation-oriented loans Entrepreneurs' level of familiarity with fundraising pathways
	Tax incentives	Tax exemptions for innovative activities Reduced profit tax for startups Tax incentives for startup investors Lack of complexity in the process of benefiting from exemptions Stability of tax regulations for startups Clarity and transparency of tax regulations related to innovation
	Specialized support funds	Existence of governmental and semi-governmental venture funds Financing seed and growth stages Specialization and expertise orientation in fund investments Transparency in the process of project evaluation Cooperation with incubators and science and technology parks
	Reducing investment risk	Facilitation of successful exits from investments Existence of innovative investment insurance instruments Government guarantees for early-stage investors Supportive policies in cases of business failure

Development and strengthening of the entrepreneurial ecosystem	Sustainable revenue models	Facilitating market access to ensure return on investment
		Culture-building for risk acceptance among investors
	International financial resources	Appropriate management of market volatility and pricing
		Training in designing diversified revenue models
	Upgrading incubators	Access to market development consulting
		Building stable linkages with domestic customers
		Support for exports and foreign market development
		Encouragement of subscription-based models
		Guiding startups toward economic sustainability
	University–industry linkage	Possibility of attracting foreign investors without legal barriers
		Facilitating currency transfer and repatriation of export profits
		Existence of international exemptions for startups
		Participation in global financing schemes
		Cooperation with international investment funds
	Networking among actors	Transparency of international financial regulations for startups
		Equipping incubators with specialized consulting and mentoring services
		Allocating financial resources and co-working spaces to teams
		Capacity-building for incubator managers to guide startups
		Effective linkage of incubators to investors and markets
	Applied entrepreneurship education	Designing performance indicators for evaluating incubators
		Synergy between incubators and science and technology parks
		Supporting applied theses based on industry needs
		Establishing technology transfer offices in universities
		Designing joint programs and courses with industry participation
	Domestic technological infrastructure	Presence of companies in university spaces and vice versa
		Employment of students in startups and industrial firms
		Networking among faculty members, researchers, and entrepreneurs
		Developing intermediary and facilitating institutions in the ecosystem
		Holding joint events
		Facilitating communication among entrepreneurs, investors, and government
		Formation of specialized startup clusters
		Digital platforms for interpersonal and inter-organizational collaboration
		Creating a database of ecosystem actors
		Designing educational programs based on real market skills
		Using mentors and successful entrepreneurs in the training process
		Organizing boot camps and specialized workshops
		Offering entrepreneurship courses at universities with a problem-based approach
		Enhancing entrepreneurs' financial, legal, and managerial literacy
		Linking education to the actual stages of startup creation
		Nationwide access to high-speed and stable internet

Strengthening the national brand and domestic entrepreneurial identity	Continuous ecosystem evaluation	Providing cloud space, servers, and data centers for startups
		Developing indigenous and open-source software infrastructures
		Supporting the development of open APIs for government services
		Information security and data privacy protection
		Connecting different cities to central innovation hubs
		Designing comprehensive indicators to monitor ecosystem performance
		Annual reporting on the state of entrepreneurship
		Involvement of independent institutions in evaluations
		Examining barriers to exit and startup migration in reports
		Using field and empirical data in policymaking
Strengthening the national brand and domestic entrepreneurial identity	Local success narratives	Transparency in providing ecosystem data to the public
		Documenting successful domestic experiences
		Showcasing inspiring Iranian role models in the media
		Representing the role of successful women and youth in entrepreneurship
		Highlighting the contribution of successful startups to the national economy
		Promoting stories of failure and recovery as learning experiences
		Disseminating these narratives in schools, universities, and social media
	National festivals and awards	Organizing national entrepreneurship and innovation festivals
		Creating specialized awards for top entrepreneurs in various fields
		Government support for programs honoring innovative startups
		Expanding media coverage of festival winners
		Selecting specialized and reputable judges
		Ensuring fairness and transparency in the judging process
	Entrepreneurial badges of honor	Awarding a national entrepreneurship medal to distinguished individuals
		Creating honorary titles in technological and innovative fields
		Installing symbolic elements and statues of honor in innovation centers
		Presence of distinguished entrepreneurs at national ceremonies
		Linking national pride to entrepreneurial effort
		Including successful entrepreneurs in national “who’s who” lists
	Domestic media support	Creating specialized programs on national broadcasting about the entrepreneurial ecosystem
		Supporting documentaries on the success of Iranian startups
		Strengthening the role of online media in conveying hopeful domestic narratives
		Media-based countering of negative portrayals and overemphasis on migration opportunities
		Training in entrepreneurship and economic journalism
		Establishing a national news platform dedicated to entrepreneurship and innovation
	Entrepreneurs’ social commitment	Promoting the concept of “entrepreneurship committed to the homeland”
		Social responsibility of startups in underprivileged regions

Psychological, social, and cultural support for entrepreneurs	Cultural–economic identity	Strengthening the linkage between entrepreneurship and social justice Encouraging local job creation by entrepreneurs Supporting social projects originating from startups Educating and promoting professional ethics in the startup arena Emphasizing endogenous entrepreneurship rooted in Iranian culture Introducing local values in product and brand design Discursive construction around the notion of a “capable Iranian entrepreneur” Preventing mere imitation of Western models Promoting national discourse on innovation and knowledge-based production Linking Iranian identity with economic foresight and future orientation
	Psychological counseling services	Establishing specialized psychological counseling centers for entrepreneurs Providing group and individual counseling in incubators and accelerators Training in stress management and intra-organizational conflict management Designing psychotherapy packages for managing financial pressure and failure Collaboration with industrial–organizational psychologists in innovative spaces Continuous assessment of entrepreneurs' mental health using localized tools
	Acceptance of startup failure	Promoting the discourse “failure is part of the learning process” Publishing experiences of failure and startup revival Organizing a festival of successful failure experiences (FailCon – Iranian version) Reforming bankruptcy laws in favor of entrepreneurs Training investors and mentors to accept failure Portraying comeback stories after failure in the media
	Culture of risk tolerance	Training decision-making skills under uncertainty Introducing successful role models with high risk-taking experience Creating a cultural discourse based on the “courage to start” Supporting medium-risk projects in funds Strengthening long-term thinking in the face of economic instability Educating families on the importance of entrepreneurial risk
	Informal support networks	Strengthening ties among entrepreneurs through local groups Promoting entrepreneurship cafés, meetups, and startup clubs Creating dialogue circles between experienced and novice founders Using the experiences of entrepreneurs who have returned from migration Supporting informal mentoring and coaching networks Connecting entrepreneurial alumni with market actors
	Family and social support	Educating families about the role of startups in development Narrating the role of family in the success of local entrepreneurs Developing educational programs for family participation in startup growth Culture-building in society regarding respect for local entrepreneurs

Internationalization from within the country	Export capacity in startups	Providing social insurance and livelihood coverage for entrepreneurs in early stages Creating supportive facilities for families engaged in innovation spaces Networking among entrepreneurs' families Level of product readiness for foreign markets
	Connection to the global market	Ability to adapt products to international laws and standards Access to foreign distribution channels Availability of public and private export services and facilities Training and capacity-building in the field of export Logistical and international transportation support Networking with key actors in foreign markets
	Joint international funds	Participation in international events and exhibitions Access to information on target markets (market research) Language proficiency and international skills of the startup team Use of international online platforms Interaction with foreign customers and partners through technology Access to information and awareness about international funds Possibility of attracting capital from foreign funds Coordination and cooperation with domestic and foreign funds Track record and credibility of partner funds Transparency and compliance with international investment regulations Risk management and long-term financial support Access to international programs and accelerators
	Participation in global programs	Ability to adapt global programs to local conditions Active participation in global startup networks Financial and advisory support from such programs Opportunities for branding and visibility at the international level Knowledge and technology exchange through these programs
	Export-oriented domestic brands	Identifying and benchmarking successful Iranian export brands Using export-oriented branding and marketing Creating an international identity for the startup brand Maintaining continuous relationships and loyalty with foreign customers Using the experiences of export brands in supply chain management
	Attracting foreign investors	Ability to manage brand image in foreign markets Ability to present an attractive value proposition to foreign investors Financial transparency and professional reporting Building effective communication networks with foreign investors Familiarity with foreign investment procedures and regulations Ability to respond to investors' risks and concerns Providing legal and financial infrastructure for international collaboration

Based on the above table, the research model consisted of 1 overarching theme, 6 second-order organizing themes, and 35 first-order constructing themes. Finally, based on the final categories, the research model is presented in Figure 1.

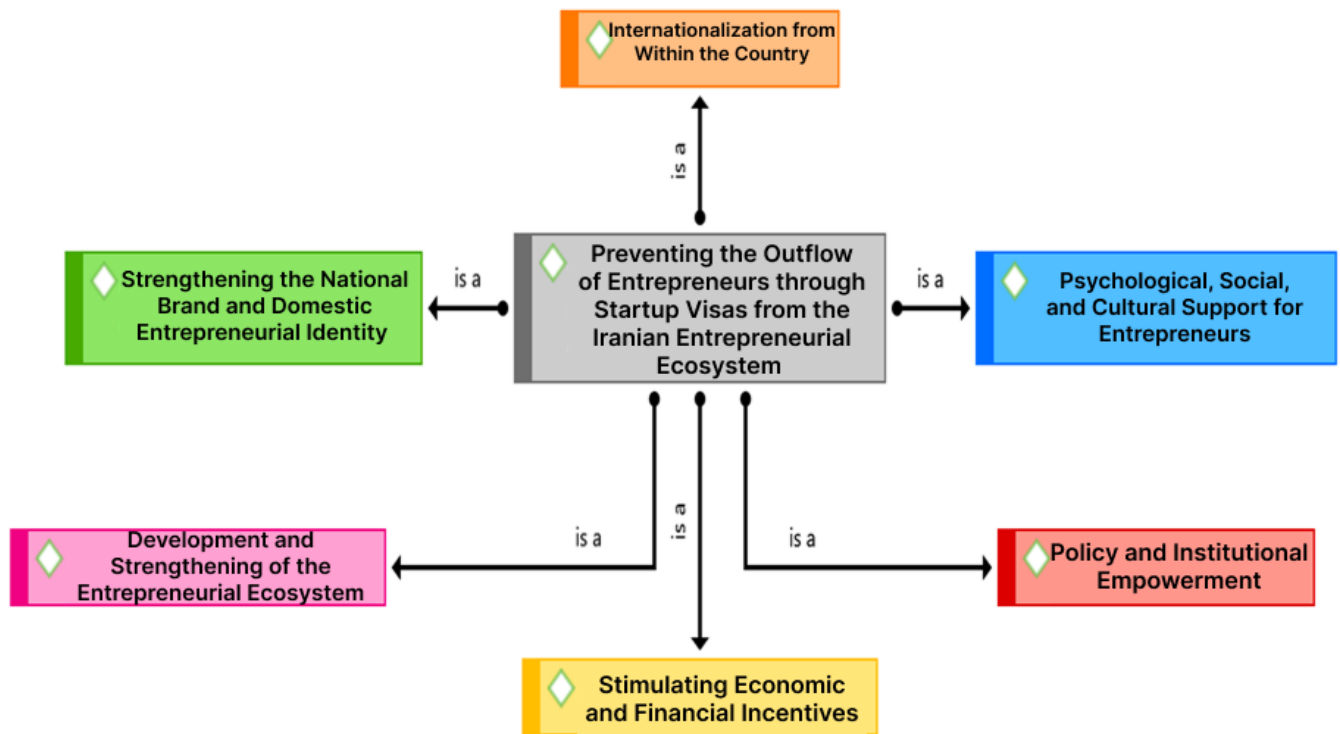


Figure 1. Design and explanation of the model for preventing the outflow of entrepreneurs through startup visas from the Iranian entrepreneurial ecosystem

To assess the validity of the questionnaire, the Content Validity Index (CVI) and Content Validity Ratio (CVR) were calculated using the opinions of 10 experts. The results are presented in Table 3.

Table 3. Questionnaire validity

Second-order organizing themes	First-order organizing themes	Number of experts N	Essential and appropriate Ne	Essential but inappropriate Nb	Non-essential and inappropriate	CVR	CVI	Status
Second-order organizing themes	First-order organizing themes	10	7	2	1	0.4	0.9	Confirmed
Policy and institutional empowerment	Stability of startup-related laws	10	7	3	—	0.4	1.0	Confirmed
	Stable supportive policies	10	8	1	1	0.6	0.9	Confirmed
	Intellectual property protection	10	5	3	2	0.0	0.8	Confirmed
	Reducing administrative bureaucracy	10	7	2	1	0.4	0.9	Confirmed
	Alignment of macro-level policies	10	7	1	3	0.4	0.8	Confirmed
	National coordinating institutions	10	7	2	1	0.4	0.9	Confirmed

Stimulating economic and financial incentives	Access to capital	10	7	3	–	0.4	1.0	Confirmed
	Tax incentives	10	6	3	1	0.2	0.9	Confirmed
Development and strengthening of the entrepreneurial ecosystem	Specialized support funds	10	7	1	2	0.4	0.8	Confirmed
	Reducing investment risk	10	6	3	1	0.2	0.9	Confirmed
	Sustainable revenue models	10	8	1	1	0.6	0.9	Confirmed
	International financial resources	10	8	1	1	0.6	0.9	Confirmed
	Upgrading incubators	10	4	4	2	-0.2	0.8	Confirmed
	University–industry linkage	10	6	2	2	0.2	0.8	Confirmed
	Networking among actors	10	4	5	1	-0.2	0.9	Confirmed
	Applied entrepreneurship education	10	6	2	2	0.2	0.8	Confirmed
	Domestic technological infrastructure	10	7	1	2	0.4	0.8	Confirmed
	Continuous ecosystem evaluation	10	6	2	2	0.2	0.8	Confirmed
Strengthening the national brand and domestic entrepreneurial identity	Local success narratives	10	7	2	1	0.4	0.9	Confirmed
	National festivals and awards	10	5	2	3	0.0	0.7	Confirmed
	Entrepreneurial badges of honor	10	6	2	2	0.2	0.8	Confirmed
	Domestic media support	10	6	3	1	0.2	0.9	Confirmed
	Entrepreneurs' social commitment	10	7	1	2	0.4	0.8	Confirmed
	Cultural–economic identity	10	6	3	1	0.2	0.9	Confirmed
Psychological, social, and cultural support for entrepreneurs	Psychological counseling services	10	8	1	1	0.6	0.9	Confirmed
	Acceptance of startup failure	10	8	1	1	0.6	0.9	Confirmed
	Culture of risk tolerance	10	4	4	2	-0.2	0.8	Confirmed
	–	10	6	2	2	0.2	0.8	Confirmed
	Informal support networks	10	4	5	1	-0.2	0.9	Confirmed
	Family and social support	10	6	2	2	0.2	0.8	Confirmed
Internationalization from within	Export capacity in startups	10	7	1	2	0.4	0.8	Confirmed
	Connection to the global market	10	6	2	2	0.2	0.8	Confirmed
	Joint international funds	10	7	2	1	0.4	0.9	Confirmed
	Participation in global programs	10	5	2	3	0.0	0.7	Confirmed

Export-oriented domestic brands	10	6	2	2	0.2	0.8	Confirmed
Attracting foreign investors	10	6	2	2	0.2	0.8	Confirmed
–	10	7	2	1	0.4	0.9	Confirmed

The number of experts who selected “essential and appropriate” and “essential but inappropriate” is divided by the total number of experts. If the resulting value is less than 0.70, the item is rejected; if it is between 0.70 and 0.79, the item must be reviewed; and if it is greater than 0.79, it is acceptable. According to Table 3, the CVI indices obtained scores higher than 0.70 and are therefore confirmed.

The first step in interpretive structural modeling (ISM) is to calculate the internal relationships among the indicators. To reflect the internal relationships among the indicators, the views of experts are used. The components of the research were coded as shown in Table 4.

Table 4. Coding of components

TM	Components
C01	Development and strengthening of the entrepreneurial ecosystem
C02	Policy and institutional empowerment
C03	Psychological, social, and cultural support for entrepreneurs
C04	Strengthening the national brand and domestic entrepreneurial identity
C05	Stimulating economic and financial incentives
C06	Internationalization from within
C07	Model for preventing the outflow of entrepreneurs through startup visas from the Iranian entrepreneurial ecosystem

Determining levels in the interpretive structural hierarchy is presented in Table 5.

Table 5. Level determination in the ISM hierarchy

Symbol	Input	Output	Intersection	Level
C1	C01–C02–C05	C01–C03–C04–C05–C06–C07	C01–C05	2
C2	C02	C01–C02–C03–C04–C05–C06–C07	C02	1
C3	C01–C02–C03–C05	C03–C04–C06–C07	C03	3
C4	C01–C02–C03–C04–C05–C06	C04–C06–C07	C04–C06	4
C5	C01–C02–C05	C01–C03–C04–C05–C06–C07	C01–C05	2
C6	C01–C02–C03–C04–C05–C06	C04–C06–C07	C04–C06	4
C7	C01–C02–C03–C04–C05–C06–C07	C07	C07	5

Therefore, variable C02 is the first-level variable. After identifying the first-level variable(s), these variables are removed, and the sets of inputs and outputs are recalculated without considering the first-level variables. The common set is identified, and variables whose intersection equals the input set are selected as second-level variables. Variables C01 and C05 are second-level variables. Variable C03 is the third-level variable. Variables C04 and C06 are fourth-level variables. Variable C07 is the fifth-level variable. The final pattern of the identified variable levels is shown in Figure 2.

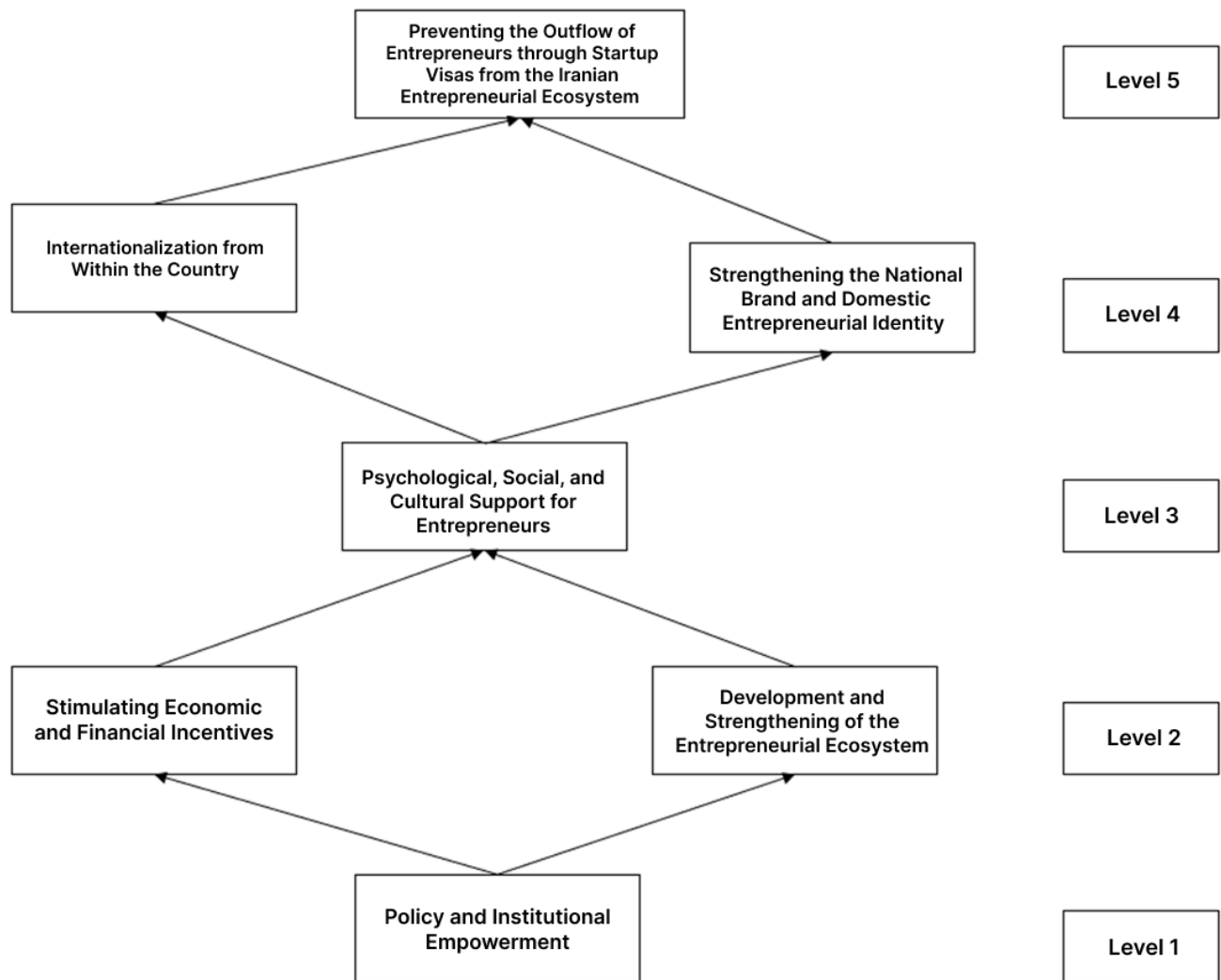


Figure 2. Interpretive structural model

In the ISM model, the mutual and influential relationships among the criteria and the connections between criteria at different levels are clearly illustrated, which helps managers better understand the decision-making space. To determine the key criteria, the driving power and dependence of the criteria are calculated in the final reachability matrix. The driving power–dependence diagram for the variables under study is shown in Figure 3.

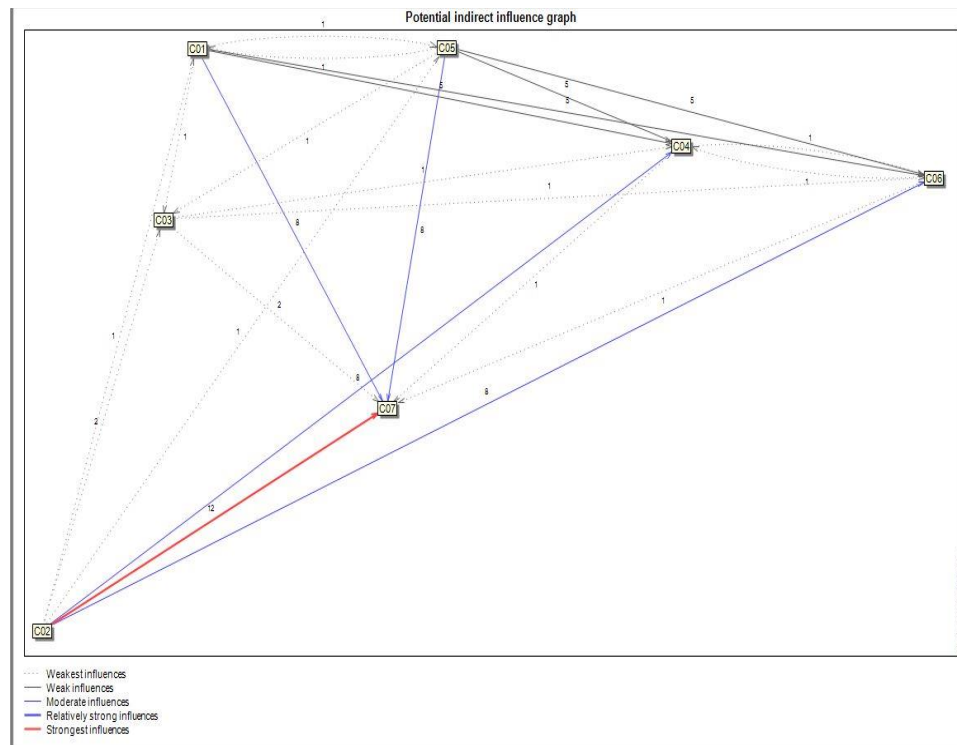


Figure 3. Driving power and dependence of the research variables

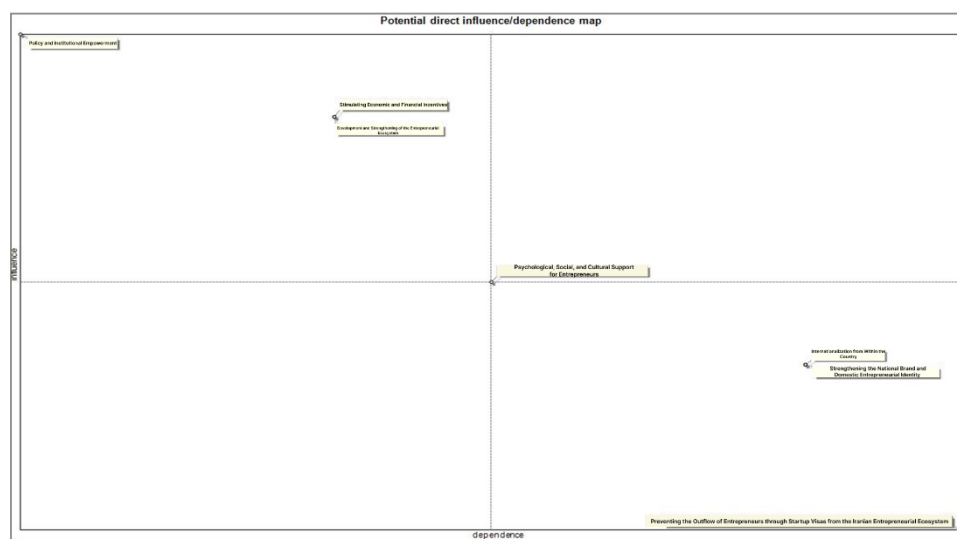


Figure 4. Driving power and dependence diagram (MICMAC output)

In this analysis, the variables are classified into four groups: autonomous, dependent, linkage, and independent.

Autonomous: Autonomous variables have low dependence and low driving power. These criteria generally remain detached from the system because they have weak connections to it. Any change in these variables does not lead to significant changes in the system.

Dependent: Dependent variables have strong dependence and weak driving power. These variables are highly affected by the system but exert little influence on it. In this study, the dependent variables are *internationalization from within*, *strengthening the national brand and domestic entrepreneurial identity*, and the *model for preventing the outflow of entrepreneurs through startup visas from the Iranian entrepreneurial ecosystem*.

Independent: Independent variables have low dependence and high driving power. In other words, they have high influence and low susceptibility to influence. These variables are *policy and institutional empowerment, stimulating economic and financial incentives, and development and strengthening of the entrepreneurial ecosystem*.

Linkage: Linkage variables possess both high dependence and high driving power. In other words, their influence and susceptibility to influence are both high, and any minor change in these variables causes major changes in the system. In this analysis, based on the MICMAC model, the linkage variable is *psychological, social, and cultural support for entrepreneurs*.

In the present study, structural equation modeling techniques—specifically Partial Least Squares (PLS)—were used to test the measurement model and research hypotheses. The regression coefficient and significance level (t-value) are presented in Figures 5 and 6.

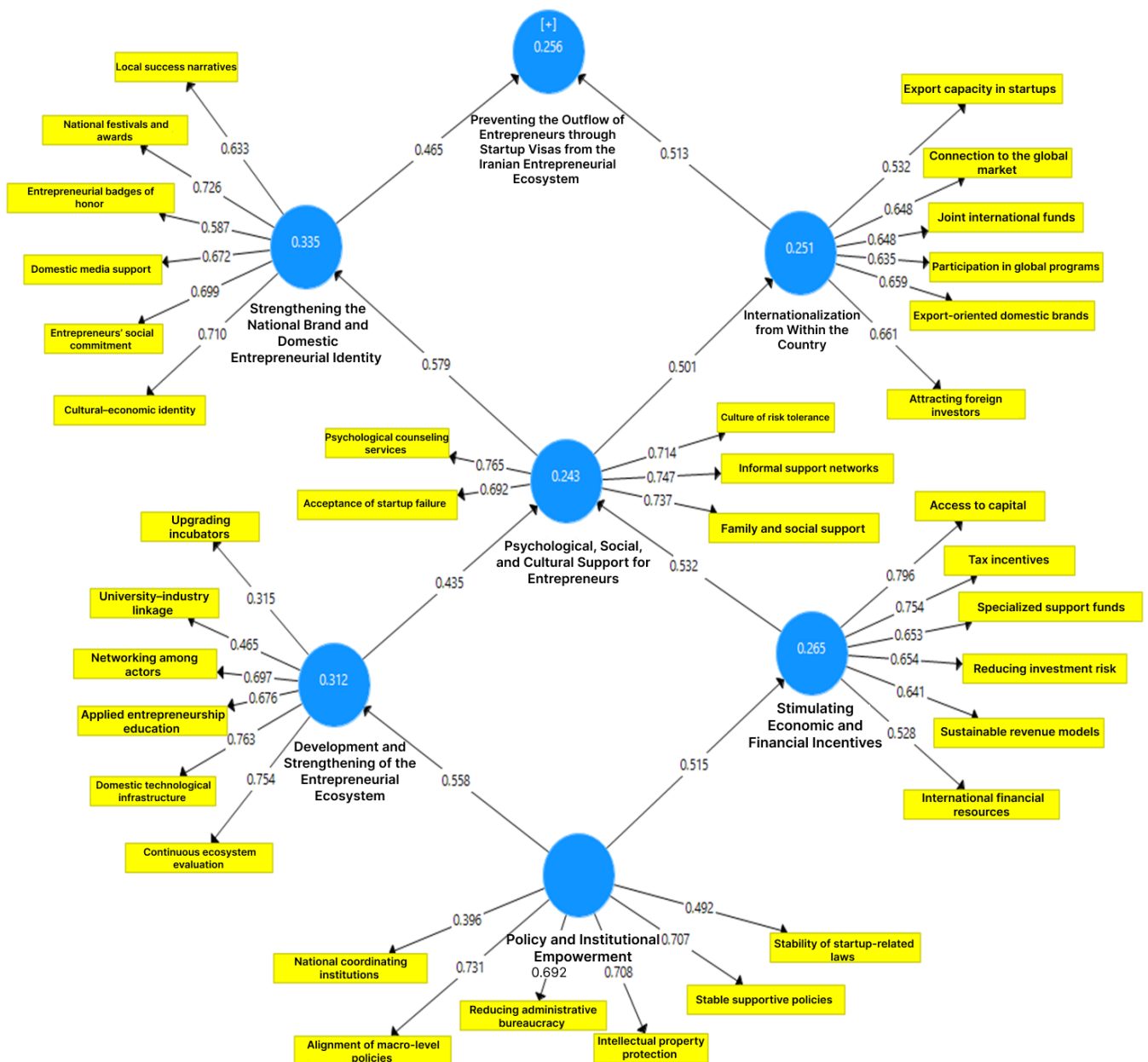


Figure 5. Overall factor loadings of the research model

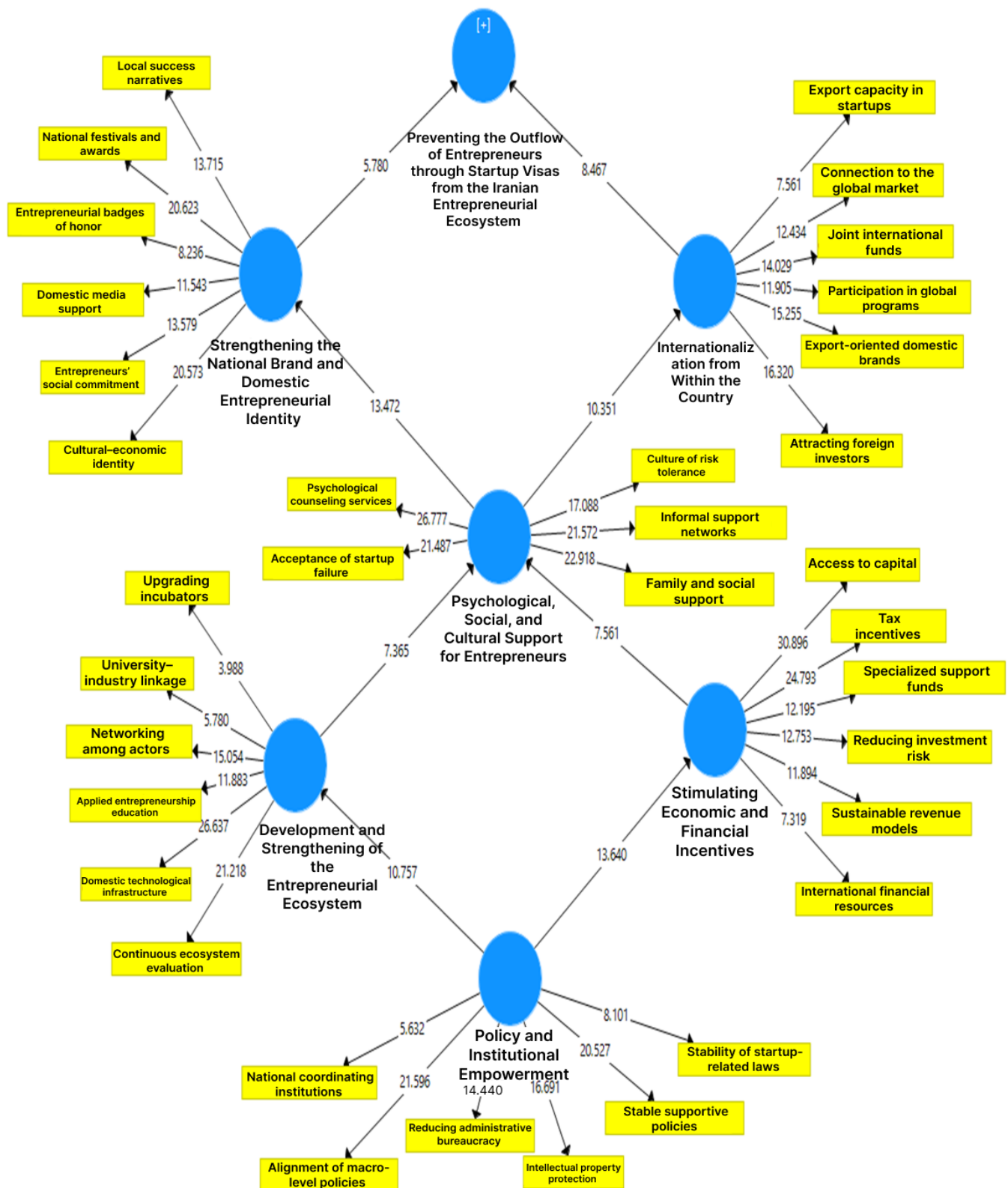


Figure 6. Bootstrapping t-values of the research model

As shown in the model, all factor loadings are greater than 0.30, and all t-values exceed 1.96. Therefore, the model is confirmed at the 95% confidence level.

Outer Model (Measurement Model)

The measurement model of structural equations is presented in Table 6.

Table 6. Convergent validity and reliability of the research variables

Symbol	Variable	Cronbach's Alpha	AVE	CR
C1	Development and strengthening of the entrepreneurial ecosystem	0.865	0.53	0.801
C2	Policy and institutional empowerment	0.790	0.566	0.852
C3	Psychological, social, and cultural support for entrepreneurs	0.737	0.601	0.782
C4	Strengthening the national brand and domestic entrepreneurial identity	0.844	0.627	0.764
C5	Stimulating economic and financial incentives	0.825	0.633	0.758
C6	Internationalization from within	0.803	0.614	0.794
C7	Model for preventing the outflow of entrepreneurs through startup visas	0.794	0.628	0.773

According to the results of Table 6, Cronbach's alpha for all variables is greater than 0.70; therefore, all variables are reliable. The Average Variance Extracted (AVE) is greater than 0.50 for all constructs, confirming convergent validity. Composite Reliability (CR) is also greater than both AVE and 0.70, indicating that each construct in the model possesses satisfactory validity and reliability.

Discussion and Conclusion

The purpose of this study was to identify and model the factors influencing the outflow of entrepreneurs through startup visas and to design a comprehensive framework for preventing this phenomenon within the Iranian entrepreneurial ecosystem. The findings revealed that six major dimensions—policy and institutional empowerment, economic and financial incentives, development of the entrepreneurial ecosystem, national brand and entrepreneurial identity, psychological and socio-cultural support, and internal internationalization capacity—play critical roles in shaping entrepreneurial decisions regarding migration. These results underscore the multi-layered nature of entrepreneurial outflow and highlight the deeply interconnected structural, institutional, and behavioral variables that collectively determine the sustainability of a national entrepreneurial system.

One of the central findings was the critical influence of policy and institutional empowerment, particularly the stability of laws, consistent support programs, intellectual property protections, and the reduction of bureaucratic constraints. This aligns closely with global research, which consistently shows that institutional strength and regulatory predictability are foundational to entrepreneurial confidence and ecosystem efficiency (1, 17). In many developing economies, unstable regulatory environments have been found to contribute to uncertainty, inefficiency, and reduced investment willingness (3). Similarly, studies conducted in Iran emphasize that entrepreneurs face persistent challenges navigating unclear or frequently changing policies, which diminish their interest in long-term domestic investment (22, 24). The present study's findings corroborate this concern by showing that policy inconsistency is one of the strongest drivers of entrepreneurial outflow.

Another important dimension identified is economic and financial incentives, including access to capital, tax incentives, investment risk reduction mechanisms, and international financing opportunities. The importance of financial systems in strengthening entrepreneurial ecosystems is well documented in global literature. Studies have shown that access to diverse financing channels, including venture capital, angel investors, fintech mechanisms, and crowdfunding platforms, significantly enhances entrepreneurial performance and innovation potential (8, 9). However, research in developing countries reveals that traditional financial institutions often remain risk-averse or bureaucratic, restricting startups from obtaining necessary capital (10). The present findings indicate that Iranian entrepreneurs face similar structural financial constraints, prompting them to pursue startup visa opportunities in

countries with more developed financial ecosystems. This observation aligns with evidence from agricultural and rural entrepreneurship studies in Iran that underscore the lack of integrated financial support frameworks as a persistent obstacle (14, 25).

The study also highlighted the major role of ecosystem development, including incubator advancement, university–industry linkage, networking structures, and technological infrastructure. International scholarship shows that effective incubators and accelerators serve as central hubs for knowledge exchange, mentorship, and early-stage support, significantly increasing startup survival rates (15). Moreover, the integration of universities into innovation ecosystems is essential for generating science-based startups and fostering multidisciplinary innovation (20). The findings from this study correspond to those of Moradnezhadi and Moradanzhadi, who argue that Iranian universities, despite progress, still face substantial barriers in aligning academic output with entrepreneurial needs (16, 23). Weaknesses in networking and connectivity among actors were identified as major factors pushing entrepreneurs toward foreign ecosystems that offer better integration, mentorship, and commercialization pathways.

Further, the study found that strengthening national brand and entrepreneurial identity—through local role models, national festivals, media support, and cultural narratives—has a meaningful effect on entrepreneurial retention. International research supports this conclusion, showing that cultural identity, societal narratives, and inclusive recognition structures influence entrepreneurial motivation, self-efficacy, and long-term commitment (19). For instance, women entrepreneurs' wellbeing is strongly influenced by supportive cultural contexts and gender-inclusive entrepreneurial narratives, suggesting that identity-related factors shape entrepreneurial pathways (21). Similarly, digital narratives and success stories can reduce fear of failure, strengthen perceived self-efficacy, and encourage persistence in local entrepreneurial ecosystems (6). The present findings suggest that Iran's limited positive storytelling around entrepreneurship, coupled with strong emigration narratives, may be contributing to the psychological attractiveness of foreign startup ecosystems.

The inclusion of psychological, social, and cultural support as a core determinant of entrepreneurial outflow is another significant contribution of this study. Extensive research highlights that entrepreneurship is a psychologically demanding activity characterized by uncertainty, stress, and emotional volatility. Without adequate psychological support mechanisms, entrepreneurs may experience burnout, reduced risk tolerance, and heightened desires to exit the local ecosystem (4). Recent international studies further confirm that psychological resilience is a critical factor in sustaining entrepreneurial engagement, especially in volatile institutional environments (29). The results of this study point to a gap in psychological counseling services, community support networks, and family engagement structures in Iran's ecosystem, which may intensify entrepreneurial stress and push founders toward foreign environments perceived as more supportive.

Finally, the study underscores the essential role of internal internationalization capacity, including export readiness, global market access, participation in international programs, and the ability to attract foreign investors. Modern entrepreneurial ecosystems increasingly depend on global connectivity, with startups aiming to access international customers, partners, and investors from the earliest stages (18). Studies show that ecosystems with strong international linkages create more competitive and scalable startups and also reduce the likelihood of migration by providing global opportunities domestically (12). In Iran, however, limitations in export facilitation, market research, global networking, and cross-border financial processes constrain entrepreneurial growth, pushing founders to seek foreign ecosystems where these obstacles are minimized (26). The findings of this research

validate these challenges and emphasize the need for internal internationalization infrastructures to counteract outbound entrepreneurial mobility.

Synthesizing these insights, the study demonstrates that entrepreneurial outflow is not the result of isolated factors but rather an outcome of deficiencies across multiple interconnected domains. The interpretive structural modeling (ISM) results further reveal hierarchical patterns among these dimensions, identifying policy empowerment and financial incentives as foundational driving forces. This structural insight aligns with global studies that classify institutional and financial infrastructures as “keystone conditions” necessary for ecosystem functioning (28). Without addressing these core systemic drivers, efforts to strengthen peripheral components—such as internationalization or branding—are unlikely to produce sustainable results.

The findings also confirm that the phenomena of entrepreneurial migration and startup visa utilization are deeply linked to ecosystem shortcomings rather than merely individual preferences. Research in various developing countries similarly shows that founders often migrate not for lifestyle reasons but because foreign ecosystems offer clearer regulatory frameworks, more inclusive institutional support, and better financial and internationalization opportunities (3, 17). Therefore, the implications of this study extend beyond entrepreneurship policy and touch on broader issues of national innovation strategy and talent retention.

This study is limited by its reliance on self-reported data from entrepreneurs and experts, which may be subject to personal bias or selective recall. Additionally, the structural model represents the ecosystem at a specific point in time, and dynamic changes in policy or global economic conditions may alter entrepreneurial motivations in ways not captured by the dataset. The sample size, while adequate for ISM and PLS analyses, may not fully reflect the diversity of entrepreneurial experiences across all regions and industries in Iran.

Future studies should incorporate longitudinal data to examine how entrepreneurial outflow evolves over time in response to policy reforms or economic changes. Comparative studies between Iran and other countries with similar economic and institutional profiles would provide deeper insights into ecosystem gaps. Further research should also explore psychological dimensions—such as stress, resilience, and perceived opportunity structures—using mixed-methods or experimental approaches to capture nuances in entrepreneurial decision-making.

Policymakers should prioritize stabilizing regulatory systems, simplifying administrative processes, and enhancing financial access to strengthen the ecosystem's foundational pillars. Universities, incubators, and science parks should expand mentorship networks, psychological support services, and global market integration programs to reduce migration incentives. Media and cultural institutions should actively promote local entrepreneurial success stories to strengthen national entrepreneurial identity and foster a supportive socio-cultural environment for founders.

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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

All ethical principles were adhered in conducting and writing this article.

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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