

Developing a Framework for Retaining Academic Human Capital in Confronting the Emigration Trend Among Talented Postgraduate Students

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Abstract

Purpose: The present study aims to propose a conceptual framework for retaining academic human capital and counteracting the migration trend among talented postgraduate students in Iranian universities.

Methodology: Adopting a qualitative approach, this study employed the meta-synthesis method. The research community consisted of scholarly works published in the fields of elite migration, human capital retention, and higher education policy. Through a systematic search and rigorous screening, 70 valid sources (43 Persian and 27 English) were selected. Data analysis was conducted using open, axial, and selective coding, and the extracted categories were integrated into a conceptual framework.

Findings: Five core categories were identified: (1) Causal conditions – including effective educational and learning factors, motivational and psychological factors, and social as well as emotional support; (2) Contextual conditions – including supportive institutional policies and actions of universities, and scientific and research infrastructures; (3) Intervening conditions – including structural and economic factors at national and international levels, managerial and executive factors, and socio-political and cultural factors; (4) Strategies – such as designing supportive packages for return migration, facilitating the process of scientific reverse migration, creating special job opportunities for capable graduates, attracting and engaging elites in national and strategic projects, reforming the higher education and research system in line with global standards to meet elite needs, and enhancing the social status and dignity of scientific elites in macro policies; and (5) Consequences – including a decline in universities' scientific and research capacity, damage to the national knowledge-based economy, loss of human capital and intellectual resources, weakening of the country's international scientific position, and widening of the scientific gap with developed countries.

Results: Retaining postgraduate elites is a complex and multidimensional challenge that requires coordinated policy-making at the levels of the Ministry of Science, universities, and other relevant institutions. The proposed framework provides a conceptual tool for designing effective interventions aimed at strengthening motivation, fostering social hope, and enhancing the sense of belonging of elites to the higher education system and national development.

Value: By systematically and critically synthesizing the findings of previous studies, this research offers a comprehensive model for retaining academic elites and addressing scientific migration in Iran. The proposed framework can serve as a foundation for evidence-based policymaking, strategic planning, and designing support systems for elites within universities.

Key Words: *Academic Elites, Scientific Migration, Human Capital Retention, Postgraduate Students, Meta-Synthesis, Higher Education Policy*

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Extended Abstract



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Introduction: The large-scale migration of highly educated individuals from Iran has emerged as a major social and scientific concern. According to the International Monetary Fund (IMF), approximately 150,000 to 180,000 Iranian elites leave the country annually. Among 90 developing countries, Iran ranks first in terms of elite brain drain. A substantial number of top academic talents, including over 90 out of 125 international Olympiad medalists (2010–2013), are currently studying at universities in the United States and Canada. These statistics point to a significant and often irreversible loss of national intellectual capital. Beyond the social and human implications, this migration inflicts severe economic and scientific damages: estimates range from 50 to 150 billion dollars annually, with some analysts comparing the economic damage to nearly 300 times the cost of the Iran-Iraq war. Notably, 96% of patents registered by Iranian-origin inventors between 2007 and 2012 were filed by those residing abroad, illustrating a sharp decline in domestic innovation output. Given these alarming trends and their far-reaching consequences, the urgency to develop localized, multidimensional strategies and frameworks for retaining academic elites—particularly top-performing postgraduate students—has never been more critical. However, despite the strategic importance of this issue, existing research in Iran has largely neglected the retention of academic human capital from a human resource development perspective. Most studies have either focused on general organizational retention (e.g., public, military, or industrial sectors) or examined the concept of human resource retention without attention to academic migration dynamics. A few university-based studies have adopted a human capital approach but have generally focused on faculty members rather than postgraduate students. This gap in the literature underscores the need for a conceptual model grounded in interdisciplinary evidence and responsive to the specific context of Iranian higher education.

Purpose: The present study was conducted with the aim of presenting a comprehensive conceptual framework for the retention of academic human capital in counteracting the migration trend among talented postgraduate students.

Methodology: This research adopted a qualitative approach using the meta-synthesis method. The research community consisted of scientific studies related to elite migration, human capital retention, and higher education policy. Following a systematic search and rigorous screening, 70 credible sources (43 Persian and 27 English) were selected. Data analysis was carried out through open, axial, and selective coding, and the main categories were integrated into a unified conceptual framework. Meta-synthesis, as a qualitative research strategy, facilitates the systematic integration of diverse studies to generate new theoretical insights and grounded conceptual models.

The research process followed the six-step model proposed by Sandelowski and Barroso (2007), encompassing:

1. Formulating the research question;
2. Identifying and selecting relevant sources;
3. Assessing the quality of selected studies;
4. Extracting data (codes, concepts, and themes);

5. Analyzing and synthesizing data to identify core themes;
6. Interpreting findings and developing the final framework.

To ensure the relevance and quality of the included literature, specific inclusion criteria were applied:

- Central focus on migration, retention, or attraction of academic elites;
- Qualitative, meta-analytical, descriptive-analytical, or conceptual approaches enabling thematic coding;
- Extractable findings within psychological, educational, economic, structural, managerial, cultural, or policy-related domains;
- Relevance to or generalizability to the Iranian socio-academic context;
- Publication in credible national or international journals from 2000 onward.

An initial pool of 309 sources (in Persian and English) was identified.

After screening based on the inclusion criteria, 70 studies—comprising 43 Persian and 27 English sources—were selected. Studies focusing solely on general economic migration or unrelated macro-management topics were excluded. Data analysis involved a three-stage coding process (open, axial, and selective coding) to extract and categorize key themes. To ensure validity in this meta-synthesis study, strict inclusion/exclusion criteria were applied to select high-quality studies from reputable databases, ensuring content validity. Geographic and methodological diversity enhanced external validity, while manual, independent coding by two researchers, with agreement reached through discussion and consensus, ensured internal validity and inter-coder reliability. Data analysis was conducted manually using simple qualitative methods and standardized protocols, with repeated reviews and expert consultations ensuring reliability over time and analytical consistency.

Findings: The results revealed five major dimensions along with their subcomponents:

- **Causal conditions:** Effective educational and learning factors: constructive interaction between professors and students; regular and purposeful feedback; transparent and applicable curriculum design; meaningful learning activities; recognition of students' learning styles; use of modern educational technologies; peer mentoring and group learning; systematic performance-based assessment; and skill-oriented and experiential learning programs.

Motivational and psychological factors: academic satisfaction and personal growth; scientific self-efficacy and confidence; intrinsic motivation for learning and research; academic belongingness; psychological and emotional adjustment; long-term goal orientation and planning; non-financial motivation for personal and social growth; and work–study–life balance.

Social and emotional support factors: supportive peer networks; strong peer interactions; sense of belonging to academic and scientific community; access to psychological and social counseling services; participation in scientific groups and student associations; and structured support for cultural and academic minorities.



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- **Contextual conditions:** Institutional policies and supportive actions: scholarships and research grants; access to welfare, health, and insurance services; university support for student employment; tailored job opportunities; university–industry–labor market linkages; positive and motivational organizational culture; talent retention strategies; and structural flexibility for supporting elites.

Scientific and research infrastructures: advanced laboratories and facilities; interaction with global research centers and opportunities for scientific exchange; international collaboration and networking; establishment of science and technology parks and their integration with universities; support for start-ups and innovation centers; and access to scientific databases and research resources.

- **Intervening conditions:** Structural and economic factors (national and international): low income and inadequate livelihood; lack of stable and relevant employment; economic instability and job insecurity; weak research and innovation policies; limited academic freedom and innovation space; and sanctions restricting international activity.

Managerial and executive factors: weak policy-making and lack of retention strategies; excessive bureaucracy; lack of transparency in resource allocation; absence of clear career development pathways; lack of a comprehensive plan for return migration; and restricted university autonomy in decision-making.

Cultural and socio-political factors: negative or neglectful societal attitudes toward elites; attraction of modern lifestyles abroad; domestic socio-political restrictions; limited freedom of thought and expression; and perceived discrimination and inequality in academia.

- **Proposed strategies for retention of academic human capital :** designing supportive packages for return migration; facilitating reverse scientific migration and residence; creating tailored job opportunities for competent graduates; engaging elites in national and strategic projects; reforming the higher education and research system in line with global standards to meet elite expectations; and strengthening the social status, dignity, and recognition of scientific elites in macro policies.
- **Consequences of migration or retention:** decline in universities' scientific and research capacity; damage to the national knowledge-based economy; loss of human capital and intellectual resources; weakening of international scientific reputation; and widening of the scientific gap with advanced countries.

Conclusion: Retention of postgraduate elites is a multidimensional and complex issue that demands coherent and integrated policy-making across the Ministry of Science, universities, and related institutions. The proposed framework provides a conceptual tool for designing evidence-based interventions that can enhance motivation, foster social hope, and strengthen the sense of belonging of elites to the higher education system and national development.



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Value: By systematically and critically synthesizing findings of previous research, this study proposes a comprehensive model for academic elite retention in Iran. The framework contributes to the literature on talent management in higher education and can serve as a practical foundation for policy-making, strategic planning, and the development of sustainable support systems for academic elites.



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