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Identifying the Dimensions and Components of the Entrepreneurship Development Model in the Country's Higher Education System

Shoukooh Seyedbagheri[1], Heydar Amiran[2*], Jamshid Edalatian Shahriari[1]

1. Department of entrepreneurship, central Tehran branch, Islamic Azad university, Tehran, Iran.
2. Department of entrepreneurship, central Tehran branch, Islamic Azad university, Tehran, Iran (Corresponding Author).

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Purpose: The entrepreneurship development in the higher education system creates a competitive advantage for educational systems. Therefore, the current research was conducted with the aim of identifying the dimensions and components of the entrepreneurship development model in the country's higher education system.

Method: In an applied study from type of qualitative from among the experts of the country's higher education system number of 14 people of them were selected as a sample according to the principle of theoretical saturation and based on the inclusion criteria with the purposive sampling method. The samples of the present research were subjected to a semi-structured interview, which whose validity was confirmed by the triangulation method and their reliability was calculated by the coefficient of agreement between two coding methods 0.84. Data were analyzed by thematic analysis method in MAXQDA software version 2020.

Results: The findings indicated that the entrepreneurship development model in the country's higher education system has 73 components in 8 dimensions, including intrastructural strategic components (with 3 components), policy-making strategic components (with 3 components), centrality of the higher education system (with 4 components), cooperation of the higher education system (with 10 components), human force (with 11 components), adaptability (with 11 components), external organization (with 10 components) and internal organization (with 11 components). Finally, the entrepreneurship development model in the country's higher education system was drawn based on the output of MAXQDA software.

Conclusion: According to the results of this study and based on the dimensions and components of the entrepreneurship development model in the country's higher education system, it is necessary to plan for the entrepreneurship development through the improvement of the identified dimensions and components in this research.

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1. Corresponding Author: amiranheydar@yahoo.com

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1. Introduction

In many societies, the quality of higher education systems has created a competitive advantage at both regional and international levels. Given the phenomenon of the global village and the disappearance of geographical boundaries due to the expansion of information and communication technologies, higher education operates in an intertwined national and international environment and must respond to both national and international contexts(Ortega et al., 2022). Higher education institutions are significant organizations that play an effective role in achieving societal goals, and any effective change in this system improves the societal condition compared to other societies(Kotula et al., 2021). This system is considered one of the important and valuable sources of providing specialized, skilled, thoughtful, and efficient human resources, acting as both a guardian of societal heritage and a responder to changing needs influenced by scientific and technological advancements(Harangus & Kátai, 2020). Higher education aims to promote and enhance knowledge and train specialized human resources in various fields, with a mission to develop knowledge, facilitate human growth and evolution, enrich the country's culture, and nurture the specialized human resources needed by society. Nurturing specialized human resources for achieving sustainable and balanced development requires societies to have dynamic and efficient higher education, achievable only through advanced education(Aboutalebi et al., 2023). Higher education is one of the most important and constructive social institutions that has faced many changes and transformations in recent years and needs strategic planning in line with societal changes and transformations to maintain its dynamism (Bradley & Godin, 2020). Higher education is the main factor in progress, change, and transformation in society, and one of the main topics and goals of universities is to improve the educational status of students, with universities always striving to nurture a generation of students who can live in environments with diverse values, complex cultural transformations, and rapid technological changes (PorFalahati et al., 2023). The higher education system is the main driver of political, economic, social, and cultural development, as it both preserves and transmits cultural heritage and values of societies and responds to new social needs in light of societal changes and technological advancements (Kruglova et al., 2022). This system is regarded as the most prominent scientific institution, dedicated to nurturing humans, serving as the driving force and the intellectual core of society, and steering the path towards sustainable development (King & Bailey, 2021).

In today's world, in addition to educational and research missions, higher education systems and universities have another mission in the context of increasing participation in the innovation process and technological development, with universities engaging in entrepreneurial activities and their development recognized as a source of technology development (Nasiri et al., 2022). One of the indicators of development in any society is the growth and utilization of the abilities and talents of its human resources, with a society being able to develop when all its members have the capacity for development, among the effective strategies in this area is focusing on entrepreneurship (Ghasemi et al., 2022). In recent decades, the importance of the entrepreneurship construct has led many researchers to examine the factors affecting it from various angles, exploring facilitators and promoters of innovative activities and businesses, as well as obstacles to realizing these types of activities (Coulibaly et al., 2018). Entrepreneurship, considered key to economic and social growth in many countries, assumes that entrepreneurial activities in various dimensions contribute to growth and development. The construct of entrepreneurship includes identifying high potential and technology-focused business opportunities, gathering resources such as talents and capital, managing growth and significant risks through principled decision-making skills (Aria Parsa & Dalvi Esfahan, 2023). Entrepreneurship, originating from the French word Entreprendre meaning to undertake, refers to the process of innovation and exploiting opportunities with minimal effort along with accepting financial, psychological, and social risks aiming for financial benefit, desire for success, personal satisfaction, and independence (Yang et al., 2023). Another definition posits entrepreneurship as the creation of new businesses accompanied by risk-taking and uncertainty, this construct being a wealth generator, business creator, innovator, change agent, job creator, and value creator, achieved through seeking and pursuing opportunities and maximizing value derived from it (Wellalage et al., 2023). Entrepreneurship development

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is a set of public and private policies and methods that accelerate and support entrepreneurial behaviors (Leonidou et al., 2020). This type of development is a global concern and one of the main reasons for global progress and transformations. If entrepreneurship is a system comprising entrepreneurs, institutions, and government policies, then entrepreneurship development involves increasing the level of entrepreneurial activities, with governments tasked with creating an environment facilitating continuous entrepreneurial activity and efforts to establish and grow successful organizations (Zhang, 2020). Entrepreneurship development, while facilitating growth and sustainable development, addresses current issues including poverty, social and cultural disarray, unemployment among university graduates, and the broader unemployment problem (Manning & Vavilov, 2023). Entrepreneurial universities, through establishing university spin-off companies, bring new ideas and technologies to fruition and are introduced as an important element in the entrepreneurship ecosystem. The strategic role of these universities and achieving innovative capabilities through knowledge creation and the entrepreneurial opportunity discovery process provide added value for facilitating development (Zhang, 2023).

Research on entrepreneurship development in higher education systems has been conducted, with the most important findings detailed below. Mir, Rahimikia, and Daraei (2024) concluded in their study that an ecosystemic entrepreneurship model for universities identified factors including structural elements (structure and government), entrepreneurial contexts (environmental and managerial factors), entrepreneurial outcomes (development and transfer of entrepreneurship and technological entrepreneurship), educational and cultural factors (educational, cultural, and scientific and technological factors), and policy and planning (government policy and leadership policy) (Mir et al., 2024). MostafaZadeh, Haghighat Monfared, and Keramati (2023) found that prerequisites and drivers of entrepreneurship development in universities include student prerequisites, culture building in society, value infrastructure in society, universities' human capital, management prerequisites, policy-making and goal-setting for social entrepreneurial universities, structure of social entrepreneurial universities, academic communications, and strengthening the position of social entrepreneurial universities in society, with outcomes of entrepreneurship development in universities including enhanced skills and social and individual learning, improved university and student status in society, cultural expansion, solving economic and social problems, increased employment, and development of social entrepreneurship values (Mostafa Zadeh et al., 2023). Amya, Didehkhani, and Saeedi (2022) concluded that factors affecting the development of entrepreneurial education in higher education systems include six categories: internal excellence factors (with 7 indicators), technical knowledge (with 7 indicators), motivational issues (with 5 indicators), management issues (with 9 indicators), educational transformation (with 5 indicators), and systemic issues (with 5 indicators) (Amya et al., 2022). Porgoo, Mirabi, Reshadatjoo, and Vazifehdost (2021) found that strategies for entrepreneurship development in higher education by 1440 include factors such as growth in scientific production and academic achievements, social capital, technological and environmental changes, entrepreneurial social network, increased income and wealth creation, support from senior management, organizational culture, human capital, empowerment and education, infrastructure and government support, innovation, and learning methodology and scientific advancement. Goudarzi, Hosseini, and Tabaian (2019) concluded that entrepreneurship development in universities in the humanities includes seven dimensions: the role of government, entrepreneurial culture, research and commercialization, strengthening university financial resources, educational infrastructure, university infrastructure, and external relations (Goudarzi et al., 2019). Fichter and Tiemann (2018) identified seven areas influencing the transformation of entrepreneurial universities, including the environmental framework (encompassing potential factors like national university, innovation, or entrepreneurship policy, regional development strategies, or relevant innovation systems), university infrastructure framework (comprising strategies, structure, and culture), university members as actors in various academic fields (including education, research, transfer, or support for new business establishment), external interactions between university members and external actors (such as companies, research organizations, business development organizations, or supporters), main actions for developing

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university support systems (including research or project implementation), organizational history and university competencies, and student interest and demand (Fichter & Tiemann, 2018).

The higher education system, as a purposeful organization, strides towards balanced and harmonious growth, playing a decisive role in the economic, social, and cultural development of the country, training the specialized human resources required by various sectors, with the strengthening and development of this sector being the foundation for the development of other societal sectors (Safamanesh et al., 2023). Investigating and researching entrepreneurship development in the higher education system is of great importance as the results of this study can contribute to a better understanding of the factors affecting its development, enabling managers and officials to design and implement programs for entrepreneurship development in the higher education system. Entrepreneurship development in the higher education system creates a competitive advantage for educational systems. Therefore, the present research was conducted with the aim of identifying the dimensions and components of the entrepreneurship development model in the country's higher education system.

2. Methodology

In an applied qualitative study, 14 experts from the country's higher education system were selected as the sample based on the principle of theoretical saturation and according to the study's entry criteria through purposive sampling. In qualitative research, there are no specific rules or laws for determining the sample size prior to conducting the research, and the sample size is determined during the research process. Sampling and research on participants continue until new samples can no longer add new information to previous content, reaching what is termed as saturation. Furthermore, in purposive sampling, samples are determined based on pre-defined criteria, which in this study included the acceptance of interview recordings while maintaining ethical standards by researchers, willingness to participate in the study, having at least 10 years of teaching experience, and having research or management experience in the higher education system.

The current study's samples were subjected to semi-structured interviews, which were conducted individually and continued until the research reached saturation in terms of findings. Initially, a list of higher education system experts was prepared, and then they were examined based on the sample selection criteria. The importance and necessity of the research were explained to the selected samples, and they were reassured about the observance of ethical considerations. For this purpose, the researchers of the current study committed to adhere to all ethical standards such as confidentiality, privacy, respecting the samples' privacy, and the freedom of samples to participate in the study. Subsequently, necessary coordination regarding the place and time of the interview was made with the samples, and the interview was conducted individually at a pre-determined time and place. During the interview, in addition to recording the interviews, notes were taken, and the noted content was read to the interviewees for verification of accuracy and completeness. It is worth mentioning that in this study, the validity of the interviews was confirmed through triangulation, and their reliability was calculated using a coefficient of agreement between two coders at 0.84.

In summary, the operational steps of the current study were as follows: after identifying the samples, individual interviews were conducted with them. During the interview, questions were asked in sequence from the interviewees, and in addition to noting the content, the interviews were also recorded. After answering each question, the noted content was read to the interviewees for them to correct or confirm. It should be noted that the duration of the interview with each of the experts lasted approximately 40 to 60 minutes, and at the end of each interview, the interviewees were thanked for their participation in the study. The data of this study were analyzed using thematic analysis in MAXQDA software version 2020.

3. Findibngs

In this study, interviews were conducted with 14 experts, and their descriptive information results were presented in Table 1.

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Table 1. Descriptive Information Results of the Experts in the Current Study

Variable	Value	Frequency	Percentage
Gender	Male	12	85.71
	Female	2	14.29
	Total	14	100
Work Experience (Years)	11-15	2	14.29
	16-20	2	14.29
	21-25	2	14.29
	26-30	4	28.57
	>30	4	28.57
	Total	14	100
Age (Year)	<31	2	14.29
	31-40	4	28.57
	41-50	4	28.57
	>50	4	28.57
	Total	14	100
Marriage Status	Single	1	7.14
	Married	13	92.86
	Total	14	100
Education	Master's Degree	8	57.14
	PhD	6	42.86
	Total	14	100

According to the results of Table 1, most of the experts in the current study were male (85.71%), with a service history of 26-30 years or more than 30 years (each 28.57%), aged between 31-40 years or 41-50 years or older than 50 years (each 28.57%), married (92.86%), and with a master's degree (57.14%). The results of the thematic analysis of the entrepreneurship development model in the country's higher education system were presented in Table 2.

Table 2. Thematic Analysis Results of the Entrepreneurship Development Model in the Country's Higher Education System

Dimension	Component
Intrastuctural Strategic Components	Setting strategic goals or vision and mission
	Unified leadership in higher education
	Creating a unified entrepreneurial culture
Policy-making Strategic Components	Comprehensive interaction with the labor market, industry, and university
	Support for intellectual property
	Access to venture capital
Centrality of the Higher Education System	International relations of higher education institutions
	Development of entrepreneurial teams
	Knowledge transfer in higher education institutions
	Diversity in financial resources
Collaboration within the Higher Education System	Strong technical core in academia
	Entrepreneurial members
	Expansion of the organizational environment or detailed plan
	Establishing balance and adaptation to the environment

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	Networks and strategic alliances
	Investment, especially in knowledge
	Solidarity with industry and government
	Independence from other entities
	Organizational forms
	Implementation and application of communications
Human Resources	Encouragement, motivation, and support
	Recognition and rewarding
	Graduates
	Strong leadership core or enriched guiding core
	Involving professors and faculty members
	Organization
	Promotion or organizational advancement
	Validation and recognition
	Policies of higher education institutions
	Identity, role, and defined characteristics for higher education institutions
	Characteristics and role of professors
Adaptability	Establishing an entrepreneurial management style
	Entrepreneurial interactions
	Nature and type of commercialization technology
	Public policies
	Environmental industry or peripheral industries
	Local or regional conditions
	Strong relationship with external stakeholders
	Social interaction of students and professors
	Strengthening university research and development
	Legislation
	Labor market flexibility in academia
External Organizational	Stakeholder management
	University oversight
	Hybrid organizational forms
	Target setting for higher education institutions
	Structuring for higher education institutions
	Formal modernization
	Interaction with other formal sections
	Validation and approval
	Intermediary processes
	Feedback effects
Internal Organizational	Efforts towards democratizing knowledge
	Innovative learning techniques
	Knowledge infrastructures in the region
	Intellectual property rights
	Industrial composition of the geographical area
	Financing in higher education institutions
	Entrepreneurship education in higher education
	Development of entrepreneurship offices and technology transfer
	Presentation of entrepreneurial achievements
	Development of entrepreneurship education
	Support for innovation processes

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According to the results of Table 2, the entrepreneurship development model in the country's higher education system comprised 73 components in 8 dimensions including intrastuctural strategic components (with 3 components), policy-making strategic components (with 3 components), higher education system centrality (with 4 components), higher education system collaboration (with 10 components), human resources (with 11 components), adaptability (with 11 components), external organization (with 10 components), and internal organization (with 11 components). The results of the thematic analysis of the entrepreneurship development model in the country's higher education system based on the output of MAXQDA software version 2020 were presented in Figure 1.

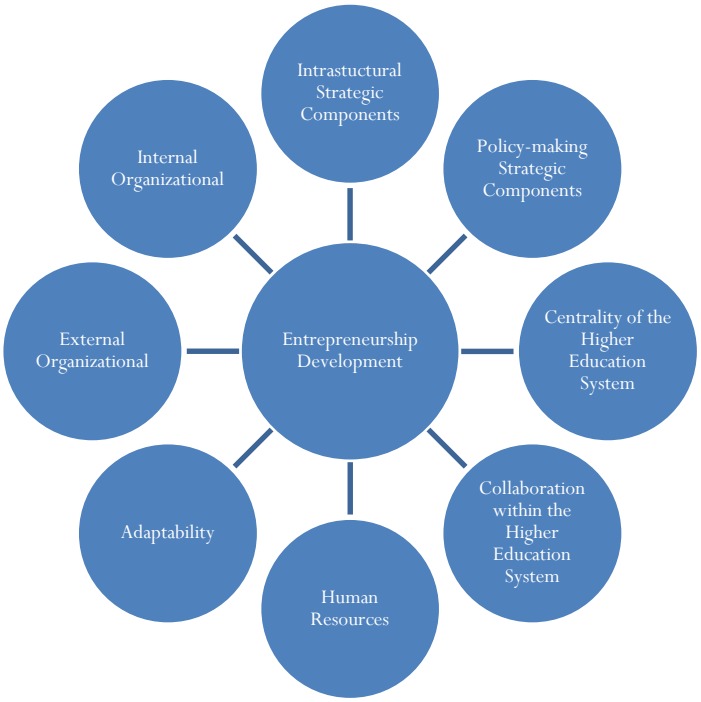

Figure 1. Final Conceptual Model

4. Conclusion

Considering the role of entrepreneurship development in improving educational systems and the importance of research on entrepreneurship development in higher education, the present study aimed to identify the dimensions and components of the entrepreneurship development model in the country's higher education system. The findings indicated that the entrepreneurship development model in the country's higher education system includes 73 components across 8 dimensions: intrastuctural strategic components (with 3 components), policy-making strategic components (with 3 components), centrality of the higher education system (with 4 components), collaboration within the higher education system (with 10 components), human resources (with 11 components), adaptability (with 11 components), external organizational (with 10 components), and internal organizational (with 11 components). Ultimately, the entrepreneurship development model in the country's higher education system was delineated. These findings align to some extent with those of Mir et al. (2024), MostafaZadeh et al. (2023), Amya et al. (2022), Porgoo et al. (2021), Goudarzi et al. (2019), and Fichter & Tiemann (2018) (Amya et al., 2022; Fichter & Tiemann, 2018; Goudarzi et al., 2019; Mir et al., 2024; Mostafa Zadeh et al., 2023; Porgoo et al., 2021).

Regarding the interpretation of the intrastuctural strategic components dimension with three components - setting strategic goals or vision and mission, integrated leadership in higher education, and creating a unified entrepreneurial culture - it can be said that recognizing the characteristics and backgrounds of those who have embarked on entrepreneurial activities is a significant step towards encouraging potential entrepreneurs and

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increasing their chances of success. However, identifying and encouraging entrepreneurs is challenging, and very few people actually engage in entrepreneurial activities.

Regarding the policy-making strategic components dimension with three components - comprehensive interaction with the labor market, industry, and university, support for intellectual property, and access to venture capital - fostering creativity and innovation, ambition, optimism, self-confidence, independent judgment, determination, passion for significant work, leadership behaviors, and people skills is crucial. Efforts should be made to strengthen perseverance, openness to criticism, hard work, pioneering, flexibility, expertise, and prudent decision-making, and improve entrepreneurial characteristics such as adaptability, foresight, policymaking, comprehension, risk-taking, and ambiguity tolerance.

For the centrality of the higher education system dimension with four components - international relations of higher education institutions, development of entrepreneurial teams, and knowledge transfer in higher education institutions - it is necessary to adjust the tendency to attribute desirable and undesirable events and activities to oneself and others, enhance individuals' internal locus of control, assist those with an external locus of control in correcting their attributional style, and recognize those who are making strides in improving the higher education system.

Concerning the collaboration within the higher education system dimension with ten components, innovative techniques for entrepreneurship development should be designed, accepting the risk of personal capital investment in the industry, entrepreneurs should accept the risk of collaborating with the higher education system, obstacles and challenges to entrepreneurship development and job creation in higher education should be examined, tools such as the internet and experts from government organizations should be utilized to facilitate entrepreneurship development, consultation with experts in private and governmental organizations should be sought, advisory centers of various organizations should be consulted, one of the consultative options for entrepreneurship development in higher education could be cultural heritage and tourism, and entrepreneurship education in higher education should be transformed into a global phenomenon, always paying attention to supply and demand in the higher education system.

Regarding the human resources dimension with eleven components - encouragement, motivation and support, recognition and reward, graduates, a strong leadership core or enriched guiding core, involving professors and faculty, organization, promotion or organizational advancement, acknowledgment and recognition, policies of higher education institutions, identity, defined roles and characteristics for higher education institutions, and the characteristics and roles of professors - it's essential to consider the age structure of human resources in higher education as one of the indicators of entrepreneurship development, utilize skilled human resources in higher education, benefit from individuals with higher education in the higher education system, coordinate between the supply and demand of skilled human resources and reduce the gap between them, increase the participation rate of higher education in entrepreneurship development and industry, give significant importance to factors effective in future market development, always aim for quantitative and qualitative development of the higher education system, create job opportunities in various economic, social, and cultural sectors, reduce unemployment rates among graduates, aim for unemployment to be specific to unskilled and older individuals, not educated and young individuals, increase job creation with growth and production, and pay special attention to future needs and requirements of the country in higher education development.

Regarding the adaptability dimension with eleven components - establishing entrepreneurial management styles, entrepreneurial interactions, the nature and type of commercialization technology, public policies, environmental industry or peripheral industries, local or regional conditions, strong relationships with external stakeholders, social interaction of students and professors, strengthening university research and development, legal regulation, and labor market flexibility in academia - it's necessary to meet the needs of the higher education system through internal economic, social, and cultural programs, the government should seriously encourage entrepreneurship and provide necessary facilities for entrepreneurs, create suitable and balanced psychological conditions for the success of entrepreneurs, take ideas from successful

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entrepreneurship experiences and programs, promote stories and realities related to entrepreneurship development, organize entrepreneurship education programs, justify the economic dependence on entrepreneurship development appropriately, identify entrepreneurs in all communities and areas for exploitation, prevent the occurrence of unsuitable environments leading to the growth of the underground economy, smooth the environment for entrepreneurship occurrence, and describe the desirable outcome of an entrepreneurship policy and enhance the level of entrepreneurial activity.

Additionally, regarding the external organizational dimension with ten components - stakeholder management, university oversight, the revelation of hybrid organization, targeting for higher education institutions, structuring for higher education institutions, formal modernization, interaction with other formal sections, validation and approval, intermediary processes, and feedback effects - conditions should be prepared for launching and growing successful entrepreneurial organizations, entrepreneurship policy should be clearly and step-by-step documented, research results on the career path of entrepreneurship should be displayed and explained, more empirical and theoretical research on entrepreneurship development should be conducted, entrepreneurial attitudes and behaviors essential for success and survival of the organization should be strengthened, factors affecting entrepreneurship development should be identified and improved, always pay attention to the personal and motivational characteristics of entrepreneurs as a model, and always focus on the role of organizational and strategic factors affecting entrepreneurship development.

Regarding the internal organizational dimension with eleven components - efforts towards democratizing knowledge, innovative learning techniques, knowledge infrastructures in the region, intellectual property rights, industrial composition of the geographical area, financing in higher education institutions, entrepreneurship education in higher education, development of entrepreneurship offices and technology transfer, presentation of entrepreneurial achievements, development of entrepreneurship education, and support for innovation processes - appropriate actions for strategic management of entrepreneurship development should be taken, planning for innovative learning techniques should be made, knowledge infrastructures for entrepreneurship development should be prepared, provisions for entrepreneurs in the field of intellectual property should be considered, appropriate financial resources for entrepreneurship through various loans should be provided, entrepreneurship in the higher education system should be taught, offices specifically for this work and technology transfer should be designed, entrepreneurial achievements should be registered on a site by areas, and always support innovation processes and entrepreneurship education.

Based on the results of this study and according to the dimensions and components of the entrepreneurship development model in the country's higher education system, planning for entrepreneurship development through improving the identified dimensions and components in this research is essential. Therefore, it is suggested that policymakers, recognizing the factors effective in entrepreneurship development, strive to improve it, and for this purpose, the commitment of policymakers and country's macro-planners towards redesigning and correcting the management of the higher education system based on entrepreneurship development strategies is necessary. Also, revising the country's comprehensive scientific map and other strategic documents related to science and technology according to the defined framework clearly and explicitly is essential, for which designing an intermediary organization at the regional (Middle East) and inter-regional (countries of the Islamic world) levels regarding entrepreneurship development in higher education can be beneficial.

Ethical Considerations

The researchers of the present study committed to adhere to all ethical standards such as confidentiality, privacy, respecting the samples' privacy, and the freedom of samples to participate in the study.

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Authors' Contributions
The researchers of this study consulted and collaborated in all sections.

Conflict of Interest
There was no conflict of interest among the researchers.

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