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Designing and Implementing a Technological Entrepreneurship Model Using a Mixed Method

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Abstract

Entrepreneurship, as a key factor in economic and social transformations, has become a major concern for researchers and policymakers. This research aims to design and implement a model of technological entrepreneurship through a mixed method. By reviewing related concepts and interviewing 15 experts in the entrepreneurship industry, a model of technological entrepreneurship characteristics was developed. The results showed that the dimensions of the model include policies, laws, barriers, valuation, entrepreneurship development, and solutions, with 75 indicators confirmed for these components.

Keywords: Entrepreneurship, Technology, Technological Entrepreneurship.

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Introduction

In recent years, new digital technologies such as cloud computing and data analytics have significantly impacted entrepreneurship processes. These changes have raised new research questions about the intersection of entrepreneurship and digital technologies. This study aims to fill the existing research gap by designing a model for the characteristics of technological entrepreneurship and assisting managers in improving decision-making within companies.

Theoretical Foundations and Background

Historical experiences indicate that technological revolutions are associated with an increase in entrepreneurship levels. Entrepreneurship, as a dynamic process, relates to creativity and change, with information technology playing a significant role in facilitating this process. Definition of Entrepreneurship: Entrepreneurship is defined as the process of creating value through the combination of resources with financial and social risks, contributing to economic growth and social development.

Dimensions of Organizational Entrepreneurship

Entrepreneurship has a profound impact on innovation, competition, and wealth creation. Numerous definitions of entrepreneurship exist, encompassing the establishment of new companies, purposeful activities, and the combination of resources for gaining advantages. A better understanding of this phenomenon requires industry-based studies.

History of Entrepreneurship and Its Necessity and Importance

Abadi presented one of the earliest theories on entrepreneurship, and for this reason, some consider him the founder of this term. He viewed an entrepreneur as a risk-taker, observing that risk involved merchants, farmers, industrialists, and other owners who purchased at known prices and sold at unknown prices, thereby facing danger (Abadi, 2005).

In the 18th century, following the industrialization of societies, a distinction emerged between capital owners and those needing capital. In the late 19th and early 20th centuries, there was no differentiation between managers and entrepreneurs. By the mid-20th century, the concept of the innovative entrepreneur was established, with Schumpeter differentiating between managers and those creating businesses (Schumpeter and Redvers, 1934).

The historical development of economies in developed countries provides evidence supporting the fact that economies are influenced by entrepreneurship. There is evidence showing that the development of countries like the USA, Japan, and Germany, which have industrially developed, is due to entrepreneurship. Entrepreneurship has now emerged as a profession that should be nurtured through specific educational and academic programs based on behavioral and empirical studies (Khanekah, 2006). Parsou Slamer considers entrepreneurship one of two essential conditions for economic development, and Schumpeter views it as a key element in creating innovation.

Types of Entrepreneurship

In the literature of entrepreneurship, various types can be found, including:

Sustainable Entrepreneurship
Collaborative Entrepreneurship
Local Entrepreneurship
Responsive Entrepreneurship
International Entrepreneurship
Social Entrepreneurship
Technological Entrepreneurship
Individual Entrepreneurship

Intrapreneurship
Corporate Entrepreneurship
Administrative Entrepreneurship
Remote Entrepreneurship
Opportunity-driven Entrepreneurship
Informational Entrepreneurship
Government Entrepreneurship
Acquisitional Entrepreneurship

Challenges of Entrepreneurship

The lack of awareness regarding entrepreneurship is one of the barriers to expanding the culture of entrepreneurship in the country. This unawareness, along with the undervaluation of capital, insecurity, social status, and the presence of security and informational barriers, are among the problems facing the expansion of the entrepreneurial culture. Government officials should eliminate barriers to product production and company establishment, and strengthen the spirit of production and business. Encouraging youth and adolescents towards productive activities and creating a suitable environment for them are among the actions that can effectively promote the culture of entrepreneurship. Government financial support also holds significant importance in this regard (Shah Mohammadian, 2013).

Technological Entrepreneurship

To cope with technological changes, organizations turn to continuous learning processes and thus produce new technological knowledge and skills (Martin Rojas et al., 2019). Organizations are aware that technological factors change rapidly, and technological advancements lead to faster innovations. In such conditions, maintaining a competitive advantage becomes challenging, and organizations must be capable of adapting to technological changes (Akgun et al., 2014). Based on the capability theory, only a few organizations that can develop dynamic capabilities can survive in a competitive environment and create sustainable competitive advantage (Gonzalez et al., 2009).

Technological entrepreneurship involves the integration of technology and knowledge along with entrepreneurial competencies and encompasses the process of creating, exploiting, and developing new technological opportunities in the market (Machnik and Kurdle, 2016). This type of entrepreneurship accelerates the transformation of new sciences and knowledge into technology, addressing societal needs and contributing to the establishment and development of organizations (Ramazanpour Nargesi et al., 2017).

Research Background

Moshadi Abdol et al. (2023) conducted a study titled "Designing a Model of Entrepreneurial Business in the Banking Industry," revealing that innovative capabilities and entrepreneurial attitudes rank highest among dimensions. Rezaei (2022) categorized the model of technological entrepreneurship in the banking industry into 7 dimensions. Soukhtanlou et al. (2022) identified key variables of the technological entrepreneurship ecosystem in their research. Additionally, various other studies have addressed the positive impacts of technological entrepreneurship and the factors influencing it.

This text requires minor edits and accuracy in references to be ready for final presentation. If you need more details or specific edits, please let me know!

Methodology

In this research, factors influencing technological entrepreneurship were examined through content analysis and interviews with experts. The interview questions for specialists in management, focusing on technological entrepreneurship, included:

What are the main policies affecting technological entrepreneurship in the country?

What factors could help in the development of technological entrepreneurship in the country?

What weaknesses or legal gaps exist regarding technological entrepreneurship?

What are the proposed solutions for improving and developing technological entrepreneurship in the country?

How do you assess the current state of technological entrepreneurship in the country?

What are the main barriers to developing technological entrepreneurship in the country?

How important is technological entrepreneurship in Iran, and how do you assess its importance?

The qualitative sample consisted of 15 active experts in the entrepreneurship industry. Initially, a number of experts were purposefully selected to examine and analyze the essential categories extracted in the first phase. The number of samples in qualitative sampling is determined based on theoretical saturation, meaning sampling continues until new components and opinions are presented by sample members.

This research began with a literature review and interviews with experts. Data were analyzed using MaxQDA software, where open and axial coding was performed to identify and summarize indicators and components. Then, using the Delphi method, indicators and components were finalized with expert approval, ultimately forming the final framework of the model through selective coding.

Research Findings

This section addresses the findings of the research obtained from the Delphi method and coding.

1. Open Coding Stage (Initial)

In data-driven theorizing, open coding is an analytical process where concepts are identified and developed based on their characteristics and dimensions. The interviews conducted with experts were fully implemented in MaxQDA software and reviewed multiple times to achieve a complete understanding. The main themes and concepts were extracted from the interview phrases and relevant articles, conceptualized, and named using codes.

After the open coding stage, 82 initial indicators were extracted. The primary goal of open coding is to break down and understand the text and link the obtained components with each other, organizing them into categories.

2. Axial Coding

In axial coding, classification is based on prior research studies and a thorough understanding of the subject. In this stage, the common aspects of the identified concepts are clarified and categorized, resulting in the creation of categories and components. In this section, 6 components were confirmed and classified by experts:

Policies

Laws and Regulations

Existing Barriers

Valuation

Entrepreneurship Development

Solutions

3. Selective Coding Stage (Final)

Finally, selective coding was performed to demonstrate the relationships among the concepts, dimensions, and components obtained, as shown in Figure 1 of MaxQDA 18 software. Based on the concepts and categories, the theoretical model is as follows:

After developing the conceptual model of the research based on the concepts extracted from in-depth and semi-structured interviews, the designed model was tested using the Delphi method. The Delphi process was conducted in 3 rounds with the participation of 15 experts with executive or managerial experience and sufficient knowledge in this field. The Delphi method is a group process that includes mutual interaction between the researcher and a group of recognized experts.

In the Delphi process, to measure the validity of the indicators and components, opinions from 15 experts were gathered in three stages by distributing a questionnaire in a yes-or-no format. Additionally, by assigning a score of 1 to 5 based on the importance of each indicator, 75 indicators were confirmed by experts.

5. Discussion and Conclusion

In this research, 6 components and 75 indicators for designing and explaining the model of technological entrepreneurship were identified and confirmed. The results indicate that existing policies act as influencing factors on the emergence of barriers, valuations, and impactful laws and regulations, thus affecting solutions

Based on the weights obtained in the coding stages, the indicators of investment in startups, project definition, and lack of coordination among different sectors, bureaucratic processes, and government support for ideas have the highest expertise weight.

According to the research results and the design of the technological entrepreneurship model, the following recommendations are proposed:

1. Combine entrepreneurship with startups and knowledge-based initiatives to create entrepreneurial opportunities.
2. Reduce intermediaries and provide online services.
3. Support government initiatives for creative ideas and innovations.
4. Develop updated policies and regulations.
5. Increase the rate of self-employment and create a healthy competitive environment.

Suggestions for future research:

1.Conduct research in other statistical communities.

2.Identify and prioritize factors related to technological entrepreneurship.

3.Examine and prioritize factors that enhance the development of entrepreneurship.

4.Evaluate the impact of policies on the development of entrepreneurship using mediating variables.