DESIGNING A TECHNOLOGY VALUATION MODEL IN IRANIAN STARTUPS

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Abstract
Technology valuation is needed by companies in today's knowledge-based economy. The intangible nature of technology, influence of environmental factors and conditions on it, have made calculating its value complicated. At present, a large part of the country's economic activities in the technological ecosystem is carried out by companies and startups, whose growth and development are possible with the influx of capital. Therefore, the aim of the upcoming research was to identify dimensions and explain the technology valuation model in Iranian startups. The approach of the research is qualitative, and in the research process, the Grounded Theory has been used. The 10 participants including active experts, policymakers, consultants, and CEOs in Iran's startup ecosystem, were selected by using the purposeful sampling method and analyzed by using the content analysis method. Participants identified factors such as lack of technology valuation requirements, bubble of startups claiming technology, innovation as causal factors, technology brokers and conflict of interests as interfering factors in the strategies of the desired phenomenon, development and promotion of technology valuation discourse, transformation of existing knowledge in the field of technology to valuable knowledge, leadership and idea management and localization of technology valuation as solution-oriented strategies, benefits of calculating the real value of technology and valuation process itself regardless of the result were expressed as the consequences of expanding the technology valuation model in Iranian startups. In this way, the dimensions of the desired model were extracted and explained.

Keywords: Valuation, Technology, Startup, Grounded theory.
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1. INTRODUCTION

Valuation methods have changed drastically in the present era and the value of intangible assets cannot be ignored anymore (Dospinescu & Dospinescu, 2020). Today, intellectual property rights have gained significant importance and all kinds of intellectual property such as trade secrets, licenses, copyrights, trademarks and inventions have the ability to generate income (Reilly & Schweis, 2016). Owners of intangible assets can possess exclusive rights to prevent others from using the registered technology (Hanel, 2006). It is necessary to have enough insight about the value of the mentioned property for the abuse of competitors or commercialization (Parr, 2018).

In the knowledge-based economy, it is very important to define the structures, relationships and factors affecting the production and application of knowledge and technology (Loderer et al. 2020). This economic system represents the faces or parts of an economy that is being produced by applying new inventions and technologies in order to achieve long-term growth (Zaki, 2019).

The relationship between types of assets (tangible and intangible) and its value has changed drastically in the last 20 years (Hanel, 2006). For the commercialization and transfer of knowledge and technology from research units to industry and services, it will be especially important in the form of valuation of technology, technical knowledge, products, etc., and in fact, valuation in this field is a bridge to transform knowledge and technology into wealth and property.

Valuation methods of intangible assets, compared to tangible assets, is a multi-disciplinary process with many challenges and cannot be easily calculated, and there is no guarantee for the certainty of the specified value (Chiu & Chen, 2007).

In general, there are various methods to facilitate buying and selling, transfer and commercialization of technology at the local, national, regional and international levels, most of which are classified into two general methods, quantitative and qualitative. Considering the growth and development of start-up businesses all over the world and consequently in Iran, calculating the technology used in this type of business for investment, entering the stock market, etc., has gained double importance. However, so far in Iran, no model that can evaluate startup technologies, and this is an important gap in this field. Accordingly, in this paper, for the first time, an attempt has been made to evaluate this issue. Hence, in this paper, a model has been provided for calculating the value of technology in Iranian startups by examining different methods of technology valuation, conducting exploratory interviews, and using the grounded theory method. Accordingly, in this paper first, a literature review is conducted in section 2. Next, the research methodology is discussed which is including, open coding, axial coding, Selective coding, and research
findings subjects. Afterward, the provided model for valuing startup technology in Iran is described in section 4. Finally, the findings of this research are discussed in section 5.

2. Theoretical Framework and Review of Literature

Innovation is an intangible asset of the company that creates value in the long term, but this value is not always properly recognized as an intangible asset (Enholm et al. 2021). In traditional accounting, innovation is usually identified as a cost and is not covered as an asset, which is the reason for the lack of accurate identification criteria in innovation (Dainienė & Dagilienė, 2014).

Technical knowledge is considered property, and to support it, methods such as contractual relation, unjust enrichment, and trust relation, which fall under the category of civil liability or contractual liability (Sarbazian, 2020). With the increase of billion-dollar startups and their role in entrepreneurship growth and social impacts, venture capitalists, entrepreneurs, etc., lawmakers are concerned about how to value start-up companies (Hidayat et al., 2022). The valuation of this type of technology is difficult due to high uncertainty in commercialization (Kim et al., 2019).

Technology valuation is an illogical goal, and this means reversing the relationship between the means and the goal. This inverted valuation is harmful to the cultivation of mental culture (Gunderson, 2017). Access to information improves efficiency in valuation. The role of the Internet and Internet searches is important in clarification or valuation bias modification (Chang & Kwon, 2018).

Technology evaluation based on price adjustment by the transferor is a model for technology valuation that has three stages: first, the technology price is set in negotiations, and in the second stage, the price range is gradually limited, and in the last stage, the time interval for bargaining is determined to ensure a scientific and reasonable price (Ma, 2015). Business team, opportunity size, marketing, sales channels, partners, competitive environment, product strength, intellectual characteristics, idea implementation time, investment cycles and rules and regulations have the greatest impact on the value of petroleum startups in Iran (Ghanbari et al., 2019). To calculate the value of the technology, the three components of the costs incurred for it in different stages (laboratory, prototyping, semi-industrial, etc.), the analysis of the future revenues of the technology and the impact of its special features can be used (Fakour, 2016).

The probability distribution of the project value and the percentage of profit that is obtained is the most important for making decisions in investing in venture projects (Hernandez-Garcia et al., 2017). Innovative companies with less financial constraints (high leverage) can have a higher value or show less uncertainty in their performance (Nemlioglu & Mallick, 2020). The most important factor in determining the value of technology in the field of research is the market index (Safari & Aldaghi, 2016). Patents that were sold in the second half of their life (10 years and 2 months) have a much higher price than before this time in their life (Vimalnath et al., 2017). Two groups of factors: 1. before entering the market and 2. after entering the market are important as the main factors of technology value, and the final value is a weighted combination of the two groups.
(Ghazinoory et al., 2016). Mehdi Khojasteh and Maryam Ashrafi compiled the classification model of patent rights using the Electre method and the hierarchical analysis process and taking into account 4 indicators of the essence of technology, technology cost, product market and technology market among the four dual screen technologies, lost mobile phone tracking, wireless communication security and banking (Khojasteh & Ashrafi, 2019). Using relative valuation methods in accounting, DeLon and McLean's evaluation model, and action value engineering, the value of technology can be calculated. To test the action model, the valuation of the electronic service of the traffic plan licensing in municipality of Tehran was discussed, which confirmed the test result of the mentioned method (Khatami Firouzabadi et al., 2018).

According to internal and external surveys, researches focused on technology valuation have been conducted and the results have been published. The researcher-made table (1) shows the summary of researches and studies conducted in the field and subject of the current research.

Finally, the research hypotheses of this work are as follows:

- There is a relationship between technology and the valuation of start-up businesses in Iran.
- There is a suitable basis for valuing the technology of start-up businesses in Iran.

<table>
<thead>
<tr>
<th>The author/authors</th>
<th>Subject</th>
<th>Summary of findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim et al. (2021)</td>
<td>Valuation of university-originated technologies: A predictive analytics approach</td>
<td>In this research, 23 indicators were extracted to calculate the value of university-originated technologies. Then, using binomial tree models and machine learning based on a large number of decision trees, valuation was done and finally, the mentioned model was evaluated using quantitative criteria (Kim et al., 2019).</td>
</tr>
<tr>
<td>Anatolyevich et al. (2021)</td>
<td>Approach to valuation of aerospace technologies commercialization capability</td>
<td>The model introduced by the researchers includes scientific, technical, time and cost indicators, which are determined based on the analysis of the information obtained from the patent and with the help of fuzzy logic (Anatolyevich et al., 2021).</td>
</tr>
<tr>
<td>Liu et al. (2020)</td>
<td>Bayesian Graph Convolutional Neural Network based Patent Valuation Model</td>
<td>According to the mentioned model, the patent value is a multi-dimensional vector in which each dimension shows the relative value for valuation. Next, the presented model was evaluated with the</td>
</tr>
<tr>
<td>Authors</td>
<td>Title</td>
<td>Valuation Model Description</td>
</tr>
<tr>
<td>---------</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>Valdivia et al. (2020)</td>
<td>A research and technology valuation model for decision analysis in the environmental and renewable energy sectors</td>
<td>The researchers’ model focuses on decision-making analysis and can be used in the early stages where there is a lot of uncertainty until the pre-commercialization stages where there is a higher percentage of certainty. Also, this model has the ability to display graphic outputs and simulate several implementation methods in a simple and understandable way. But there are limitations such as entering data by the user and the project manager, which can manipulate the data and make the analysis less effective (Valdivia et al., 2020).</td>
</tr>
<tr>
<td>Ghanbari et al. (2019)</td>
<td>Designing a Valuation Model for Petroleum Startups</td>
<td>The research results indicated that the business team, opportunity size, marketing, sales channels, partners, competitive environment, product power, intellectual characteristics, idea implementation time, investment cycles and rules and regulations have the greatest impact on the value of petroleum startups in Iran (Ghanbari et al., 2019).</td>
</tr>
<tr>
<td>Mokhtarzadeh and Ahmadzadeh (2013)</td>
<td>Technology pricing in the software sector</td>
<td>In this model, the cost-based method was used at the basic level, and the market-based method was used at the main level for strategic importance and technical evaluation, the income-based method was used for financial and economic evaluation, and the real option method was used for risk evaluation (Mokhtarzadeh, 2013).</td>
</tr>
</tbody>
</table>
3. Research Methodology

The present research has been carried out in the framework of a qualitative approach by applying the strategy of grounded theory and with the purpose of presenting a theory from the data. Qualitative research data were collected through in-depth interviews with research participants. In this way, 10 policymakers, managers of startups, knowledge-based centers, accelerators and activists in the country's startup businesses were interviewed face-to-face, in-depth and with open-ended questions between 30 and 60 minutes. Sampling was done theoretically.

Theoretical sampling is a type of purposive sampling that helps the researcher in creating or discovering theories or concepts that have been proven to be theoretically related to the developing theory. Theoretical sampling continued until the categories reached theoretical saturation, theoretical saturation is a stage in which new data does not appear in relation to the category, the category finds a suitable scope and the relationships between the categories are established and confirmed. In the grounded theory, data analysis is performed in the following three-step process (Strauss and Corbin, 2019).

- Open coding
- Axial coding
- Selective coding

Open coding is achieved by segmenting data into separate sections. In order to obtain similarities and differences, they are carefully examined and questions are raised about the phenomena that the data suggest (Strauss and Corbin, 2019). Open coding is a part of the analysis that specifically deals with the naming (conceptualization) and categorization of phenomena through a detailed examination of the data. Therefore, it can be said that in open coding, two main actions take place concluding: conceptualization and categorization.

The meaning of segmenting and conceptualizing is that the observed item, sentence, paragraph is divided into parts and each of the events, ideas or occurrences is given a name, a label that is either a sign of that phenomenon or takes its place (Strauss and Corbin, 2019). When certain phenomena are identified in the data, then concepts can be grouped based on them. This reduces the number of units to work with them. The process of classifying concepts that seem to be related to similar phenomena is called categorization. Then we give a conceptual name to a category that includes a phenomenon, but it should be noted that this name should be a more abstract association than the names of the concepts that form the category (Strauss and Corbin, 2019). At this stage, the researchers tried to use sentence-by-sentence coding for the optimal and maximum use of data and concepts.

Axial coding is the second stage of analysis in grounded theorizing. The purpose of this stage is to establish the relationship between the generated categories (in the open coding stage). The basis of the communication process in axial coding is based on the expansion of one of the classes (Danai Fard and
Eslami, 2012). The coding pattern shows the relationships between causal conditions, strategies, contextual and intervening conditions, and outcomes. In this part, based on the paradigm approach in grounded theory, the categories that were identified in the previous step with the help of open coding are connected to each other to form the research model. Figure 1 shows these relationships well.

At this stage, the categories are placed around the explanatory concept and make the process of refinement (combination and improvement) of the categories take place.

Now we will express the discoveries that happened in the reciprocal process from the interviews. In order to realize the resulting theory and provide the answer to the main question of the research, i.e. what should the technology valuation model be in Iranian startups?, based on the mentioned analysis method, the results and findings obtained in the different stages of coding and the dimensions of the exploratory model are mentioned below.

<table>
<thead>
<tr>
<th>Interviewees</th>
<th>gender</th>
<th>Area of Expertise</th>
<th>Records</th>
<th>Experience in startups</th>
</tr>
</thead>
<tbody>
<tr>
<td>First person</td>
<td>Man</td>
<td>Startups and Knowledge Enterprises</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Second person</td>
<td>Man</td>
<td>Business policy</td>
<td>28</td>
<td>15</td>
</tr>
<tr>
<td>Third person</td>
<td>Man</td>
<td>Co-founder of the startup</td>
<td>25</td>
<td>7</td>
</tr>
<tr>
<td>Fourth person</td>
<td>Man</td>
<td>Technology assessor</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Fifth person</td>
<td>Man</td>
<td>Accelerator CEO</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Sixth person</td>
<td>Man</td>
<td>Knowledge-based ecosystem policy making</td>
<td>27</td>
<td>20</td>
</tr>
<tr>
<td>Seventh person</td>
<td>Man</td>
<td>Technical-economic plan consultant</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Eighth person</td>
<td>Man</td>
<td>Startup CEO</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Ninth person</td>
<td>Man</td>
<td>Startup and technology incubator CEO</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Tenth person</td>
<td>Woman</td>
<td>Startup company expert</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

4. Description of model elements

4.1. Phenomenon-based approach: Technology valuation in Iranian startups

The Phenomenon-based approach is the phenomenon or the main event that the hierarchical measures are directed to control and manage it, and it is related to that, which in this research is "Technology evaluation of Iran's startups". In the following, each of the components of the Phenomenon-based approach are shown in the form of Table 3. Due to the large dimensions of Table 3, it is included in Appendix A.
4.2. Causal conditions

Causal conditions are conditions that effect on the category-based and are the reason for the importance of the Phenomenon-based approach. It is a necessary and insufficient condition to achieve the consequences of using the strategy. In this research, the following factors were identified as some of the causal conditions, which are displayed in Table 3 (see Appendix A).

4.3. Contextual conditions

Context indicates a series of special characteristics that indicate a phenomenon, in other words, it is the place of events related to a phenomenon along a dimension. Context is a series of specific conditions in which action/interaction strategies are made to manage, control and respond to the phenomenon (Strauss and Corbin, 2019). In the open coding stage, 3 subcategories were identified as contextual conditions. These categories are summarized in Table 3 (see Appendix A).

4.4. Intervening conditions

Intervening conditions indicate events that cause a change in the intensity of causal relations (Danai Fard and Eslami, 2012). In other words, in examining independent variables with dependent compounds, some conditions affect this relationship and intensify or weaken it, these conditions are called intervening conditions. In the open coding stage, two sub-categories were identified which the concepts related to each of these two sub-categories and their upstream main category are shown in Table 3 (see Appendix A).

4.5. Strategies

Routine or strategic methods and how to manage situations, issues and problems that a person faces in line with the Phenomenon-based approach are called action/reaction or strategy. Strategic solutions are measured and purposeful measures that are taken to solve problems that are carried out by individuals, organizations, societies or nations in order to manage the phenomenon (Strauss and Corbin, 2019). Based on this, in the open coding stage, 7 subcategories were identified, and the classification of these categories is shown under the main category and a summary of the relevant concepts in Table 3 (see Appendix A).

4.6. Consequences

Consequences may be actual or implied and may occur now or in the future. In the open coding stage, the results were categorized in the form of 2 sub-categories, which are displayed under the sub-set concepts of each of these categories and the corresponding main category in the form of Table 3 (see Appendix A).
4.7. Validity

To ensure the validity of the research, or in other words, the accuracy of the findings from the perspective of the researcher, participants or readers of the research, the following measures were taken:

a. Adaptation by participants: The axial coding phase was reviewed by the participants and they expressed their opinion about this phase and their views were applied in the axial coding phase.

b. Peer review: 3 management professors reviewed the findings and commented on the axial coding stage. It is worth mentioning that the selected colleagues have sufficient expertise in this field and this made the work results as accurate as possible.

c. Collaborativeness of the research: At the same time, the participants were helped in analyzing and interpreting the data.

5. Discussion and Conclusion

Due to the lack of requirements for technology valuation in Iran, the increasing importance of the technology dimension has become necessary among other dimensions of the organization and the false bubble of startups claiming technology and innovation in the country, the valuation of technology in Iranian startups and the design of a primary model based on first-hand data as the Phenomenon-based approach. Based on the analysis of contextual data in this field, the technology valuation model in Iran's start-up businesses includes the following steps:


Figure 1. The paradigm model of technology valuation of Iranian startups
In order to implement this model as successfully as possible, adopting strategies and solutions such as developing and promoting the technology valuation discourse, transforming existing knowledge in the field of technology into desirable and valuable knowledge, leadership and idea management, technology evaluation system, culturalization, regulatory and regulation in the technology market and localization of technology valuation can be a guide. Of course, the functioning of these strategies in practice is affected by the economic-infrastructural, cultural-social and legal-political conditions of Iran.

Also, interfering factors such as conflicts of interest and technology brokers can also influence the mentioned strategies and technology valuation in Iranian startups. If the steps of the proposed process for technology valuation in this research are implemented correctly and also the strategies mentioned above are implemented correctly, it can be hoped that in the future, start-up businesses and the entire innovation ecosystem in the country will benefit from calculating the true value of Startups technology and the benefits of the technology valuation process regardless of the outcome of this process.

By comparing the model presented in the current research with previous studies that have been conducted in Iran, it can be said that the main advantage of the current research is the use of the grounded theory method in order to discover the comprehensive components affecting the technology valuation of startups in Iran. For example, Khatami Firozabadi and his colleagues in their research named “Valuation Model of Electronic Services (Information Technology) in Large Non-Profit Institutions” presented a model for valuing electronic services using grounded theory method. The importance of the researchers’ mentioned study was that they presented a specific model for electronic services, but it is possible that this model does not work properly in other technologies.

In another research in 2016, Bahman Fakour presented a framework for technology valuation in the initial stages of development, which includes three components: costs incurred for technology in different stages (laboratory, prototyping, and semi-industrial), analysis of future revenues and special features impact of technology. In the above research, the role of factors such as the type of business, technology brokers, the bubble of startups claiming technology and innovation, the necessary requirements for valuation, culturalization in this field, etc., have not been mentioned.

Based on this description provided, presenting a model to evaluate startup technologies in Iran is the main contribution of this paper. The main advantage of the current research is to conduct qualitative and exploratory interviews for a comprehensive investigation of the research subject. In future research, the researcher intends to examine the research model through the preparation of a questionnaire, the selection of the statistical population, and its structured analysis through the prepared questionnaire in future studies. But the lack of awareness in Iran about start-up businesses may limit the scope of research.
REFERENCES


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Appendix A

<table>
<thead>
<tr>
<th>Main category</th>
<th>Subcategory concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determining the type of business</td>
<td>Determining whether the business is product-oriented or service-oriented. Determining the focus of software production or the focus of hardware production in the business.</td>
</tr>
</tbody>
</table>
### Phenomenon-based approach

| Determining valued resources | Determining tangible resources such as physical technologies.  
| Determining intangible resources such as technological ideas. |
| Determining specialized valuation groups | Determination of science and technology experts.  
| Determination of financial and economic experts.  
| Technology valuation experts must have experience in addition to expertise. |
| Determining the technology valuation approach | The approach of investigating the cost of re-establishing a technological startup.  
| Comparative valuation approach.  
| Risk factor calculation approach  
| A perspective-based valuation approach. |
| Overview of general valuation methods appropriate for technology valuation | Qualitative and intuitive methods show that there are the scoring card method and the method of aggregating risk factors.  
| There are relative methods that actually perform sample mining based on analysis, coefficient methods, fair value methods in the market and even matching methods that somehow compare and value similar businesses.  
| Venture capital valuation and discounted cash flows valuation are appropriate methods for technology valuation.  
| Standard technology valuation method based on preliminary design pricing and detailed design.  
| The method of discounted future cash flows (DCF) is a reliable but time-consuming method for valuation |
| Determining valuation criteria | The amount of innovation and creativity.  
<p>| The degree of inclusiveness. |</p>
<table>
<thead>
<tr>
<th>Causal conditions</th>
<th>The amount of revenue generation.</th>
<th>The amount of expenditure</th>
<th>The level of compatibility with the environment and social responsibility.</th>
<th>Level of compliance with laws and regulations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indexing</td>
<td>Qualitative indexing for valuation.</td>
<td>Quantitative indexing for valuation.</td>
<td>Weighting indicators.</td>
<td></td>
</tr>
<tr>
<td>Calculating the value of technology</td>
<td>Calculating technology value score based on each of the defined indicators.</td>
<td>Assimilating grades based on a common scale.</td>
<td>Calculating the final value of technology.</td>
<td></td>
</tr>
<tr>
<td>Lack of technology valuation requirements</td>
<td>Lack of specialized technology valuation centers.</td>
<td>Lack of technology valuation experts.</td>
<td>Lack of a clear mechanism for technology valuation.</td>
<td></td>
</tr>
<tr>
<td>The importance of the technology dimension among other dimensions of the organization</td>
<td>The increasing importance of technology in general in all organizations and businesses.</td>
<td>The increasing importance of technology in start-up and knowledge-based businesses.</td>
<td>The difference in the level of importance of different technologies.</td>
<td></td>
</tr>
<tr>
<td>The false bubble of startups claiming technology and innovation</td>
<td>In Iran, the number of enterprises with the name of innovation centers is more than the number of real startups.</td>
<td>Many fake startups were created with the aim of attracting the funds of the Presidential Office of Science and Technology, and their technology is not accurately valued.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contextual conditions</td>
<td>Intervening conditions</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic and infrastructure conditions of Iran</td>
<td>Technology brokers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social and cultural conditions of Iran</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal and political conditions of Iran</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Many fake startups were created in universities to take advantage of scientific advantages and advances, and their technology is not accurately valued.

Isolating the ecosystem of technological businesses from traditional businesses by the Presidential Office of Science and Technology and Science and Technology Parks. Iran's low ranking in business indicators. We are one phase behind the creation of technology and its consumption in the world. Domestic investors' understanding of new technologies is low and they do not show interest in investing in startups. The necessary facilities and platform for the entry of foreign investors in the field of startups have not been provided. The lack of statistical and information resources for technology valuation in different industries of Iran.

Lack of institutionalization for technology valuation. Lack of public awareness of startup and valuable technologies. The position of creating wealth and material value in Iranian society. The investor usually has a monopolistic spirit and wants 100% ownership of the idea. Not paying attention to the technology valuation philosophy.

Lack of clear regulations in the field of intellectual property. Weakness in international relations in the field of technology due to political issues. The multiplicity of technology managers in Iran, including the Scientific and Industrial Research Organization of Iran and redundant regulations and red tape to create technological values in start-up businesses. Non-integrated planning in the field of technology. It is difficult to maintain technical knowledge in Iran. Bureaucracy.

The role of brokers in creating ecosystem financial instruments. Advisory and expert role of brokers. The role of brokers in the contract adjustment between the investor and the technologist.
Conflict of interest

Sometimes the evaluator and the technician are the same. Sometimes the government's decisions in the field of some main technologies are in conflict with businesses. There is no legal independence in technology evaluation. The conflict of opinions of the investor and the technologist in the way of the initial contract adjustment. A percentage of the evaluator's taste and interests are always involved in technology valuation.

Development and promotion of technology valuation discourse

Expanding the technology valuation model throughout the country. Adapting the technology valuation model to the paradigm of knowledge-based economy. Formalizing the technology valuation model. Promoting the valuing of technology as a process and creating a process view of it. Except for the 7 common components of startup ecosystems, the role of the media as the 8th component of this ecosystem should not be ignored.

Transforming existing knowledge in the field of technology into desirable and valuable knowledge

Transforming implicit knowledge into written and explicit knowledge. Facilitating the transfer of technological knowledge. Transforming academic research in the field of technology into practical and useful research for the industry. Creating a technology valuation flowchart.

Leadership and idea management

Identifying technological ideas. Platform for research and development and creation of ideas. Valuation of technological ideas according to the technology valuation model. Paying attention to the creative team of ideas and technology in valuations.

Comprehensive technology evaluation system

Including the technology evaluation system on people and organizations of the whole country. Ecosystem standardization. In the technology evaluation system, in addition to equipment, it should be considered to experience, soft technology, and science of management and guidance. External environment analysis should be a part of technology evaluation and valuation system.
<table>
<thead>
<tr>
<th>Culturalization</th>
<th>Intra and extra organizational culturalization in the field of technology. Knowledge-based economy culturalization and contextualization. Culturalization to pay attention and invest in innovative and technological ideas. Technology valuation is a team work, and the development of a teamwork culture helps it.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation and regulation in the technology market</td>
<td>Attention to the technology supplier in the technology market. Attention to the technology applicant in the technology market. Attention to the role of the government in the technology market. Creating a suitable legal platform for the development and valuation of technology. Supporting the private sector in the technology market. Allowing the private sector to enter technology valuation.</td>
</tr>
<tr>
<td>Localization of technology valuation</td>
<td>Attention and basing of benchmarked models. Modeling relatively successful models in countries with environmental conditions similar to Iran, such as Turkey. Considering the global paradigm of technology in modeling. In the local valuation of technology, the business model should be considered. In Iran, a test should be designed to determine the people who value startup technology.</td>
</tr>
<tr>
<td>Benefits of calculating the real value of technology startups</td>
<td>Calculating the value of the organization's technology helps to facilitate the bid price and the ask price of shares. Calculating the value of the organization's technology helps to facilitate the transfer and purchase of startups. Calculating the value of the organization's technology helps economic transparency. Calculating the value of the organization's technology helps managers and stakeholders make better decisions. Organizing knowledge-based and technological startups and distinguishing the good from the bad. Helping investors and technologists to agree and understand. Helping competitiveness and breaking the monopolistic and rentier markets.</td>
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<td>The benefits of the technology valuation process itself, regardless of the result of this process</td>
<td>During this process, a kind of culturalization to technology gradually takes place. In this process, organizational learning takes place in the field of technology. Systematization and the involvement of a lower level of tastes in the valuation of technology. Helping to target technology incubator and innovation centers in universities and science and technology parks. Help promote more legality in startup management and technology management. Acquainting managers and policy makers in the field of technology with all the steps of technology valuation. Acquainting entrepreneurs and technologists with all the steps of technology valuation. Developing a holistic and integrated perspective in evaluating and valuing technologies instead of detailed approaches. Valuation process with the involvement of different stakeholders can cause synergy in the creation and development of technology and technological and knowledge-based startups.</td>
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