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# Presenting technological entrepreneurship ecosystem model in Iranian creative industries (Case study: digital technologies)


## Abstract

Digital technological entrepreneurship in creative industries has dramatically changed the development of related businesses by combining new technologies with traditional culture and art. Given the importance of the issue and the country's urgent need in this strategic area, the purpose of this study is to present a technological entrepreneurship ecosystem model in the Iranian creative industries (case study: digital technologies). This is applied research in terms of aim and descriptive survey in terms of the data collection method. The Secretariat of the Ecosystem Development Program of Innovative Companies of the Vice Presidency for Science and Technology acts as a comprehensive communication medium registered between digital innovative companies. About 1227 innovative companies are registered in this secretariat, out of which 175 companies are active in digital businesses and cyberspace in the field of animation and computer games, which constitute the statistical population. Among them, 120 companies were selected as a sample using cluster sampling. The main assessment tool used in this research is a 100-item researcher-made questionnaire. Data were analyzed using partial least squares (PLS) and structural equation modeling (SEM) in Smart PLS software. The results showed that digital technological cultural taste mediates the relationship between the ecosystem, it was found that the ecosystem has a significant direct effect on the output and consequences of the ecosystem.


**Keywords:** *Entrepreneurial ecosystem, Digital creative industries, Technological Entrepreneurship, Digital entrepreneurship*


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## Introduction

The entrepreneurial ecosystem comprises interrelated causes and effects with entrepreneurial-dependent effects (Stam, 2015). An important area in the entrepreneurial ecosystem is technological entrepreneurship, which plays an irreplaceable role in technology development, economy, job creation, wealth, and public welfare (Kuratko and Hodgetts, 2007). Creative/cultural industries are a part of the economy with significant artistic/creative inputs whose main purpose is to transfer meaning in various goods. The term "creative industries" refers to the use of industrial production norms to produce cultural goods (Mangematin et al., 2014). Entrepreneurship in creative industries is a process derived from personal creative achievements, creating opportunities with economic and symbolic value (Schulte Holthaus, 2018).

Due to the rapid growth and change of technology and changes in market behavior, technological entrepreneurship in creative industries has been increasingly formed on the production of creative goods and services at the customer's request. The relationship between cultural values through creative industries and social communication with the use of digital technologies is emphasized (UNCTAD, 2019, Zagalo and Branco, 2015), shaping the new concept of "digital cultural technology" (Elia et al., 2020; Connor and Sosa, 2018; Matrix, 2018). Digital creative industries based on technology, creativity, and intellectual property are rapidly growing and developing assets (Novani et al., 2018).

The significance of this study can be examined from two perspectives: 1) The significance of this study in terms of the current situation of Iran's creative industries. Unfortunately, today we see low export statistics and international interactions in this prosperous area for a number of reasons. These include adverse environmental/legal conditions for creative industries, including poor intellectual property and copyright systems, inadequate infrastructure, lack of knowledge about technological entrepreneurship creative industries, poor innovation systems in creative industries, neglect of creative industries as an economic driver, and wealth-building institutions instead of cost centers (Shameli et al., 2019; Sheshjavani, 2017; Siavashi, 2017; Shavalpour and Kohani, 2014; Keyqobadi et al., 2008). The world's cultural economy turnover is about $ 2.7 trillion, about 6% of world GDP. Creative goods export volume is about $ 510 billion. China tops the list with $ 125 billion, and other developed countries benefit from this thriving economy. However, Iran's creative industries export only about $ 1 billion due to international sanctions and economic crises in recent years, despite their rich cultural-historical background (UNCTAD, 2018).

To expand cultural influence and strengthen the country's position in the international arena, protection of national identity and differentiation of national culture against foreign cultures and globalization, social development, revival and promotion of Islamic-Iranian lifestyle, use of social technologies to solve the country's problems and improve quality governance, increasing public access to indigenous

cultural services and products, developing a resilient economy by helping to transition from a resource-based single-product economy to a creative and knowledge-based economy, as well as culturalization, resilience to cultural invasion and/soft technology development.

Thus, the significance of the study of the dimensions and components of the technological entrepreneurship ecosystem in the digital creative industries empowers companies and startups in this field. Also, it is not hidden from us as a national entrepreneurship problem and can help highlight one of the less addressed policy areas so that Iranian entrepreneurs and businesses can take action in this area and at the same time achieve growth and development in this industry with very high growth potential by taking appropriate measures. Accordingly, this study presents a technological entrepreneurship ecosystem model in Iran's creative industries (case study: digital technologies).

## Theoretical Foundations

### Technological entrepreneurship ecosystem

An entrepreneurial ecosystem refers to a successful entrepreneurial production system. A successful country in entrepreneurship is said to have a good entrepreneurial ecosystem. The entrepreneurial ecosystem also refers to a set of interrelated causes and effects with entrepreneurial-dependent effects (Stam, 2015). Prahalad (2005) defines the entrepreneurial ecosystem as individuals, companies, and communities in combination with factors that increase economic welfare and wealth. The entrepreneurial ecosystem acts not only as a catalyst for the development of a sustainable economy but also as the main advantage of an economy to face and get rid of a downturn. Socio-cultural factors are considered insignificant factors that have a direct impact on the individual performance of entrepreneurs. The main factors of this ecosystem are universities and research centers, human resource quality, formal and informal networks, government, investment and financial sectors, infrastructure, and other dynamic, professional and cultural factors (Isenberg, 2011; Cohen, 2005).

Digital entrepreneurship refers to the creation of new jobs and investments and the transformation of jobs through new digital technology developments or new applications of past digital technologies (Shen et al. 2018; Zhao and Collier, 2016). Du et al. (2018) define the digital entrepreneurial ecosystem as a combination of elements of an area that support the growth and development of innovative startups in the wake of new opportunities offered by digital technologies. By this definition, the digital entrepreneurial ecosystem is a collective and participatory effort in the digital space to overcome the resource constraints in a company and accelerate the creation of digital startups (Du et al., 2018). Digital entrepreneurship at the individual level includes business entrepreneurship, knowledge entrepreneurship, and institutional entrepreneurship (Davidson et al., 2010). At the social/participatory level, it becomes an entrepreneurial digital ecosystem using organizations' resources (Li and Du and Yin, 2017).

Table 1 includes the main models and pivots of the technological entrepreneurship ecosystem studied in this article.

**Table 1.** Research background

| N. | Author | Model dimensions | Pivot |
|---|---|---|---|
| 1 | Prodan (2007) | New technology-based companies, universities, organizations<br>Capital, market, customers, government<br>Consultants | He cites technological entrepreneurship as the most important contributor to regional development. |
| 2 | Nacu, Avasilcăi (2014) | Personality and behavioral factors of technological entrepreneurship<br>Environmental factors<br>Sources | Tech entrepreneur factors: vision, creativity, knowledge, perseverance, management, inner motivation, positive thinking, passion, trust, talent, orientation<br>Environmental factors: geographical environment, demographic, economic, political, legal<br>Resources: Physical, Natural, Information, Financial, Human |

| | | | |
|---|---|---|---|
| 3 | Elia et al. (2020) | Digital Activities (What)<br>Digital Actors (Who)<br>Digital Motivation (Why)<br>Digital Organizations (How)<br>Digital output<br>Digital environment<br>Digital flows | Digital technologies have a tremendous impact on all aspects of entrepreneurship.<br>The concept of "digital entrepreneurship" has two main features: 1) it is highly centralized and empowered by using the Internet and digital technologies. 2) It combines the potential for innovation in large and scattered groups with heterogeneous backgrounds to participate in entrepreneurial activities. |
| 4 | Schulte Holthaus (2018) | Culture and identity, society, education, market, investment, Technology, Entrepreneur, Knowledge and Skills, Network, Motivation, Organization and Management, Institutional Communication, Clustering, Geolocation, Creativity, Government, Entrepreneurship, Innovation | The trio of creativity, opportunity, and value creation in the field of entrepreneurship in creative industries |

**Creative industries**

Creative industries refer to a set of market factors presented by embracing new ideas on social media for production (Potts et al., 2008). Creative/cultural industries refer to industries resulting from creating, producing, and commercializing creative intangible cultural content in nature. This content is usually protected by copyright law and may be included in most products and services (UNESCO, 2009). Creative/cultural industries stimulate innovation and economic development of countries and regions, especially developing countries. With their very high growth potential, these industries are rapidly becoming the most important source of income for the world economy (UNCTAD, 2018). Table 2 includes the main models and pivots of the creative industry ecosystem studied in this article.

**Table 2.** Research background

| N. | Author | Model dimensions | Pivot |
|---|---|---|---|
| 1 | Ramezan pour (2013) | University<br>Fund<br>Government<br>Infrastructure<br>Consultants<br>Market<br>Tech entrepreneur | Investigating important factors affecting technological entrepreneurship in Iran |
| 2 | Shameli (2019) | Human Capital<br>Research<br>Cultural capital | Application of grounded theory in designing the system for monitoring the effects of Iran's creative industries |

| | | | |
|---|---|---|---|
| | | Structural and institutional capital<br>Government support<br>Market capital<br>Economic incentives<br>Social incentives<br>Creative industries infrastructure<br>Network of experts<br>Entrepreneurial skills<br>geographical location<br>Financial access<br>Protection laws<br>Scientific richness | |
| 3 | Shesh javani (2017) | Micro-level: formal training, market opportunity<br>Intermediate level: holding permanent exhibitions, forming artists' classes<br>Macro-level: Illegal reproduction, private sector, communication with global markets, artistic migrations, foreign investment | Economics of art and entrepreneurship |
| 4 | Hematikh ayat an et al. (2022) | Technological and innovative factors, enterprise factors, environmental factors, and supporting factors are among the transformational factors of entrepreneurial ecosystem technology. Their measurements were fully identified. Also, the role and position of cultural taste of digital technologies as a key construct in the success of this ecosystem was examined, and its components were identified. | Dimensions and components of entrepreneurial ecosystem technology in digital creative industries of Iran with emphasis on the cultural taste of digital technologies |

**Cultural taste of digital technologies**

Cultural taste refers to the tasteful choice and recognition of the path of meeting the audience's needs with specific subjective and objective functions. Its most important functions are cultural production and consumption, analysis of the status and cultural level of the audience, cultural modification and reform, and cultural development. Taste is not value, but what shapes taste is value. Indeed, the value system of each person, which is strongly influenced by the specific culture of their place of residence, determines the taste of each person in choosing cultural instances. Therefore, the audience's value system can be influenced by influencing or changing the taste (Sadeghinia, 2017). Also, as Sheshjavani (2014, 2017) noted in his research, the consideration of cultural/artistic entrepreneurship differences will be associated with major structural changes in economic activities, growth of social rate of return, and active participation of social actors playing economic roles in art, leading to the expansion of growth capacity.

Studies have shown that previous models have described the entrepreneurial ecosystem, technological entrepreneurship, digital entrepreneurship, creative industries ecosystem, and

entrepreneurship in creative industries. Taking a purely economic approach to the entrepreneurial ecosystem, especially the digital entrepreneurship and creative industry ecosystem, seems to lead to an inflexible reductionism that examines the ecosystem regardless of values and socio-cultural context. This thinking ignores the underlying ideas and values of the performance of many actors in this ecosystem. In other words, a "purely economic approach ignoring cultural factors" used in previous studies offers a model, often ignoring cultural differences, which reduces activism in the ecosystem to economic interests. Therefore, it is impossible to provide the same model for developing a digital technological entrepreneurship ecosystem in creative industries without considering the socio-cultural context in different societies. The first theoretical gap indicates that previous research has not sufficiently addressed the digital technological entrepreneurship ecosystem in the creative industries based on its inherent differences and its dimensions and components.

The second theoretical gap ignores the taste of digital technological cultural businesses. According to Mohammadi Eliassy's (2008) research, based on the theory of Colquitt and Zapata (2007), theoretical contribution means playing the role and innovative contribution of research work. One of its scenarios is to create and present a new component for the models and theories proposed in the past with high theoretical contribution and valuable capital contribution to the development of a scientific field and the creation of new research directions. This research aims to achieve a new model for the factors affecting the development of the digital entrepreneurial ecosystem in creative industries and its consequences by analyzing articles and theoretical foundations and applying the experiences/information of local experts, and also introducing a new concept of "cultural taste of digital technologies" and identifying its components and measures.

In addition to the above theoretical gaps, no serious research has been done on the digital technological entrepreneurship ecosystem in creative industries due to the business context in Iran. The need to pay attention to this area is determined by a new explanation. The importance of this experimental gap is doubled, especially given the importance of digital technologies and the place of creative industries in economic achievements.

Thus, regarding the theoretical gap, it can be generally said that ignoring the effects of business context on the digital technological entrepreneurship ecosystem in creative industries does not simply mean ignoring one component (Where), but leads to ignoring different strategies adopted in this field (How). This research seeks to answer the above problems.

Hematian khayat et al.'s model points to a neglected component called "cultural taste of digital technologies," which can change the path of the entrepreneurial development of creative industries. Therefore, this article is based on the model of Hematian khayat et al.

**Research Method**

This is an applied research study in purpose and descriptive survey in the data collection method. The Secretariat of the Ecosystem Development Program of Innovative Companies of the Vice Presidency for Science and Technology acts as a comprehensive communication medium registered between digital innovative companies. About 1227 innovative companies are registered in this secretariat, out of which 175 companies are active in digital businesses and cyberspace in the field of animation and computer games, which constitute the statistical population.

A total of 240 questionnaires were distributed, as each company could provide top or mid-level managers with answers. Finally, 153 questionnaires were collected. After removing five unfinished questionnaires, 147 questionnaires from 147 companies were finally analyzed. Because in 120 companies surveyed, top- or mid-level managers answered the questionnaire questions. The level of analysis is a quantitative part of the organization's research. In cases where more than one manager answered the questionnaire, the managers' answers' arithmetic mean was considered a single answer for the company. For this purpose, a cluster sampling method was used.

The main assessment tool used in this research is a 100-item researcher-made questionnaire. The validity test was performed using the content validity test method by measuring CVR. The overall CVR of the questionnaire was 0.657, higher than the critical reference value of 0.600 (Ayre & Scally, 2014), indicating the instrument's content validity. Also, to ensure the reliability questionnaire, Cronbach's alpha was calculated. While it was confirmed that all dimensions of the model had Cronbach's alpha higher than 0.7, the whole questionnaire, with Cronbach's alpha of 0.861, has acceptable reliability.

Data were analyzed using the PLS method in Smart PLS software.

**Findings**

To determine the moderating role of the "digital technological, cultural taste" component between digital technological entrepreneurship ecosystem creative industries and ecosystem output, we seek to answer the question of whether the "digital technological, cultural taste" component can moderate or increase the intensity of the relationship between independent and dependent variables. To perform this test, the following model is run by the software.

Software outputs indicate that the convergent validity of each item that makes up the model components (AVE) is greater than 0.5. Also, all path coefficients drawn above the arrows are significant. However, the significance coefficient (z) of the CR*RS moderating variable is 0.022. At the 95% probability level, since the t2 (0.386) statistic is smaller than the critical value of 1.96, the "digital technological, cultural taste" component cannot be validated as a moderating variable (Figure 1, Figure 2).

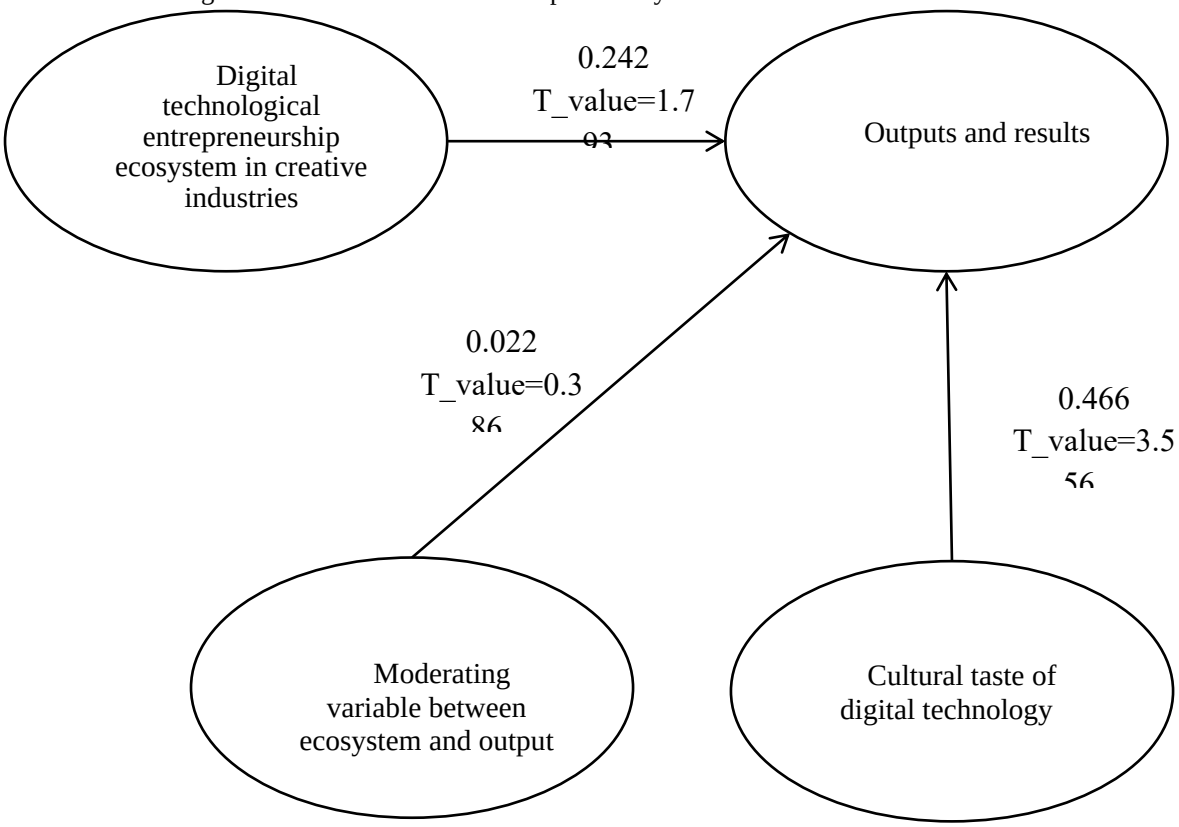


**Figure 1:** Model for examining the moderating role of the "digital technological, cultural taste" component

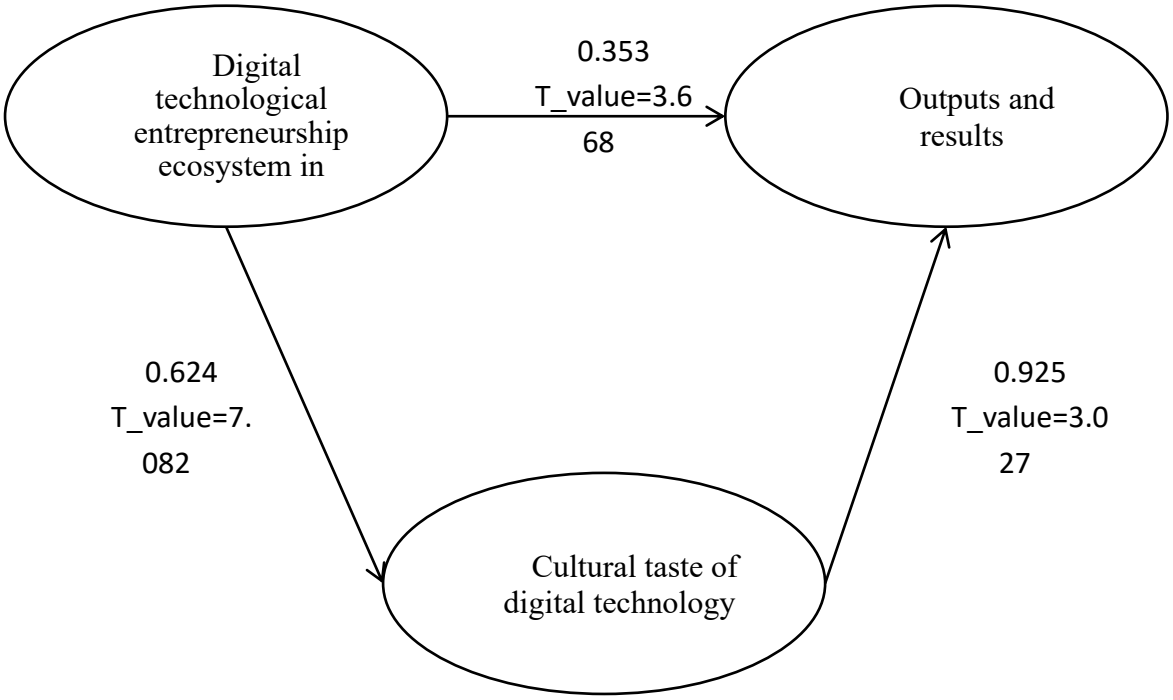


**Figure 2:** Model for examining the mediating role of the variable "technological taste in digital technological entrepreneurship ecosystem creative industries" and outputs

According to Table 3, all values are above 0.7.

**Table 3.** Cronbach's alpha and composite reliability of the model constructs

| Construct | Composite reliability Alpha>0.7 | Cronbach's alpha Alpha>0.7 | Average variance extracted AVE>0.5 |
|---|---|---|---|
| Technological entrepreneurship ecosystem digital creative industries | 0.927 | 0.915 | 0.568 |
| Technological factors | 0.869 | 0.838 | 0.625 |
| Enterprise factor | 0.879 | 0.854 | 0.723 |
| Environmental factors | 0.873 | 0.849 | 0.631 |
| Support factor | 0.859 | 0.816 | 0.734 |
| Cultural taste of digital technologies | 0.912 | 0.904 | 0.607 |
| Principles of digital culture | 0.884 | 0.852 | 0.562 |
| Digital cultural values | 0.914 | 0.862 | 0.673 |
| Ecosystem consequences | 0.880 | 0.862 | 0.635 |
| Development of existing industries | 0.791 | 0.707 | 0.560 |
| Creating a new business | 0.799 | 0.791 | 0.601 |
| Value creation | 0.883 | 0.856 | 0.758 |

Source: Research Findings

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The second model construct is "digital technological, cultural taste." The model's predictive power with respect to this construct is also high. Table 4 lists the calculated changes in the endogenous model constructs.

Table 4.
Calculated changes in endogenous model constructs

| Constructs | Communality coefficients | R2 values | Redundancy values |
|---|---|---|---|
| Digital technological cultural taste | 0.681 | 0.495 | 0.337 |
| Ecosystem outputs and consequences | 0.533 | 0.831 | 0.442 |

No reference value is mentioned for Red; this value is calculated solely for use in the formula used to calculate the "goodness of fit (GOF)" criterion, developed by Tenenhaus et al. (2004), to examine the overall fitness of the model. The GOF was calculated to be 0.692, confirming the very good fit of the overall model.

Conclusion

This study aimed to present a technological entrepreneurship ecosystem model in Iran's creative industries (Case study: digital technologies). Findings confirmed the impact of changes in digital technological entrepreneurship ecosystem creative industries on ecosystem outputs and consequences. Path analysis and structural model findings showed that one unit of change in ecosystem factors explains 58% of the unit changes in outputs.

The "outputs and consequences of the digital technological entrepreneurship ecosystem in the creative industries" include a number of specific issues, including creative value creation, which is less considered in other entrepreneurial ecosystems. Thus, adopting a purely economic approach to the entrepreneurial ecosystem of digital creative industries leads to a kind of inflexible reductionism that examines the ecosystem regardless of values and socio-cultural context. This thinking ignores the underlying ideas and values of the performance of many actors in this ecosystem. In other words, a "purely economic approach ignoring cultural factors" used in previous studies offers a model, often ignoring cultural differences, which reduces activism in the ecosystem to economic interests. Research by Elia et al. (2020) showed that information technology and digital technologies have a multifaceted impact on entrepreneurship and can play the role of facilitator, mediator, or the result of an entrepreneurial operation or business plan. Thus, digital entrepreneurship output refers to the creation of new jobs or the transformation of existing jobs by using new digital technologies or the new use of old technologies. Digital technologies can be thought of as an output or environment for entrepreneurial processes. That is, organizations focused on digital technologies design, manufacture, and deliver digital products and services (Elia et al., 2020). Previous research has also shown that entrepreneurship contributes to economic growth, startups, job creation, innovation, and productivity (Aldrich et al., 2014). Entrepreneurship at the individual, organizational, and macro levels requires the satisfaction of specific conditions that in various ways lead to wealth expansion, firm performance, competitiveness, and economic growth (Mangematin et al., 2014). Entrepreneurship beyond economic development also creates new value (Kraus et al., 2018; Schulte Holthaus, 2018; Novani et al., 2018; Thérin, 2007; Bailetti, 2012). The output of artistic activities is symbolic value and economic and monetary value. Artistic content is a carrier of culture that depends on cultural industries and communication media. Numerous studies have shown that cultural development, including diversity, cultural heritage, and tourism, are among the outputs of the entrepreneurial ecosystem in the context of creative industries (Schulte Holthaus, 2018). Economics has shifted from basic knowledge activities to creativity, innovation, entrepreneurship, and imagination. Entrepreneurship occurs in all organizations with different outputs and sizes, from small domestic companies to large global companies. Entrepreneurship can be defined as the process of creating value for socio-business communities through the unique combination of public and private resources to exploit socioeconomic resources or cultural opportunities. Digital technologies can be thought of as an output or environment for entrepreneurial processes. The digital output ecosystem is based on a network of entrepreneurial actors (entrepreneurs, investors, incubators, accelerators, service providers, research institutes) or the establishment of digital companies. That is, organizations focused on digital technologies design, manufacture, and deliver digital products and services (Elia et al., 2020).

The findings show that "digital technological, cultural taste" mediates the relationship between the ecosystem and its outputs. Cultural taste refers to the taste in choosing and recognizing the path of meeting the audience's needs. It has its own unique subjective and objective functions, including cultural production and consumption, analysis of the audience's cultural status and level, cultural modification and reform, and cultural development, among the most important of them (Sadeghinia, 2017). Also, as Sheshjavani (2014, 2017) noted in her research, the consideration of cultural/artistic entrepreneurship differences will be associated with major structural changes in economic activities, growth of social rate of return, and active participation of social actors fulfilling economic plans, leading to the expansion of the country's growth capacity.

"What is cultural taste essentially, and how do ecosystem activists perceive socio-economic needs?" This is a fundamentally cultural question. Therefore, it is impossible to

provide the same model for developing such ecosystems without considering the socio-cultural context in different societies.

Edgar Schein (1990) divided the cultural layers of organizations and institutions into three layers: Edgar Schein (1990) divided the cultural layers in organizations and institutions into three layers: 1) external manifestations and cultural artifacts; 2) the values and beliefs that culture defends (beliefs, goals, and credible standards that have intrinsic value, deep feelings that are the basis for judging the rightness or wrongness of a subject), and 3) assumptions and principles underlying the values and effects (innermost layer). He believes that some cultural layers that are harder and later to see have been overlooked. Schein introduces "assumptions and principles" as the innermost layer and believes principles differ from values. Principles are immutable that usually nest in the subconscious, including the obvious and the indisputable.

Madhooshi and his co-worker (2016) defined the main components of the creative industries value chain as follows: recruitment system, aptitude research and human resource growth system, idea support and fostering system and creativity, content management system, commercialization system, investment, and financial system, production system, market management system, modeling and identity values (national, social, religious, cultural, and civilizational identity) (Madhooshi et al., 2017; Shameli, 2019). Although a purely economic view of art does not have the desired consequences, the intellectual infrastructure on which the artist relies to create a work of art leads to its permanence and reproducibility and consequently to monetization. Even popular cultural institutions are used to promote various brands. Indeed, trade lies in being non-commercial. Art entrepreneurs engage in social value creation by explaining new processes of art services, unique operational art productions with artistic innovation, establishing sustainability and expanding artistic activities, building social capital and value, developing market-oriented approaches to solving social art problems, and finding new art markets and opportunities. Morality and humanitarian view of art entrepreneurs are among the beliefs of entrepreneurs in this field (Sheshjavani, 2017; 2014)

Cultural values in the creative industries include the interaction and transfer of cultural content, branding, and the development of cultural capital. Social values in the creative industries also include the development of social capital, the enhancement of quality of life, sustainability and social development, and the production of social wealth. Creative/cultural industries also value a range of economic values, including job creation and economic wealth, local and national economic development, and regional economic recovery through the combination of tradition and local resources with creativity, increasing competitiveness and creating added value (Pratt, 2010).

According to the analyzes and concepts presented for "flow of digital technological entrepreneurship ecosystem creative industries," digital technological, cultural taste, and performance results of the Iranian ecosystem, as a context in which concepts and relationships between them are tested, are moderated using a quantitative model test. The final proposed model is illustrated in Figure 4.

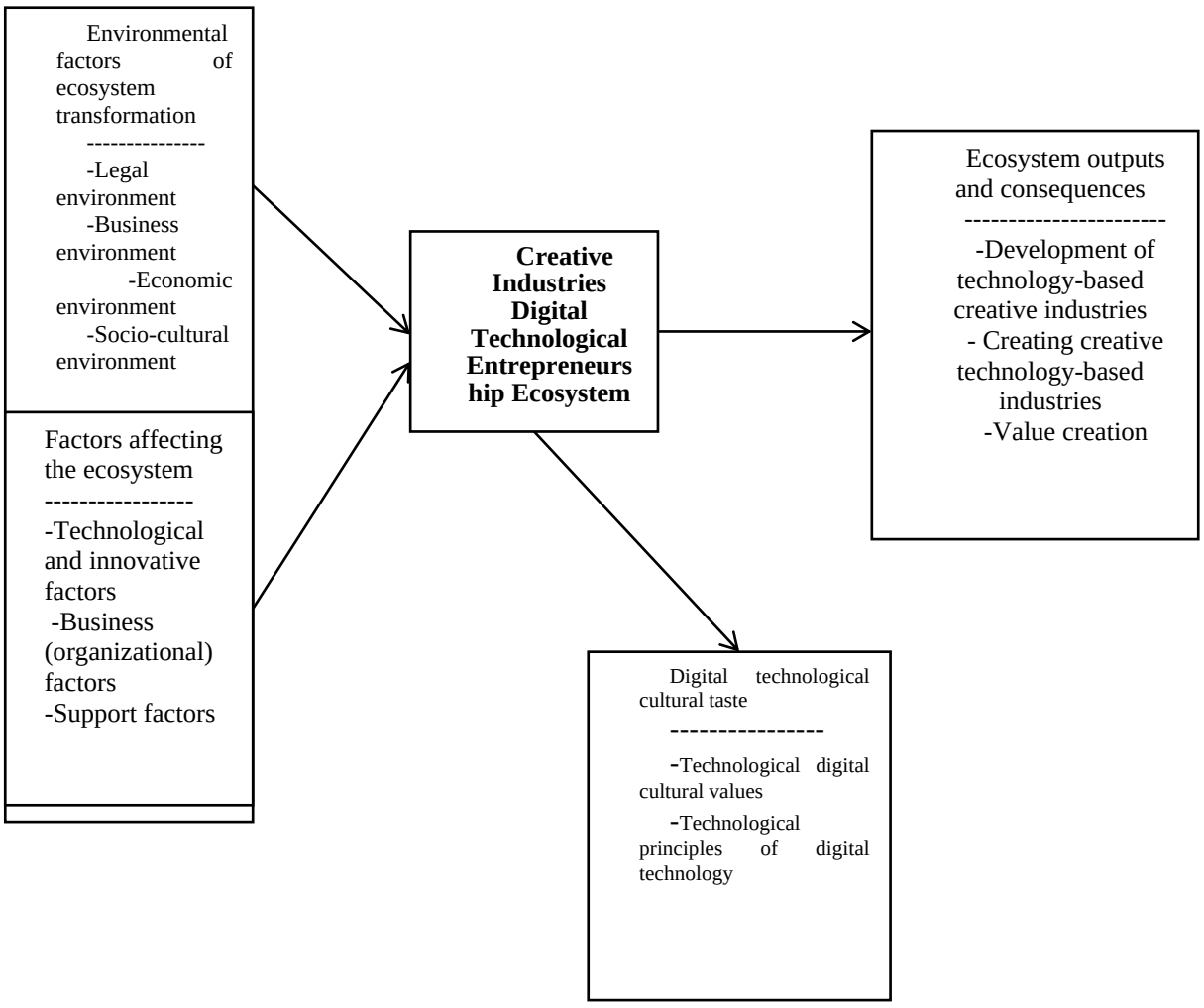


Figure 4. Final research model (technological entrepreneurship model in digital creative industries)

The construct of "digital technological, cultural taste" has a great impact on the performance of the ecosystem. Adding this construct to the proposed model leads to the development of previous models, including the proposed model of Schulte Holthaus and Elia et al. The choice of this strategy makes (i) the Iranian creative industries ecosystem have a better understanding of the dimensions and elements of this highly influential ecosystem in the economy. (ii) The more macro-policies are coordinated to improve performance and coherence, the more iii) stakeholders and actors in the ecosystem have a better understanding of the success factors of the ecosystem. This construct mediates the relationship between the ecosystem and its outputs.

Because in this study, the mediating role of the "digital technological, cultural taste" component between the two flows of the technological entrepreneurship ecosystem in the digital creative industries and the outputs/consequences of this ecosystem was tested and accepted, it has not been observed in previous and even recent studies. Therefore, the research findings fall into the category of theory building. Also, a new construct called "technological entrepreneurship ecosystem in digital creative industries" can be added, which puts this research in fifth place in theory building.

This study used theory testing to use Bourdieu's cultural taste models and Edgar Schein's organizational culture to describe, understand, interpret, and ultimately predict the "digital technological, cultural taste entrepreneurial ecosystem in the creative industries." The findings are on the horizontal axis in fourth place in theory testing. Also, the general systems approach is used for theory building. Therefore, the findings are in the horizontal axis in the fifth place in theory testing.

Some of the results obtained in this research can be generalized to a number of broader theories (rather than broader terms and situations). Herein, the entrepreneurial ecosystem in creative industries is a combination of art, industry, and entrepreneurship, which is highly dependent on environmental, political, economic, and social conditions. This complexity does not fully allow for the study and differentiation of topics. Therefore, this limitation may have a negative impact on the quality of research.

**Suggestions**

**1. Suggestions made to the government**

Partnerships, sponsorships, and international markets play an important role in developing the economics of art, especially in digital creative industries. Monitoring opportunities participating in projects, common markets, global policy development, training, business partnerships, and conditions for international presence require forming a team in the form of a center, a futurist working group, a committee, or a team to manage an international presence. It is suggested to measure and analyze the amount of change in digital creative industries in accordance with policy, strategic planning, and environmental changes in specific periods.

It is also suggested to develop professional human capital by establishing schools and related academic disciplines, such as creative industries and digital creative industries. This can be achieved by establishing professional and specialized communication between academia and industry, between technology entrepreneurs and art entrepreneurs, and between technical-vocational centers and incubators/research.

According to the findings, symbolic capital creation, artistic degree creation, branding, and socio-cultural capital development are among the consequences of technological entrepreneurship ecosystem development in digital creative industries, requiring bedrock, participation, development, and promotion of public culture, and in general, technological development cultural taste creation. Therefore, it is necessary to policy and formulates executive plans related to the use of public, private, and NGO capacities.

**2. Suggestions made to entrepreneurs**

Research model output shows that the successful consequences of ecosystems on value creation depend on trust-building, branding, social capital development, and increased interaction and transmission of technological, and cultural content. Therefore, in rebuilding the business model, great care must be taken in designing the customer relationship model. The suggested solution is that new digital products or services should be produced at the right time and under the right conditions, in the first place, and that expert and entrepreneurial mentoring, consumer psychology and taste study, and customer satisfaction survey should be used in the second place.

Effective communication between entrepreneurs, artists, consultants, and talented young workers is a must. Human communication and networking are among the most important and strong institutional factors that can help the development of human capital. On the other hand, to create abiding, sumptuous, precursor, and innovative works, it is suggested to use tradition-modernity dualism in producing traditional historical content using state-of-the-art technologies to ensure loyalty and identification of domestic customers, and at the same time, introduce global products as being new and successful.

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Conflict of interest
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Ethics Statement
None.

## References

1. Aldrich, H. (2014). The democratization of entrepreneurship? Hackers, makerspaces, and crowdfunding. Annual Meeting of the Academy of Management, Philadelphia, August 2014.
2. Bailetti, T (2012). "Technology entrepreneurship: overview, definition, and distinctive aspects". *Technology innovation management review*, *2*(2):5-12.
3. Cohen. B, (2005). Sustainable valley Entrepreneurial Ecosystems Business Strategy and the Environment. (In press). Published online in Wiley InterScience.
4. Connor, A. M., & Sosa, R (2018). "The A-z of Creative Technologies". *EAI Endorsed Transaction on Creative Technologies*, *5*(15),e3.
5. Davidson E., Vaast E. (2010). Digital Entrepreneurship and its Sociomaterial enactment. Proceeding of the 43rd Hawaii International Conference on System Science,1-10. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.401.9821&rep=rep1&type=pdf
6. Du, W., Pan, S.L., Zhou, N., Ouyang, T., (2018). From a marketplace of electronics to a digital entrepreneurial ecosystem (DEE): The emergence of a meta-organization in Zhongguancun, China. Inf. Syst. J. 28 (6), 1158–1175.
7. Elia, G., Margherita, A., & Passiante, G (2020). "Digital entrepreneurship ecosystem: How digital technologies and collective intelligence are reshaping the entrepreneurial process". *Technological Forecasting and Social Change*, *150*, p1-12.
8. 
9. Hamtian Khayat, M., Zandhasami, H., Davari, A. (2022). The dimensions and components of the technological entrepreneurship ecosystem in Iran's digital creative industries with an emphasis on the cultural taste of digital technologies. Scientific Research Quarterly Journal of Entrepreneurship Development, 15(1), 181-200. doi: 10.22059/jed.2021.319313.653618
10. Isenberg, D. (2011). The entrepreneurship ecosystem strategy as a new paradigm for economic policy: principles for cultivating entrepreneurship. *Presentation at the Institute of International and European Affairs*, May 12, 2011, Dublin Ireland. Available Online at http://entrepreneurial-revolution.com/ (last accessed: 01/27/2012). 1-32p.
11. Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2018). Digital entrepreneurship. International Journal of Entrepreneurial Behavior & Research, ahead-of-print(ahead-of-print). doi:10.1108/ijebr-06-2018-0425
12. Kuratko & Hodgetts, (2007). "Entrepreneurship Theory, Process, Practice". Seventh edition, *Cengage Learning*.

13. Li W, Du W, Yin J., (2017), Digital Entrepreneurship Ecosystem as a new form of organizing: The case of Zhongguancun, Frontiers of Business Research in China. DOI 10.1186/s11782-017-0004-8
14. Madhooshi, M.; Mohammadi, M.; Shameli, M. (2016). "Analysis of Significance-Performance in terms of Key Success Factors in the Creative Industries," Journal of Science and Innovation Policy, 8(1): 61-76.
15. Mangematin, V., Sapsed, J., & Schüßler, E. (2014). "Disassembly and reassembly: An introduction to the Special Issue on digital technology and creative industries". *Journal of Technological Forecasting and Social Change*, 83:1-9.
16. Matrix Creative Technology Report (2018). *Study on Creative Technologies in Northern Ireland*. Available Online at https://matrixni.org/documents/the-2018-creative-technologies-report.
17. Mohammadi Eliassy, Gh. (2008). "Theoretical contribution in entrepreneurial studies, concepts and typology." Iranian Journal of Management Sciences (IAMS), 3(10), pp: 145-172.
18. Nacu Cosmin Mihai, Avasilcăi Silvia, (2014). Environmental factors influencing technological entrepreneurship: research framework and results. Social and Behavioral Sciences 109 ( 2014 ) 1309 – 1315
19. Novani, S., Cintyawti, C., & Mayangsari, L. (2018). "Back to the Future: A Revelation of Conventional Platform Preference of Digital Creative Ecosystem Entities in Bandung". *Collaboration Value Co-creation in the Platform Economy*, Chapter 5, P247-268.
20. Potts, J., Cunningham, S., Hartley, J. and Ormerod, P. (2008), "Social network markets: a new definition of the creative industries", Journal of Cultural Economics, Vol. 32 No. 3, pp. 167-185
21. Pratt, A. C. (2010). "Creative Cities: Tensions Within and Between Social, Cultura and Economic Development: A Critical Reading of the UK Experience". City, Culture and Society, 1(1), 13-20.
22. Prodan, I (2007). "A Model of technological entrepreneurship", *Handbook of Research on Techno-Entrepreneurship*, Part1, pp26. UK, Edward Elgar Publishing.
23. Ramezanpour Nargesi, Gh.; Taleghani, Gh.; Ramezanpour Nargesi, S., Ghaffari, A., (2014). "Providing technological entrepreneurship model in knowledge-based companies based in technology parks," Public Administration Quarterly (PAQ), 6(1).
24. Sadeghinia, A. (2017). "Exploring the concept of cultural taste and its functions," Fourth International Conference on Media Management, October (November) 2017.
25. Schein, E (1990). "Organizational culture". *American Psychological Association Journal of American psychologists*, 45(2):109-119.
26. Schulte Holthaus, S (2018). "Entrepreneurship in the Creative Industries: A Literature Review and Research Agenda". *Studies in Small Business and Entrepreneurship*, 27(3):295-318.
27. Shameli, M.; Madhooshi, M.; Aghajani, H. (2019). "Application of grounded theory in designing a system for monitoring the effects of creative industries," Journal of Culture Strategy, 12(45): 131-152.
28. Shen, K.N., Lindsay, V., Xu, Y., (2018). Digital entrepreneurship. Inf. Syst. J. 28 (6),1125–1128.
29. Sheshjavani, H.R. (2014). "Arts entrepreneurship or entrepreneurship in art?", Journal for Artistic Research, 2(6): 61-66.
30. Sheshjavani, H.R. (2017). "Economics of art and entrepreneurship," research project "Study of strategies to promote the economic activities of art from an entrepreneurial perspective." Isfahan Art Center.
31. Siavashi, E.; Jourian, N.; Siavashi, B. (2017). "Pathology of creative industries with a user-based innovation approach," Journal of Technology Growth, 13(50): 1-10.
32. Stam, E (2015). "Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique". *European Planning Studies*. 23(9), 1759-1769.
33. Thérin F., (2007). Handbook of Research on Techno-entrepreneurship, Edward Elgar Publishing. Cheltenham.
34. UNCTAD (2018). *Creative Economy Report*. Available Online at https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2328.
35. UNESCO (2009). *Creative Industries–UNESCO Culture*, archived from the original *on 2009-08-26*, retrieved 2009-11-24.
36. Zagalo, N., & Branco, P. (2015). "The creative revolution that is changing the world." In *Creativity in the digital age* (pp. 3-15). Springer, London.
37. Zhang G, Peng X, Li J, (2008). Technological entrepreneurship and policy environment: a case of China, www. em eraldinsight.com/146 2-6004.htm
38. Zhao, F., Collier, A., 2016. In: Digital Entrepreneurship: Research and Practice, 9th Annual Conference of the EuroMed Academy of Business.