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Investigating the impact of design thinking and technological designs in supporting entrepreneurial ecosystems

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Abstract

The aim of the present study is to investigate the effect of design thinking and technological designs in supporting entrepreneurial ecosystems. The research method is applicable in terms of its purpose, quantitative in terms of implementation method, and descriptive-correlational in terms of nature and method. The statistical population of the study included 150 managers and entrepreneurs of knowledge-based companies in Isfahan, of whom 93 were randomly selected through the Cochran formula. A researcher-made questionnaire based on a 5-point Likert scale was used to collect research data. The content validity of the tool was confirmed by specialists and experts, and Cronbach's alpha and composite reliability were used to measure the reliability of the tool. By distributing the questionnaire, the validity of the tool was measured with three methods: construct validity (external model), convergent validity (AVE), and divergent validity. The AVE value for all variables must be greater than 0.5. SPSS and PLS software were used to analyze the data. The research findings show that all research hypotheses have been confirmed. Accordingly, the integration of design thinking and technological design has a significant impact on supporting entrepreneurial ecosystems. These findings emphasize the importance of these two approaches in creating and developing entrepreneurial ecosystems.

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Extended Abstract

Introduction

"Design thinking" has been used by many universities in entrepreneurial ecosystems. Despite the differences between entrepreneurship and design thinking as two separate disciplines, their combination in entrepreneurial ecosystems is promising (O'Shea et al., 2021). Design thinking is a problem-solving approach that primarily deals with understanding the needs of people and creating innovative solutions to meet these needs. It is considered a driver of innovation and change with the aim of solving problems and meeting human needs. Many developments in the business environment, especially high levels of uncertainty, have prompted the need to deviate from traditional ecosystems and implement design thinking in entrepreneurial courses (Sarooghi et al., 2019).

Entrepreneurial ecosystems refer to a network of businesses, organizations, institutions, and individuals connected to each other and exchange ideas, resources, and knowledge. These ecosystems provide a suitable platform for the development of innovation and the formation of startups. In this space, the use of approaches such as design thinking and technological design can help accelerate the process of growth and innovation, and enable entrepreneurs to create sustainable solutions based on the real needs of society and markets (Molina & Valbuena, 2019).

On the other hand, technological designs, which use advanced tools and new technologies to develop products and services, help accelerate the innovation process and improve performance in digital and technical environments. Combining these two approaches can significantly improve entrepreneurial and innovation processes (Zahra et al., 2023). In fact, this combination can pave the way for designing products that, in addition to efficiency and productivity, also carefully consider human needs and user experiences. In other words, design thinking and technological designs can simultaneously support entrepreneurial ecosystems because they not only solve more complex problems that arise in innovation processes, but also help create technological solutions based on data and advanced technologies (Aransyah et al., 2023). This raises the question: how can design thinking and technological designs support entrepreneurial ecosystems?

Theoretical Framework

Entrepreneurial ecosystems are a set of entrepreneurial actors, organizations, institutions, and processes that come together and interact to create the conditions in which new businesses are created and grow. They include elements such as access to finance, talent, mentoring, and institutional conditions such as an entrepreneurial culture and entrepreneurial networks and leadership (Koriwan & Applianti, 2023).

Technological Design

Technological design refers to the process of creating order out of chaos and making technology usable for business purposes. It involves guiding transformation processes through automation, digitalization, and technical advancement to enable the development of innovative products and services in the digital age (Lehoux et al., 2014).

Design Thinking

Design thinking is a tool that manufacturers can use to develop solutions to consumer problems (Whitehead et al., 2019).

Research Background

Farokhmanesh et al. (2024) investigated the effect of design thinking on corporate performance through the mediation of business model innovation. According to the conceptual model presented in this study, 7 hypotheses were confirmed. These findings showed that human-centeredness, learning from failure, discovering customer needs, idea

generation, experimenting with ideas, business model innovation, and design thinking have an effect on business performance. The results show that the conceptual model presented can well explain the phenomenon under study and has appropriate accuracy and validity. This study focuses on examining the effect of multiple factors, including human-centeredness, deductive reasoning, learning from failure, discovering customer needs, idea generation, experimenting with ideas, business model innovation, and design thinking, on business performance. The results of this study show that these factors have a positive effect on business performance by improving management processes and strategies, improving innovation processes, and increasing organizational capabilities. Therefore, companies can use these findings to develop new strategies and approaches to improve performance, increase competitiveness, and achieve more sustainable growth in today's dynamic and complex markets. At the end of this study, some suggestions are also made.
Shiralian et al., (2024) presented a study titled "The Innovation Equation: Understanding the Relationship between Team Cohesion, Motivation, and Design Thinking Mindset in Enhancing Employees' Innovative Performance". While there was no direct correlation between employee motivation and innovative performance, a significant positive relationship was identified between team cohesion and innovative performance, with design thinking mindset effectively mediating these relationships. Therefore, design thinking mindset was considered as an important factor in increasing innovative performance. This study emphasizes the importance of cultivating a design thinking mindset, in combination with team cohesion and employee motivation, to increase innovative performance in organizations. These insights are critical for organizations seeking to foster a sustainable culture of innovation.

Research Methodology

The research method is applicable in terms of its purpose, quantitative in terms of its implementation method, and descriptive-correlational in terms of its nature and method. The statistical population of the research includes managers and entrepreneurs of knowledge-based companies in Isfahan, numbering 150 people, of whom 93 were selected as a sample by random method through the Cochran formula. A researcher-made questionnaire based on a 5-point Likert scale was used to collect research data. The content validity of the tool was confirmed by specialists and experts, and Cronbach's alpha and composite reliability were used to measure the reliability of the tool. By distributing the questionnaire, the validity of the tool was measured with three methods: construct validity (external model), convergent validity (AVE), and divergent validity. The AVE value for all variables must be greater than 0.5.

Research findings

SPSS and PLS software were used to analyze the data. The research findings show that all research hypotheses have been confirmed. Accordingly, the integration of design thinking and technological design has a significant impact on supporting entrepreneurial ecosystems. These findings emphasize the importance of these two approaches in creating and developing entrepreneurial ecosystems.

Conclusion

The present study aimed to investigate the impact of design thinking and technological designs in supporting entrepreneurial ecosystems. The results of this study are consistent with the results of Farokhmanesh et al. (2024), Shiralian et al. (2024), Karami & Zakipour (2023), Abolhasani et al. (2021), Lynch et al. (2021), O'Shea et al. (2021), and Mansoori & Lackéus

(2020). Farokhmanesh et al. (2024) showed that human-centeredness, learning from failure, discovering customer's needs, ideation, testing ideas, business model innovation, and design thinking have an impact on business performance. It also shows that these factors have a positive impact on business performance by improving management processes and strategies, improving innovation processes, and increasing organizational capabilities. Therefore, companies can use these findings to provide new strategies and approaches to improve performance, increase competitiveness, and achieve more sustainable growth in modern dynamic and complex markets.

According to the results of this research, the following suggestion is made:

It is recommended to make greater use of design thinking and technological design, holding practical workshops, and developing digital tools to more easily implement design thinking and technological design in startups.