Evaluation of Social Capital Based on Organizational Resilience in Financial Startup Ecosystems

Reza Amiri[1]* [iD], **Hedieh Divsalar[1]** [iD]

1. Department of Business Management, TeMS.C., Islamic Azad University, Tehran, Iran

*Correspondence: reza.amiri9if9@iau.ir

Abstract

This study investigates the evaluation of social capital based on organizational resilience in financial startup ecosystems. In this research, using the thematic analysis method, 21 indicators related to assessing the efficiency of social capital were identified. To screen and ensure the significance of these indicators and to select the final indicators, the fuzzy Delphi method was applied. In this process, experts' opinions were collected and analyzed using triangular fuzzy numbers and a 7-level fuzzy scale. The results showed that social capital and organizational resilience in startups play a vital role in strengthening their ability to cope with crises and rapid environmental changes. Social relations and communication networks enable startups to access informational, financial, and advisory resources during crises and to utilize them for innovation and growth. The present research also highlights the importance of strengthening communication networks and effectively exploiting social resources in times of crisis, introducing these approaches as strategies for enhancing resilience and the success of startups within financial ecosystems.

Keywords: social capital-based, organizational resilience, startup ecosystems

1.   Introduction

In today's turbulent and unpredictable economic and organizational landscape, the role of social capital and organizational resilience in fostering sustainability, innovation, and competitiveness has become increasingly significant. Organizations across industries, especially within startup ecosystems in the financial sector, face unprecedented challenges such as technological disruption, rapid globalization, market volatility, and sociopolitical instability. In this context, the ability to adapt, recover, and innovate in response to crises relies heavily on the social fabric that connects individuals and institutions, as well as the structural mechanisms that enable collective action (Marzouk & Jin, 2023). Social capital, defined as the networks of relationships, shared norms, and trust that facilitate coordination and cooperation, has emerged as a pivotal factor that underpins resilience at both organizational and societal levels (Hashavia-Tzuri et al., 2024).

The interplay between social capital and organizational resilience is particularly salient in knowledge-intensive and innovation-driven environments. The financial startup ecosystem exemplifies such a context, where firms are simultaneously exposed to high risk and reliant on rapid adaptability. As Li, Cheng, and Lu (Li et al., 2024) argue, organizational resilience is not merely the outcome of internal capabilities but is significantly shaped by information technology capabilities and the mediating role of social capital. By strengthening collaborative networks and trust-based relationships, organizations can

transform digital resources into resilience capacities that help them withstand crises and maintain continuity. This highlights the dual role of social capital as both a resource in itself and as a mediator that enhances the effectiveness of other organizational assets.

Recent studies have sought to contextualize social capital in diverse organizational settings, ranging from universities to public institutions, as well as private enterprises. For instance, Taheri Goudarzi, Barani Biranvand, and Zandieh (Taheri Goudarzi et al., 2024) explored how holographic organizational models can facilitate the formation of social capital within academic institutions, underlining the importance of structural and cultural mechanisms in embedding resilience. Similarly, Fathi Chegeni (Fathi Chegeni, 2024) examined the mediating role of social capital in curbing deviant behaviors in government organizations, suggesting that resilient and trust-based networks are crucial for promoting ethical behavior and stability. These insights reinforce the idea that resilience is not solely a structural or procedural outcome, but also a deeply social and relational phenomenon.

The integration of social capital into resilience-building processes has also been emphasized in global contexts. Tanner, Prayag, and Coelho Kuntz (Tanner et al., 2022) proposed the "Herringbone Model," which demonstrates the intertwined relationships between psychological capital, social capital, and organizational resilience. Their findings underscore that resilience cannot be achieved without addressing both individual-level psychological resources and collective relational mechanisms. Wulandhari et al. (Wulandhari et al., 2022) further support this by exploring how social capital mechanisms contribute to cooperative resilience in organizations, showing that shared norms and trust can buffer the effects of external shocks and foster long-term collaboration.

The application of social capital to innovation and entrepreneurship is another crucial dimension relevant to financial startup ecosystems. Xi et al. (Xi et al., 2022) found that social capital has a direct influence on crowdfunding performance, highlighting its role in mobilizing resources and enhancing trust between entrepreneurs and investors. This resonates with findings by Zhang and Wu (Zhang & Wu, 2023), who demonstrated that social capital, combined with dynamic capabilities, significantly influences the performance of farmer cooperatives, a context that parallels the collective and network-driven nature of startups. Together, these studies illustrate the critical importance of social capital in contexts characterized by uncertainty, resource constraints, and the need for innovation.

In addition to its role in resilience and innovation, social capital is deeply tied to employee behavior, loyalty, and career satisfaction. Agnihotri, Shiva, and Kalia (Agnihotri et al., 2024) revealed how organizational social capital, university image, and perceived employability jointly shape the career satisfaction of IT professionals, suggesting that social capital fosters individual growth alongside organizational success. Similarly, Al-Twal, Alawamleh, and Jarrar (Al-Twal et al., 2024) highlighted the role of "Wasta" social capital in enhancing employee loyalty and innovation in organizational contexts within the Middle East. Their study demonstrates the cultural embeddedness of social capital and its varying manifestations across societies. Likewise, Alipio et al. (Alipio et al., 2024) showed that servant and collaborative leadership in tourism organizations significantly affects performance through the mediation of social capital, emphasizing leadership's role in building resilient relational networks.

Research has also illuminated the dark side of organizational life and how social capital may mitigate adverse outcomes. Ak et al. (Ak et al., 2024) examined the mediating effect of organizational socialization in the relationship between social capital and organizational dissent, showing that stronger social capital enables constructive dissent while reducing harmful conflict. This perspective is crucial in startup ecosystems, where rapid decision-making and constant change can exacerbate tensions among stakeholders. Meanwhile, Ghanbari Ghaleroudkhani et al. (Ghanbari Ghaleroudkhani et al., 2023) studied managers' behaviors in reducing psychological challenges during crises, underlining the importance of social capital as a psychological buffer that fosters employee well-being and collective resilience.

The relationship between social and organizational dimensions of capital has also received scholarly attention. Hashavia-Tzuri, Vigoda-Gadot, and Hefetz (Hashavia-Tzuri et al., 2024) demonstrated empirically that organizational social capital is closely linked with communal social capital, suggesting that organizations cannot be isolated from their broader social environment. Similarly, Ilukena, Chowa, and Haabazoka (Ilukena et al., 2024) investigated relational, structural, and human

capital as determinants of performance in insurance brokers in Zambia, further evidencing the interplay between social structures and organizational outcomes. These findings suggest that resilience in financial startups cannot be separated from the wider ecosystem in which they operate.

The methodological dimension of studying resilience and social capital has also been enriched through system dynamics approaches. Jadeja et al. (Jadeja et al., 2022) conducted a systematic review of system dynamics modeling to assess the efficiency of public sector innovations, highlighting how feedback loops and dynamic interactions shape organizational resilience. Mishchuk et al. (Mishchuk et al., 2022) expanded on this by analyzing the factors of social capital that foster sustainable competitiveness in enterprises, showing that resilience and competitiveness are mutually reinforcing outcomes of robust social networks. These contributions are particularly relevant for analyzing startup ecosystems where systemic interdependencies and dynamic processes define success or failure.

Digitalization and marketing perspectives also contribute to the discourse. Alizadeh and Ghasemi (Alizadeh & Ghasemi, 2023) explored how tourist preferences influence hotel industry competitiveness, implicitly pointing to the role of social capital in shaping consumer trust and loyalty. In a subsequent study, Alizadeh et al. (Alizadeh et al., 2024) employed grounded theory to propose digital marketing strategies based on customer experience, showing that customer-centric networks function as an extension of social capital in the digital age. These findings have important implications for startups in financial ecosystems that increasingly rely on digital trust and engagement to survive.

Finally, the interconnectedness of organizational culture, knowledge management, and social capital has been examined in several contexts. Jorfi (Jorfi, 2024) demonstrated that organizational culture has a significant impact on social capital, mediated by knowledge management practices. This reinforces the idea that knowledge flows, cultural alignment, and trust-based relationships jointly build the foundation for organizational resilience. Similarly, Marzouk and Jin (Marzouk & Jin, 2023) provided an integrative framework connecting environmental scanning and resilience, aligned with organizational information processing theory, thereby situating social capital within broader strategic processes of adaptation and learning.

Taken together, these scholarly contributions provide a comprehensive view of how social capital functions as a critical enabler of resilience, innovation, and sustainability across industries and geographies. Within the context of financial startup ecosystems, these insights underscore the necessity of cultivating strong relational networks, trust, and collaborative mechanisms to withstand crises, manage uncertainty, and foster long-term growth. By integrating perspectives from leadership, organizational behavior, digital transformation, system dynamics, and cross-cultural studies, the present study positions social capital not only as a relational asset but also as a strategic resource that underpins organizational resilience and competitive advantage.

2. Methods and Materials

This research employs a mixed-method approach for data analysis, which combines both qualitative and quantitative methods. Initially, the qualitative method is applied to design a dynamic model for evaluating the efficiency of social capital in the insurance industry. Subsequently, in the quantitative stage, the designed models are validated and analyzed. The mixed-method approach was chosen because each of these methods alone is insufficient to examine all the dimensions and variables of the research. For qualitative data analysis, thematic analysis is used. This method helps researchers identify patterns within qualitative data and categorize them into specific concepts and themes. It allows researchers to transform complex and unstructured data into meaningful information. In this study, ATLAS.ti software was used for coding and thematic analysis.

The stages of thematic analysis are as follows:

familiarization with data: careful study of the data and repeated reading; generating initial codes: identifying codes that represent interesting and important features of the data; searching for themes: categorizing codes into themes; reviewing themes: refining and modifying themes and aligning them with the data; defining and naming themes: precisely reviewing and defining the themes; producing the report: writing the analysis results and interpreting them.

In this research, Interpretive Structural Modeling (ISM) is used to identify and analyze the relationships among various indicators. ISM enables the researcher to analyze complex relationships between elements of a system and systematically

simulate its semantic structures. This model is particularly useful for identifying causal relationships between variables and determining their priorities within models.

The stages of implementing this method are as follows: identifying study variables: variables related to the dynamic model design for evaluating the efficiency of social capital in the insurance industry; Structural Self-Interaction Matrix (SSIM): constructing a matrix of relationships among different variables; relation analysis: using conceptual relationships to analyze the connections among variables. By analyzing the relationships among indicators and determining their hierarchical structures, this model helps make better decisions for improving system performance. ISM is especially useful in analyzing complex issues such as evaluating the efficiency of social capital in industries as intricate as insurance.

This research employs mixed methods to evaluate the efficiency of social capital in the insurance industry. Both qualitative and quantitative stages simultaneously involve data collection and analysis, applying analytical techniques such as thematic analysis and Interpretive Structural Modeling (ISM) to understand complex relationships and identify strategic priorities. This approach enables the researcher to comprehensively and accurately examine and develop models that can contribute to evaluation and performance improvement.

3.   Findings and Results

In the present study, thematic analysis was used for qualitative data analysis. To identify the indicators for designing the evaluation of social capital based on organizational resilience in financial startup ecosystems, thematic analysis was applied. The process of qualitative data analysis begins when the researcher identifies and considers meaningful statements and propositions related to the research subject. This analysis starts with repeated examination and review of the data, and once meaningful propositions relevant to the research subject are identified, they are coded. The practical process of data analysis includes four stages:

The first stage is preparation, in which data are collected and made ready for analysis.

The second stage is familiarization, during which the researcher carefully studies the data and becomes acquainted with the content.

The third stage is coding, where the researcher assigns codes to the meaningful statements identified in the data.

Finally, in the fourth stage, the main categories are obtained, where the identified codes are transformed into overarching categories or general themes that more precisely reflect the patterns within the data.

This method enables the researcher to extract hidden relationships and concepts in the data and gain a deeper understanding of the research subject.

Table 1. Identification of the Overarching Theme (Designing a dynamic model for evaluating the efficiency of social capital in the insurance industry)

Constructive Theme	Initial Theme	Basic Themes
Individual Components	Cognitive–Behavioral	Resistance against injustice; Increased interpersonal trust; Tolerance; Behavioral balance
	Willingness for collective partnership	Interpersonal participation; Community interaction; Collective participation interaction
	Trust and resilience	Acceptance of differences in interpersonal viewpoints; Openness to criticism
	Behavioral norms	Norm-orientation in social relations; Balancing individual demands within the organization
Socio-Cultural Components	Dogmatism in social awareness	Sense of unity with society; Recognition of indigenous cultural and social foundations
	Social value	Social growth; Professional citizenship behavior; Participation in charitable activities; Participation in environmental protection activities; Social relations
	Symmetry of social relations	Encouragement of collective interaction; Constructive relationship with customers; Constructive social relations; Constructive cooperation with partners and colleagues
	Dogmatism of social commitment	Social awareness-raising; Justice in fundamental rights; Preservation of human dignity in society; Socio-cultural structuring
	Social cognition	Effects of the social environment; Elimination of abnormal values
Structural–Content Components	Development of thinking in environmental relations	Training of social structure; Differentiation of structuring
	Structural core within the organization	Transparency in organizational structure; Systems thinking; Balance of administrative structures; Balanced hierarchy

	Social structure	Linkage between education and industry; Organizational transparency; Organizational structuring
	Influence of relational norms	Environmental impact on social spirit; Valuing relationships within structure
Organizational–Environmental Components	Organizational conflicts with collective capital	Replacement of educational conventions over principles; Priority of administrative structures over training
	Durability of organizational principles	Conflict between organizational norms and relations; Organizational meritocracy
	Decline of cognitive capital	Job commitment; Organizational adherence
Strategies for Enhancing Social Capital	Social empowerment	Social cohesion; Human resource empowerment; Human capital
	Development-oriented associations	Social participation; Creation of a learning organization
	Expansion of development-oriented thinking methods	Infrastructural development; Priority of customer orientation; Freedom of action and expression
	Strengthening civil associations	Attention to human dignity; Merit-based selection at the macro-social level
	Resolving structural conflicts	Profit-oriented structures based on win–win relationships; Individual and behavioral growth-orientation

Based on the thematic analysis of the conducted expert interviews, a total of 21 indicators were ultimately identified. To screen and ensure the significance of the identified indicators and to select the final indicators, the fuzzy Delphi method was used. In this method, the importance of indicators was evaluated from the perspective of experts. Although experts employ their competencies and cognitive abilities to make comparisons, it should be noted that the traditional process of quantifying individuals' perspectives cannot fully capture the human thinking style. In other words, the use of fuzzy sets has greater compatibility with linguistic and often ambiguous human descriptions; therefore, it is preferable to use fuzzy sets (through fuzzy numbers) for long-term forecasting and real-world decision-making. In this study, triangular fuzzy numbers were used for fuzzification of experts' viewpoints. The experts' perspectives on the importance of each indicator were collected using a 7-point fuzzy scale. This method allows human thoughts and opinions, with their natural complexities and inaccuracies, to be analyzed logically and quantitatively. Moreover, the use of fuzzy numbers provides greater flexibility in qualitative evaluations and increases accuracy in long-term decision-making.

For designing the causal relationship model of social capital evaluation based on organizational resilience in financial startup ecosystems, system dynamics methodology was employed. System dynamics is an approach to understanding the nonlinear behavior of complex systems over time through feedback loops. This method was introduced in 1961 by Jay Forrester in his book *Industrial Dynamics* and rapidly expanded. For designing a dynamic system, the model variables must first be identified. A closed boundary refers to a defined range that clearly separates the variables of a dynamic problem from unrelated variables. Each closed boundary contains feedback loops that influence one another. The combined effects of these loops represent the behavior of interest. Each feedback loop is essentially the cornerstone of the structure of the system under study. This theory stands in contrast to traditional views that regarded the flow of influence between phenomena as one-directional. System dynamics arises from feedback loops; therefore, the modeler must attempt to transform chains of cause-and-effect into causal loops. The continuation of system dynamics requires the presence of causal loops. For designing the system dynamics model, Vensim software was used.

Table 2. Model Components

Row	Model Components
1	Cognitive–behavioral
2	Willingness for collective partnership
3	Trust and resilience
4	Behavioral norms
5	Dogmatism in social awareness
6	Social value
7	Symmetry of social relations
8	Dogmatism of social commitment
9	Social cognition
10	Development of thinking in environmental relations
11	Structural core within the organization
12	Social structure based on resilience
13	Influence of relational norms

14	Organizational conflicts with collective capital
15	Durability of organizational principles
16	Decline of cognitive capital
17	Social empowerment
18	Development-oriented associations
19	Expansion of development-oriented thinking methods
20	Strengthening civil associations
21	Resolving structural conflicts

The calculation of the effect of internal relationships on the weights of indicators is the most important part of examining the internal interactions of indicators in the final selection of social capital efficiency. Therefore, it is necessary to revise the method of calculating the corresponding weight.

As explained in previous sections, the weight of indicators is calculated as follows:

Equation 1

$$W = R_{ij} \times d_i$$

where W is the weight, R_{ij} is the value assigned for the relationship between need i and engineering requirement j, and d_i is the degree of importance of need i.

In this study, the first matrix included 21 components. To gain a better understanding, the values obtained from the Delphi analysis can be normalized. However, normalization is feasible only if the components are independent of each other. To capture the relationship between components, as previously mentioned, the parameter γ is defined as the internal relationship of identified components. Ultimately, by using the following relation, normalized values of R can be recalculated while considering the internal relationships of the indicators:

Equation 2

$$R_{ij}'' = \left(\left(\sum_{k=1}^{n} (\gamma_{kj} \times R_{ij}) \right) \right) / \left(\sum_{j=1}^{n} \left(\sum_{k=1}^{n} (\gamma_{kj} \times R_{ij}) \right) \right)$$

where k and j represent engineering requirement indicators. In this equation, when $k = j$, then $\gamma_{kj} = 1$.

As mentioned, the degree of importance is also directly related to the efficiency of social capital based on innovation. Therefore, a relation is required to incorporate the effect of β on the degree of importance. For this purpose, after normalization, the following relation is presented:

Equation 3

$$d_i'' = \left(\sum_{l=1}^{m} (\beta_{il} \times d_i) \right) / \left(\sum_{i=1}^{m} \left(\sum_{l=1}^{m} \beta_{il} \right) \times d_i \right)$$

where β_{il} represents the relationship between two needs i and l.

Consequently, by considering the above relations, the new weights—adjusted according to the internal relationships of model components—can be calculated as follows:

Equation 4

$$W_j'' = \sum_{i=1}^{m} \left(d_i'' \times R_{ij}'' \right)$$

This loop includes the relationships that refer to social interactions and behaviors based on organizational resilience in financial startup ecosystems. Changes in each variable can lead to changes in other variables and facilitate the development and strengthening of social capital based on resilience. This loop is defined as follows:

Social cognition (cause) → Dogmatism in social awareness (effect)

Dogmatism in social awareness (cause) → Trust and resilience (effect)

Trust and resilience (cause) → Behavioral norms (effect)

Behavioral norms (cause) → Dogmatism of social commitment (effect)

Dogmatism of social commitment (cause) → Social value (effect)

Social value (cause) → Development of thinking in environmental relations (effect)

Development of thinking in environmental relations (cause) → Resilience of social relations (effect)

Symmetry of social relations (cause) → Social empowerment (effect)

The cognitive–behavioral loop is one of the key loops in the dynamic model for evaluating the efficiency of social capital in the insurance industry. This loop specifically focuses on the relationships among the variables of social cognition, social awareness, trust, resilience, and behavioral norms. In this loop, changes in any of these variables lead to changes in the others and create feedbacks that can influence the development and strengthening of social capital based on resilience.

Initially, social cognition, as a starting variable in this loop, has a strong impact on dogmatism in social awareness. Social cognition refers to the level of knowledge and awareness that individuals have about social issues and their surrounding environment. When individuals in a social environment possess more information and become aware of social problems and challenges, this increased awareness strengthens dogmatism in social awareness. Dogmatism, in this context, means commitment and adherence to one's knowledge and awareness, which can motivate individuals to participate more actively in social interactions and group decision-making.
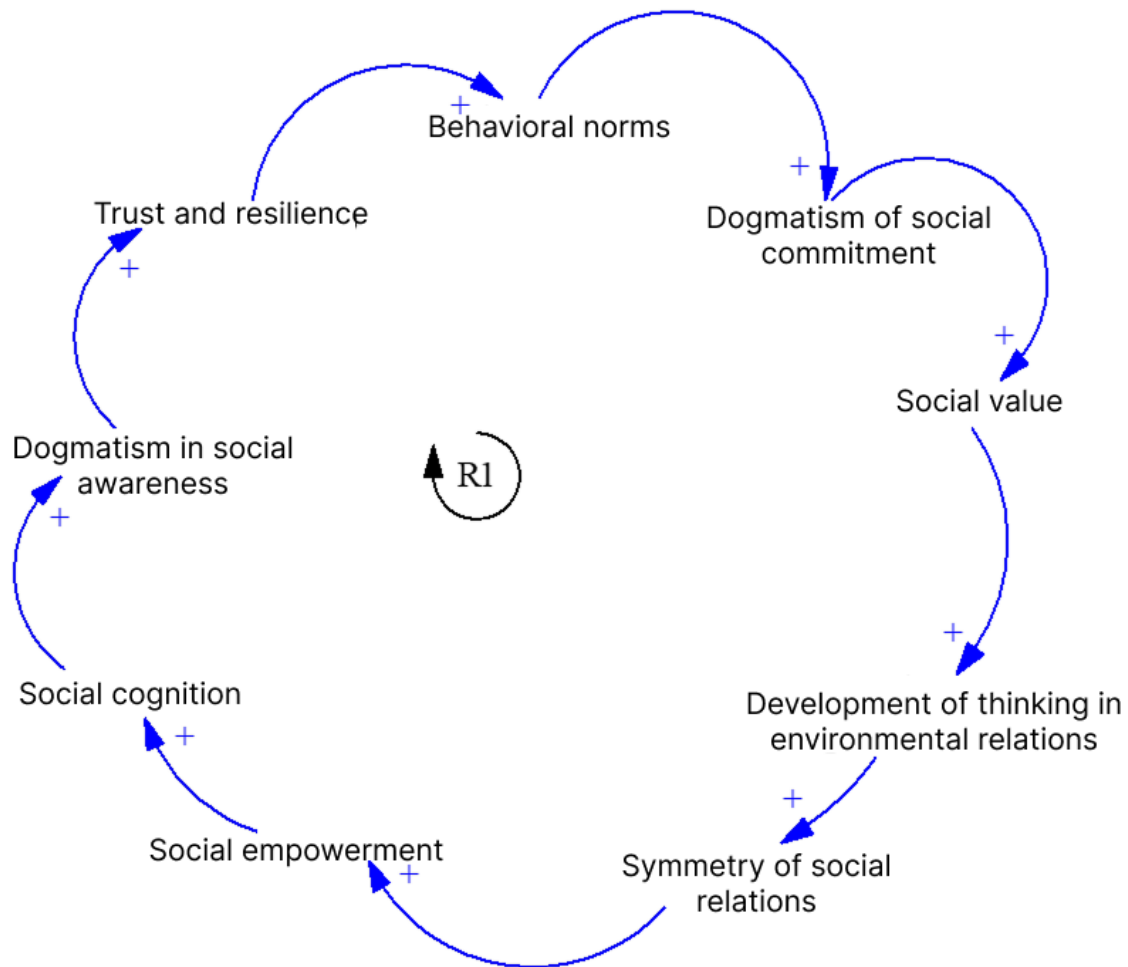
Figure 1. Loop R1

4. Discussion and Conclusion

The findings of this study reveal that social capital, when integrated with organizational resilience, significantly enhances the adaptive capacities of financial startup ecosystems. The results show that 21 key components—ranging from individual cognitive–behavioral attributes to organizational–environmental strategies—contribute to strengthening startups' ability to withstand crises, manage uncertainty, and sustain innovation. The analysis further demonstrates that these components are interconnected through dynamic causal loops, emphasizing that the value of social capital lies not only in its structural presence but also in the feedback processes that reinforce resilience over time. Particularly, the fuzzy Delphi and system dynamics approaches confirmed that organizational resilience is shaped by the interplay between trust, collective participation, behavioral norms, social cognition, and structural coherence.

These results align with prior studies underscoring the role of social capital as a driver of resilience. Li, Cheng, and Lu (Li et al., 2024) demonstrated that information technology capabilities bolster organizational resilience through the mediating role of social capital, echoing our finding that resilient networks transform digital and relational resources into adaptive capabilities.

Similarly, Tanner, Prayag, and Coelho Kuntz (Tanner et al., 2022) argued that psychological capital and social capital work in tandem to enhance resilience, resonating with our observation that cognitive–behavioral components such as trust and tolerance feed directly into broader organizational adaptability. The confirmation of these findings within financial startups adds to the evidence that social capital is not an abstract concept but a practical resource enabling firms to manage crises effectively.

The study also highlights the importance of social capital in innovation and growth under conditions of uncertainty. By emphasizing the contribution of relational networks, the findings support Xi et al. (Xi et al., 2022), who showed that social capital directly influences crowdfunding performance, an essential factor for startups that rely on collective financial backing. Similarly, Zhang and Wu (Zhang & Wu, 2023) found that dynamic capabilities combined with social capital improve cooperative performance, mirroring our conclusion that social capital fosters innovation and adaptability in environments constrained by limited resources. The fact that financial startups in this study leveraged relational trust to access financial, informational, and advisory resources during crises parallels these prior insights and underscores the universal relevance of social capital in entrepreneurial ecosystems.

In addition, the results confirm that leadership and cultural dynamics play a decisive role in shaping social capital and resilience. For example, Alipio et al. (Alipio et al., 2024) demonstrated that servant and collaborative leadership enhance organizational performance through social capital, while Al-Twal, Alawamleh, and Jarrar (Al-Twal et al., 2024) showed that relationally embedded mechanisms such as *Wasta* foster loyalty and innovation. These findings support our results that leadership behaviors, such as fostering trust, encouraging participation, and recognizing shared values, amplify resilience in startups. Furthermore, Jorfi (Jorfi, 2024) argued that organizational culture significantly impacts social capital via knowledge management, aligning with our conclusion that culture-driven practices such as transparency, meritocracy, and openness to criticism strengthen relational ties and adaptability.

The results also resonate with studies that examined the ethical and behavioral aspects of social capital. For instance, Fathi Chegeni (Fathi Chegeni, 2024) highlighted the mediating role of social capital in reducing deviant behaviors in government organizations, while Ak et al. (Ak et al., 2024) found that organizational socialization moderates the relationship between social capital and dissent. These perspectives align with our findings that behavioral norms, tolerance, and fairness within startups contribute to social cohesion and resilience, reducing the likelihood of destructive conflict. In crisis situations, such cohesion provides a critical buffer against psychological strain, as supported by Ghanbari Ghaleroudkhani et al. (Ghanbari Ghaleroudkhani et al., 2023), who emphasized managers' behaviors in alleviating employee challenges during crises. Collectively, these studies reinforce that the behavioral dimension of social capital is essential for maintaining resilience in times of uncertainty.

Our findings also extend the literature on the systemic and ecological dimensions of social capital. The causal loops identified in the system dynamics modeling demonstrate that resilience emerges from feedback interactions among individual, social, and structural components, rather than isolated interventions. This perspective is consistent with Jadeja et al. (Jadeja et al., 2022), who applied system dynamics to assess the efficiency of public sector innovations, showing that organizational resilience arises from the interplay of multiple interconnected elements. Similarly, Wulandhari et al. (Wulandhari et al., 2022) emphasized the systemic role of social capital mechanisms in cooperative resilience. Our study corroborates these systemic insights and applies them specifically to financial startups, highlighting that resilience is a product of dynamic interdependencies within organizational ecosystems.

In terms of broader organizational and societal linkages, the findings confirm that organizational social capital cannot be disentangled from the wider community. Hashavia-Tzuri, Vigoda-Gadot, and Hefetz (Hashavia-Tzuri et al., 2024) demonstrated that organizational social capital is interlinked with communal social capital, while Ilukena, Chowa, and Haabazoka (Ilukena et al., 2024) showed how relational, structural, and human capital jointly determine organizational performance. These align with our findings that startups draw upon external networks and community-based ties to sustain resilience, thereby positioning themselves not only as isolated entities but as nodes embedded in broader financial and social ecosystems.

The results also underscore the role of digital transformation and marketing strategies in enhancing resilience through social capital. Alizadeh and Ghasemi (Alizadeh & Ghasemi, 2023) found that tourists' preferences significantly affect competitiveness in the hotel industry, pointing to the relational dynamics between customers and organizations. Extending this, Alizadeh et al. (Alizadeh et al., 2024) proposed a digital marketing framework rooted in customer experience, highlighting the importance of trust and engagement in digital networks. Our findings align with these insights by suggesting that startups, particularly in the financial domain, must integrate digital trust-building mechanisms as part of their social capital strategies to enhance resilience in increasingly digital ecosystems.

The strategic dimension of our findings is further supported by Marzouk and Jin (Marzouk & Jin, 2023), who developed an integrative framework linking environmental scanning with resilience through organizational information processing theory. Their perspective aligns with our conclusion that startups must actively monitor environmental changes and leverage relational networks to interpret and respond effectively. Similarly, Mishchuk et al. (Mishchuk et al., 2022) found that social capital factors foster the sustainable competitiveness of enterprises, supporting our observation that resilience and competitiveness are mutually reinforcing outcomes of strong social capital.

Finally, the study extends the discourse on organizational innovation and adaptability. Taheri Goudarzi, Barani Biranvand, and Zandieh (Taheri Goudarzi et al., 2024) demonstrated that holographic organizational models can strengthen social capital in universities, highlighting how innovative organizational forms can embed resilience. Our study supports this by showing that startups, through innovative structures such as flexible hierarchies and learning-oriented networks, cultivate resilience and sustain competitive performance. This aligns with the broader theoretical consensus that social capital is a foundation not only for stability but also for long-term innovation and growth.

Despite its contributions, this study is subject to several limitations. First, the reliance on expert interviews and fuzzy Delphi analysis, while effective for capturing complex insights, may limit the generalizability of the results across different industries and cultural contexts. The sample of experts, though diverse, may not fully reflect the heterogeneity of stakeholders within financial startup ecosystems globally. Second, the use of system dynamics modeling, while powerful in illustrating causal loops, involves assumptions and simplifications that may not capture all real-world complexities. Finally, the cross-sectional nature of the study restricts the ability to assess changes in social capital and resilience over time, leaving the longitudinal dynamics unexplored.

Future research should expand the scope of analysis by incorporating longitudinal data to examine how social capital and resilience evolve across different stages of startup development. Comparative studies across industries and countries could shed light on the cultural and contextual variations in how social capital operates. Additionally, future studies could explore the role of emerging technologies such as artificial intelligence, blockchain, and big data analytics in reshaping social capital mechanisms and resilience strategies. Integrating quantitative surveys with qualitative methods would also provide a richer, multi-dimensional perspective on the topic.

For practitioners, the results highlight the importance of cultivating strong relational networks, both within and outside organizations, as a strategy for resilience. Startup managers should prioritize trust-building, transparent communication, and participatory decision-making to foster collective resilience. At the same time, leveraging digital platforms to build customer trust and stakeholder engagement is crucial in modern financial ecosystems. Policymakers and ecosystem facilitators should also support initiatives that enhance inter-organizational collaboration and community-based networks, ensuring that startups are not isolated but integrated into broader systems of resilience.

Ethical Considerations

All procedures performed in this study were under the ethical standards.

Acknowledgments

Authors thank all who helped us through this study.

Conflict of Interest

The authors report no conflict of interest.

Funding/Financial Support

According to the authors, this article has no financial support.

References

Agnihotri, S., Shiva, A., & Kalia, P. (2024). Investigating the Interplay of Organizational Social Capital, University Image and Perceived Employability on Career Satisfaction of Information Technology Professionals. *Higher Education Skills and Work-Based Learning*. https://doi.org/10.1108/heswbl-02-2024-0033

Ak, M., Türkmenoğlu, M. A., Acar, D., Hacarlioglu, A. R., & Özbilgin, M. F. (2024). Who Can Afford to Dissent at Work? The Mediating Effect of Organizational Socialization on the Relationship Between Social Capital and Organizational Dissent. *Frontiers in psychology*, *15*. https://doi.org/10.3389/fpsyg.2024.1390527

Al-Twal, A., Alawamleh, M., & Jarrar, D. M. (2024). An Investigation of the Role of Wasta Social Capital in Enhancing Employee Loyalty and Innovation in Organizations. *Journal of Innovation and Entrepreneurship*, *13*(1), 1-12. https://doi.org/10.1186/s13731-024-00372-w

Alipio, R. A. L., Orellana, A. N. S., Tiza, D. R. H., Sullcaray, W. P., & Avecillas, D. X. A. (2024). Servant and Collaborative Leadership in the Performance of Peruvian Tourism Organizations: Mediation of Social Capital. *Problems and Perspectives in Management*, *22*(3), 398-412. https://doi.org/10.21511/ppm.22(3).2024.31

Alizadeh, H., & Ghasemi, M. (2023). The Effect of Tourists' Preferences on the Competitiveness of the Hotel Industry. *Quarterly Journal of Tourism Research and Sustainable Development*, *5*(3), 25-40. https://www.magiran.com/paper/2508703

Alizadeh, H., Khorramabadi, M., Saberian, H., & Keramati, M. (2024). Qualitative study to propose digital marketing based on customer experience: Considering grounded theory. *Business, Marketing, and Finance Open*, *1*(6), 86-98. https://doi.org/10.61838/bmfopen.1.6.8

Fathi Chegeni, F. (2024). Investigating Organizational Anomie and Deviant Employee Behaviors in the Workplace, Explaining the Mediating Role of Social Capital in Government Organizations. *Scientific Journal*. https://jscm.ut.ac.ir/article_96908.html

Ghanbari Ghaleroudkhani, F., Farhadinejad, M., Moghaddam, A., & Najafi, M. (2023). Identifying and Ranking Managers' Behaviors in order to Reduce the Psychological Challenges of Human Resources in Critical Situations. *Journal of Human Resource Management*, *12*(4), 56-72. https://www.jhrs.ir/article_168840.html

Hashavia-Tzuri, S., Vigoda-Gadot, E., & Hefetz, A. (2024). Social Capital Inside Out: An Empirical Examination of the Relationship Between Organizational Social Capital and Communal Social Capital in Public Organizations. *Nonprofit Policy Forum*. https://doi.org/10.1515/npf-2023-0061

Ilukena, M., Chowa, T., & Haabazoka, L. (2024). Effect of Relational Capital, Structural Capital, and Human Capital on the Performance of Insurance Brokers in Zambia. In B. S. Sergi, E. G. Popkova, A. A. Ostrovskaya, A. A. Chursin, & Y. V. Ragulina (Eds.), *Ecological Footprint of the Modern Economy and the Ways to Reduce It*. Springer, Cham. https://doi.org/10.1007/978-3-031-49711-7_66

Jadeja, N., Zhu, N. J., Lebcir, R. N., Sassi, F., Holmes, A., & Ahmad, R. (2022). Using system dynamics modelling to assess the economic efficiency of innovations in the public sector - a systematic review. *PLoS One*. https://doi.org/10.1371/journal.pone.0263299

Jorfi, H. (2024). Examining the Effect of Organizational Culture on Social Capital With an Emphasis on the Mediating Role of Knowledge Management. *Irphe*, *30*(4), 123-137. https://doi.org/10.61838/kman.irphe.30.4.7

Li, M., Cheng, S., & Lu, M. (2024). Impact of information technology capabilities on organizational resilience: the mediating role of social capital. *Humanities and Social Sciences Communications*, *11*(1), 1-11. https://doi.org/10.1057/s41599-024-03951-0

Marzouk, Y., & Jin, J. (2023). An integrative framework for building organizational resilience through environmental scanning: a view of organizational information processing theory. *Management Research Review*, *46*(7), 1016-1042. https://doi.org/10.1108/MRR-11-2021-0790

Mishchuk, H., Stofkova, J., Krol, V., Joshi, O., & Vasa, L. (2022). Social capital factors fostering the sustainable competitiveness of enterprises. *Sustainability*, *14*, 11905. https://doi.org/10.3390/su141911905

Taheri Goudarzi, H., Barani Biranvand, S., & Zandieh, M. (2024). Designing a Holographic Organization Model Aimed at Forming Social Capital in Lorestan University of Medical Sciences. *Scientific Journal of Social Capital Management*, *11*(2), 219-235. https://jscm.ut.ac.ir/m/article_95122.html

Tanner, S., Prayag, D. G., & Coelho Kuntz, D. J. (2022). Psychological capital, social capital and organizational resilience: A Herringbone Model perspective. *International Journal of Disaster Risk Reduction*, *78*, 103149. https://doi.org/10.1016/j.ijdrr.2022.103149

Wulandhari, N. B. I., Gölgeci, I., Mishra, N., Sivarajah, U., & Gupta, S. (2022). Exploring the role of social capital mechanisms in cooperative resilience. *Journal of Business Research*, *143*, 375-386. https://doi.org/10.1016/j.jbusres.2022.01.026

Xi, Z., Xiaopei, L., Xianhai, W., Hongke, Z., & Wei, Z. (2022). Exploring the effects of social capital on crowdfunding performance: A holistic analysis from the empirical and predictive views. *Computers in human Behavior*, *126*, 107011. https://doi.org/10.1016/j.chb.2021.107011

Zhang, S., & Wu, D. (2023). Analyzing the relationship among social capital, dynamic capability, and farmer's cooperative performance using lightweight deep learning model: a case study of Liaoning province. *Future Generation Prediction Using Social Media Data and Physiological Signals*, 7064236. https://doi.org/10.1155/2023/7064236