Futures Studies on Investment Strategies of Iran's Social Security Organization with Emphasis on the Role of Technology: A Causal Layered Analysis Approach

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Abstract: Strategic and efficient investments in social security organizations play a crucial role in generating sustainable financial resources, enhancing services for pensioners, and strengthening the financial standing of the organization—ultimately contributing to the advancement and consolidation of social security within society. Emerging financial technologies are of high importance in the investment strategies of social security organizations, as they can significantly improve decision-making processes, increase transparency, reduce risk, and enhance financial performance. The present study aims to conduct a foresight analysis of the investment strategies of Iran's Social Security Organization, with a specific focus on the role of technology. This study employs the Causal Layered Analysis (CLA) approach. To enrich the findings, thematic analysis and focus group interviews were also utilized. In terms of orientation, the research is applied in nature, and methodologically, it is a multiple qualitative case study. The theoretical population includes experts in the fields of investment, social security, and technology. Judgmental sampling was applied, resulting in a sample size of 10 participants. The primary data collection tool in this research was the semi-structured interview. The findings indicate that at the **litany level**, challenges such as lack of transparency and low investment returns are prominent; at the **systemic level**, factors like weak digital infrastructure and legal gaps exert influence; at the **worldview level**, traditional managerial mindsets and lack of trust in financial technologies hinder innovation adoption; and at the **myth/metaphor level**, misconceptions about the high risk of financial technologies limit digital transformation. The adoption of financial technologies in the investment strategies of Iran's Social Security Organization can enhance productivity, transparency, and intelligent asset management. Achieving this transformation requires a shift in managerial attitudes, the development of digital infrastructures, legal reform, and continuous oversight. The implementation of these strategies can transform the organization from a traditional entity into an innovative player within the national digital economy, contributing to increased returns, cost reductions, and improved insurance services.

Keywords: Futures studies, investment, technology, social security, causal layered analysis.

1. Introduction

The Social Security Organization plays a pivotal role in maintaining social welfare and economic security by providing services such as retirement, disability, unemployment, and healthcare insurance, thus safeguarding citizens against financial and social risks. This organization contributes to poverty reduction and alleviating

inequality by ensuring sustainable financial support, thereby improving the living standards of various groups, particularly workers, the elderly, and vulnerable populations [1]. Social security also reinforces job security and increases labor force motivation, as individuals are more inclined toward economic activity when assured of financial support during retirement or unemployment. A robust social security system promotes social justice, reduces the financial burden on the government, and contributes to both economic and social stability [1-3].

Investment is considered one of the key factors in enhancing the performance of social security organizations, as these institutions require continuous and profitable income sources to ensure financial sustainability and fulfill their long-term obligations [4]. Through investments in financial markets, real estate, infrastructure projects, and other high-yield assets, these organizations can secure the financial resources needed to pay pensions and deliver welfare services. Optimal investment management not only decreases dependence on government subsidies and enhances financial independence but also increases returns and expands social support programs [5]. Furthermore, investment diversification can mitigate financial risks and guarantee the long-term economic stability of social security organizations.

Compared to many developed nations and some emerging economies, Iran's Social Security Organization faces serious challenges in the domain of investment and revenue generation. While social security funds in developed countries create stable financial resources by diversifying their investments across financial markets, equities, securities, and infrastructure projects, in Iran, the organization suffers from financial imbalance, heavy reliance on government resources, and low investment returns, resulting in budget deficits and unstable financial resources [1]. In many countries, scientific, transparent, and efficient investment management in insurance organizations has led to increased profitability and long-term financial stability. However, in Iran, obstacles such as poor policymaking, inefficient investments, and economic crises triggered by inflation and sanctions have hindered optimal returns. To establish a sustainable financial system, Iran requires fundamental reforms, investment portfolio optimization, and the adoption of modern financial technologies to better manage the Social Security Organization's resources.

Emerging financial technologies—particularly fintech—have the potential to significantly transform investment and financing strategies within the Social Security Organization [6]. One of the major benefits of these technologies lies in their use of big data and artificial intelligence to analyze financial patterns and identify low-risk, high-yield investment opportunities [7, 8]. By employing these intelligent tools, the Social Security Organization can optimize portfolio management and transition from traditional decision-making models to data-driven and analytically forecasted strategies. Additionally, blockchain and smart contracts enable transparent, fast, and secure financial transactions, which can reduce operational costs and eliminate risks associated with financial intermediaries [9].

In the area of financing, financial technologies also provide innovative solutions for diversifying the revenue streams of the Social Security Organization. Instruments such as digital debt securities issuance, crowdfunding, and digital assets can attract both domestic and international investors, thereby reducing reliance on traditional financing methods [10]. Moreover, the use of digital platforms for financial resource management and insurance payment systems can enhance financial transparency and enable more precise financial planning for the organization's long-term commitments [11]. Overall, the integration of fintech into the investment and financing structure of the Social Security Organization could improve efficiency, reduce risk, and foster more sustainable financial stability in the future [12].

The reviewed literature underscores the growing intersection of social security systems, financial technology, and economic behavior in both household and organizational contexts. He et al. (2025) demonstrate that expanded

social security coverage and improved health capital significantly increase households' risk-taking in investment, highlighting the role of perceived financial security [13]. Similarly, Yaroshenko et al. (2025) emphasize the transformative potential of blockchain in enhancing transparency, data security, and administrative efficiency in social security systems, while acknowledging legal and technical challenges [14]. Zaber et al. (2024) explore the impact of artificial intelligence (AI) on operational efficiency, customer service, and fraud detection in social security organizations, while cautioning against issues like data privacy and ethical concerns [15]. Xu (2024) identifies digital finance as a key driver in reducing income poverty and improving social protection in rural areas [15]. In a related context, Shi et al. (2024) highlight the positive impact of fintech on urban entrepreneurship and access to social security in China [16]. Singh and Singh (2023) investigate fintech adoption during the COVID-19 pandemic in India and reveal user trust and ease of use as critical to improving welfare service delivery [17]. Raju (2022) proposes integrating fintech tools into retirement systems to optimize pension fund management [12], while Tang et al. (2022) recommend smart contracts and blockchain for enhancing efficiency, security, and trust in social security payments [18]. Schoukens (2020) and Geve (2019) analyze how digital platform work challenges traditional welfare models in Europe, advocating for reforms to cover freelancers and gig workers more equitably [19]. Konkolewsky (2017) also stresses updating social security structures to adapt to digital labor markets and take advantage of technological innovations such as AI and big data [20]. In Iran, Arabi, Maleki, and Ansari (2022) identify key drivers for the future of social security revenue, prioritizing fintech integration and investment innovation [1], while Soleimani, Pourazat, and Esmaeili-Givi (2020) highlight macro factors like economic changes and policy shifts as pivotal for shaping the strategic direction of Iran's Social Security Organization [21]. Together, these studies collectively affirm the crucial role of technology in modernizing social security frameworks and enhancing financial resilience.

This study seeks to conduct futures research on the investment strategies of the Social Security Organization with a focus on the role of technology, using the Causal Layered Analysis (CLA) approach. The research questions are as follows:

1. What are the litany-level components related to the investment strategies of Iran's Social Security Organization with a focus on the role of technology?
2. What systemic factors influence the future of investment strategies in Iran's Social Security Organization?
3. What are the worldview-level components of investment strategies in Iran's Social Security Organization?
4. What are the metaphor and myth-level components of investment strategies in Iran's Social Security Organization?

2. Methodology

The present study is applied in its orientation and is classified as a multiple qualitative case study from a methodological perspective. The data collection tools employed in this research include semi-structured interviews with experts from the Social Security Organization to identify the four components of Causal Layered Analysis (CLA), as well as structured interviews with experts for formulating the proposed scenario. The objective of this research is to conduct futures studies on investment strategies in Iran's Social Security Organization with a focus on the role of technology. The qualitative CLA method was used to identify factors at the litany, systemic, worldview, and metaphor levels. In addition to the CLA method, thematic analysis was also employed to extract each of these components through the evaluation of the interviews. Furthermore, the qualitative method of focus group interviews was applied to develop the proposed scenario for Iran's Social Security Organization.

The experts in this study included senior managers and specialists within the Social Security Organization who are proficient in modern investment and financing methods, as well as some faculty members with expertise in futures studies and strategic foresight. The sampling method used in this study was judgmental sampling, and participants were selected based on their expertise in investment, futures studies, and digital technologies. The sample size was 10 participants, determined according to the principle of theoretical saturation.

To develop the proposed scenario, focus group interviews were utilized. Focus group interviews are a qualitative method of data collection in which a group of individuals with shared characteristics engage in discussion on a specific topic under the guidance of a facilitator or interviewer. Typically, such groups consist of 6 to 12 participants who share their opinions, experiences, and perspectives in an interactive setting. The facilitator's role is to guide the discussion and pose targeted questions to encourage participants to express deeper insights (Akyildiz & Ahmad, 2021). The main advantage of this method lies in its ability to uncover hidden attitudes, capture collective emotions, and identify shared cognitive patterns. However, challenges such as dominant individuals influencing others, difficulty managing the conversation, and potential deviation from the main topic may arise. This method is widely used in fields such as market research, social sciences, policymaking, and innovative product development (Bryne, 2006).

3.   Findings and Results

Initially, interviews were conducted with subject-matter experts. The interviews were evaluated using thematic analysis. To clarify and identify themes and their associated conceptual categories, the researcher employed coding. Each interviewee is represented by the letter "E," and the sentence number from the interview is shown before the capital letter. For example, the code "1E4" refers to the fourth sentence of the first interviewee. Below are the themes and conceptual categories identified at the litany level.

Table 1. Themes and Conceptual Categories at the Litany Level

Codes	Concepts	Sub-theme	Main Theme
(16E3), (4E6), (8E1)	Most of the organization's investments have been in the real estate sector, which yields low returns due to market stagnation.	Inappropriate investments	Decline in traditional investment returns
(6E2), (17E4), (15E6)	Reliance on traditional banking systems and lack of use of modern financial instruments	Lack of utilization of modern tools	
(31E1), (27E6)	Lack of diversification in the investment portfolio and no plans for entry into new financial sectors such as fintech	Poor investment portfolio	
(13E4), (7E5), (6E1)	Low profitability of bank deposits compared to modern investment methods	Low investment profitability	
(24E3), (32E2), (28E7), (26E1)	Poor performance of traditional industries in which the organization is a shareholder	Poor investment performance	
(2E2), (27E1), (22E4)	Failure to leverage opportunities on digital investment platforms	Failure to utilize modern opportunities	
(1E4), (20E1), (30E10)	Depreciation of national currency and its effect on the organization's financial assets	Currency depreciation	Economic volatility and inflation
(16E2), (31E4), (25E9)	Increased financing costs for investment projects	Rising investment costs	
(24E7), (27E10)	Failure to use digital risk management tools to cope with economic volatility	Lack of risk management	
(30E4), (21E2), (22E5)	Restrictions on the use of blockchain and cryptocurrencies due to lack of appropriate legislation	Technological limitations	

(19E3), (14E9), (24E2)	Aging population and the decreasing ratio of premium payers to pensioners	Increase in pensioners	Rising insurance and pension costs
(12E7), (11E2), (22E8), (24E9)	Increasing medical and insurance service costs	Rising insurance costs	
(18E7), (3E1), (25E5), (24E5), (26E6)	Failure to use digital payment systems and intelligent financial technologies to reduce operational costs	Lack of use of technological systems	
(33E4), (30E8), (2E4), (26E3), (20E5), (39E8)	Failure to utilize digital payments and e-wallets for premium collection and pension disbursement	Failure to use technology in collection and disbursement	Lack of digital transformation in the organization's financial systems
(16E6), (7E3)	Absence of artificial intelligence systems and financial data analytics for investment optimization	Lack of investment optimization	
(11E1), (9E2)	Lack of automated financial advisors for more accurate investment decisions	Lack of skilled advisors in investment	
(16E8), (11E10), (6E3), (13E6), (19E9)	Not using innovative financial technologies such as blockchain and smart contracts for asset management	Lack of use of financial technologies	

In some interviews, experts also referred to **systemic-level** factors. The systemic level includes various factors that have contributed to the current situation. This level focuses on administrative structures, policies, and the financial system. Each factor consists of several subcomponents. Table 2 presents the list of main and sub-factors (themes and conceptual categories) related to the systemic level.

Table 2. Themes and Conceptual Categories at the Systemic Level

Codes	Concepts	Sub-theme	Main Theme
(15E4), (5E8)	Continued collaboration with traditional banks instead of integration with fintech startups	Traditional financial systems	Continued reliance on traditional financial models
(9E8), (16E5), (18E6)	Reluctance to use blockchain and other modern financial technologies	Lack of technology adoption	
(17E9), (16E1)	Lack of planning for digital transformation of the organization's financial system	Absence of digital transformation	
(40E3), (36E2)	Lack of clear regulations for government organizations to invest in fintech startups	Lack of investment planning in technology	Legal and regulatory barriers to the adoption of financial technologies
(13E1), (2E3), (4E5)	Regulatory restrictions on the use of cryptocurrencies and blockchain	Regulatory limitations	
(29E2), (26E7)	Weak policy support for digital payments and online financial services	Weak support system	
(2E10), (26E2), (31E9)	Allocation of most resources to current expenses instead of investing in new technologies	Lack of resource allocation	Financial resource shortage for fintech development
(2E1), (19E4), (14E8)	No clear strategy for investing in fintech companies	Lack of a defined investment strategy	
(23E5), (30E1), (25E6)	Lack of support for insurtech startups to improve digital insurance services	Lack of support for digital services	

This level examines the perspectives and beliefs that influence high-level decision-making. Some interviews pointed to worldview-related factors. Table 3 presents the list of main and sub-components at the worldview level.

Table 3. Themes and Conceptual Categories at the Worldview Level

Codes	Concepts	Sub-theme	Main Theme
(9E5), (11E7), (6E9)	The belief that traditional investments are safer than modern technologies	Distrust in technology-based investment	Traditional mindset toward investment and resistance to digital transformation
(16E7), (8E10), (8E4), (1E8)	Managers' unawareness of the benefits of AI, blockchain, and fintech	Lack of awareness regarding technology	

(9E9), (12E5), (15E10)	Preference for traditional practices and reluctance to adopt modern financial technologies	Preference for traditional methods	
(20E6), (12E4), (7E8)	The belief that financial technologies may be highly risky	Risk-oriented perception of technology	Distrust in financial technologies and digitization of processes
(16E4), (20E3), (7E2)	Concerns about misuse or manipulation of financial data in digital systems	Concern over inefficiency of digital systems	
(19E6), (8E5)	Distrust in the capabilities of AI and automated financial advisors in economic decision-making	Lack of trust in artificial intelligence	
(18E4), (16E8), (6E3), (13E6), (19E9)	Fear that entering the fintech space might lead to capital loss	Risk of capital loss	Concerns over risks associated with investing in emerging technologies
(22E2), (14E7), (10E6)	Preference for sticking to low-risk investment policies even if they yield lower returns	Risk aversion in investment	
(4E7), (7E6), (10E1), (10E9)	Reliance on traditional methods for managing financial risks	Inclination toward traditional investment	

This level represents the most underlying and foundational layer. It examines subconscious beliefs and perceptions that hinder the adoption of financial technologies. Table 4 presents the list of main and sub-components at the metaphor and myth level.

Table 4. Themes and Conceptual Categories at the Metaphor and Myth Level

Codes	Concepts	Sub-theme	Theme
(16E6), (7E3)	The mistaken belief that fintech investment is equivalent to gambling in high-risk markets	Misconceptions about fintech	"Fintech means gambling"
(20E2), (21E6), (30E8)	Concerns over high volatility in digital markets and cryptocurrencies	High volatility in financial markets	
(2E5), (27E4)	Inadequate familiarity with secure and regulated structures of financial technologies	Lack of awareness of financial technologies	
(20E5), (39E8), (21E10)	Resistance to transforming the organization into a leading entity in digital investment	Resistance to technological change	"The Social Security Organization is only a welfare entity, not an innovative investor"
(33E4), (30E8)	The false belief that adopting fintech deviates from the organization's core mission	Misconceptions about fintech	
(8E6), (18E8)	Overemphasis on supportive policies and overlooking financial innovation opportunities	Neglect of innovative opportunities	
(19E3), (14E9), (24E2)	The belief that Iran lacks the infrastructure to adopt financial technologies	Technological backwardness mindset	"Fintech is only for developed countries"
(17E1), (22E10)	Distrust in domestic capabilities to develop indigenous fintech platforms	Lack of trust in domestic capability	
(21E2)	Delays in adopting financial technologies due to the banking system's lack of readiness	Non-adoption of technology	

In the next section, the proposed scenario will be developed using the focus group interview method. This method is an interactive qualitative approach used to derive proposals, solutions, and develop scenarios. The focus group interview agenda is based on the four components of the Causal Layered Analysis approach, with particular emphasis on the worldview and myth/metaphor levels.
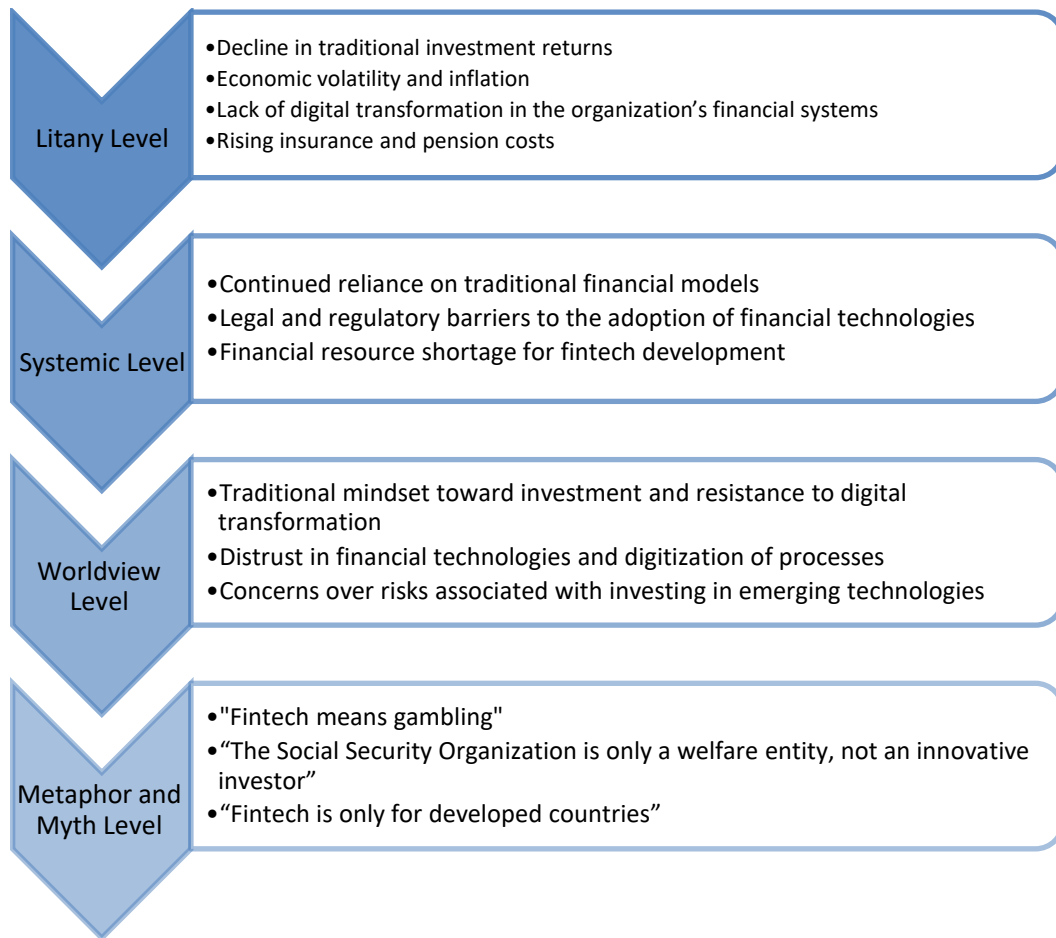
Litany Level
- Decline in traditional investment returns
- Economic volatility and inflation
- Lack of digital transformation in the organization's financial systems
- Rising insurance and pension costs

Systemic Level
- Continued reliance on traditional financial models
- Legal and regulatory barriers to the adoption of financial technologies
- Financial resource shortage for fintech development

Worldview Level
- Traditional mindset toward investment and resistance to digital transformation
- Distrust in financial technologies and digitization of processes
- Concerns over risks associated with investing in emerging technologies

Metaphor and Myth Level
- "Fintech means gambling"
- "The Social Security Organization is only a welfare entity, not an innovative investor"
- "Fintech is only for developed countries"

Figure 1. Conceptual Model of Investment in Iran's Social Security Organization with Emphasis on the Role of Technology

4.   Discussion and Conclusion

The findings of the present study revealed a multifaceted set of barriers and challenges influencing the future of investment strategies in Iran's Social Security Organization, particularly in relation to the role of digital technologies. At the litany level, the analysis pointed to low returns from traditional real estate investments, a lack of diversification in the investment portfolio, minimal engagement with financial innovations such as fintech, and increased operational costs. These reflect persistent reliance on outdated financial mechanisms and minimal adaptation to the rapidly evolving digital finance ecosystem. Economic instability, including currency depreciation and inflationary pressures, further exacerbates the inefficiency of traditional investment strategies. These findings align with the work of He et al. (2025), who demonstrated that improved financial security mechanisms—like social insurance and health capital—positively influence households' risk-taking in investments, indicating that financial uncertainty deters innovation in public fund management as well [13].

At the systemic level, the study highlighted critical issues such as continued dependence on conventional banking systems, lack of strategic planning for digital transformation, absence of supportive legal frameworks for fintech adoption, and misallocation of resources toward current expenditures rather than technological investment. These systemic shortcomings echo the observations of Zaber et al. (2024), who noted that AI applications in social security systems can drastically enhance operational efficiency, but only when backed by robust legal and

organizational infrastructures [22]. Similarly, Yaroshenko et al. (2025) emphasized that implementing blockchain technologies could increase transparency and minimize fraud, but such implementations require institutional readiness and regulatory clarity—both of which are lacking in the Iranian context, as shown in the present study [14].

The worldview level revealed deep-seated cognitive and cultural resistance to adopting digital financial technologies. Participants expressed strong preferences for traditional investment methods, citing perceived safety, familiarity, and skepticism about the reliability of AI and blockchain. Distrust in the capability of smart financial technologies, including algorithmic advisors and predictive analytics, was prevalent. These insights mirror the conclusions drawn by Singh and Singh (2023), who found that user trust, perceived utility, and ease of use are fundamental for the adoption of fintech in welfare systems, particularly during crises like the COVID-19 pandemic [17]. Moreover, the concern about data misuse and potential financial loss from unregulated digital platforms underscores a widespread cultural aversion to technological disruption, as also reported by Xu (2024), who found regional and demographic factors influencing the effectiveness of digital financial policies in rural versus urban areas [15].

At the metaphor and myth layer—the deepest stratum—the study uncovered subconscious narratives and symbolic beliefs that impede the integration of technology into investment strategies. Fintech was often equated with gambling, while blockchain and digital currencies were associated with volatility, fraud, and regulatory ambiguity. Furthermore, many participants held the belief that the Social Security Organization's role should remain limited to traditional welfare provision, not venture into innovative investment. Such resistance parallels the findings of Tang et al. (2022), who discussed the symbolic tension between legacy missions of welfare institutions and their potential transformation into data-driven, investor-type entities through technologies like blockchain and smart contracts [18]. Greve (2019) and Schoukens (2020) also identified similar cultural and institutional hesitations in Europe, where social security systems face challenges in adjusting to platform economies and freelance labor dynamics [19, 23].

The cumulative evidence from all four levels of the CLA indicates that technological modernization of Iran's Social Security Organization is not merely a matter of introducing new tools but necessitates a fundamental reconfiguration of administrative paradigms, legal infrastructures, leadership mindsets, and cultural attitudes. Arabi, Maleki, and Ansari (2022) similarly underscored the importance of embracing fintech innovations and strategic reforms to optimize the investment and financing capabilities of the organization [1]. Their identification of key drivers—including fintech utilization, digital fundraising mechanisms, and governance reform—directly supports the scenario proposed in this study. Likewise, Soleimani et al. (2020) pointed to macro-level shifts in policy, economics, and technology as central forces shaping the future of Iran's social security sector, reinforcing the need for foresight-based policy reform [21].

Taken together, the results of the present study provide a compelling framework for understanding the layered complexities that inhibit investment innovation in Iran's social security sector. While technological tools such as AI, blockchain, and digital financial services offer immense potential for increasing transparency, reducing risk, and improving asset performance, their success depends on confronting entrenched beliefs, institutional inertia, and legal constraints. The future of investment in Iran's Social Security Organization thus hinges on strategic transformation that begins with worldview and cultural narratives, moves through systemic and legal reforms, and ultimately manifests in actionable financial diversification and digital adoption.

Despite its insights, the study is not without limitations. The sample size was limited to 10 participants, selected through judgmental sampling, which may constrain the generalizability of findings. Although theoretical saturation was achieved, broader inclusion of policymakers, IT professionals, and legal experts could have enriched the depth of systemic and mythological analysis. Additionally, as the research relied on qualitative methods such as Causal Layered Analysis and focus group interviews, the findings are interpretive and context-specific. The study did not triangulate results with quantitative data or conduct comparative analyses with other countries' social security systems, which limits its external validity.

Future studies should explore comparative international cases to identify best practices in integrating fintech into public welfare investment structures. Longitudinal studies tracking digital transformation initiatives in similar developing economies could shed light on the evolution of public trust, organizational efficiency, and policy effectiveness over time. Moreover, research combining quantitative data on investment performance with qualitative insights from stakeholders would offer a more comprehensive picture of the real-world impact of fintech adoption. There is also a need for in-depth exploration of legal reforms and the institutional capacities required to support blockchain, AI, and digital finance within Iran's public sector.

Policymakers and administrators in the Social Security Organization should prioritize digital transformation through clear strategic planning and regulatory adjustments. Capacity-building programs aimed at enhancing technological literacy among managers, coupled with awareness campaigns addressing cultural resistance, could pave the way for gradual adoption. Investment diversification should be guided by data-driven decision-making tools, supported by fintech platforms, AI analytics, and automated advisory systems. Furthermore, partnerships with fintech startups and academic institutions could accelerate innovation while ensuring that social values and institutional missions remain central to this transformation.

Authors' Contributions

Authors equally contributed to this article.

Ethical Considerations

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

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