




Identification and Prioritization of Factors Affecting Digital Financial Innovation Using the Structural Equation Modeling Approach

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ABSTRACT

The purpose of this study was to identify and prioritize the factors influencing digital financial innovation using the structural equation modeling approach. The research employed both qualitative and quantitative methods. Data were collected through interviews. The statistical population consisted of professors and experts in the field of accounting, with no defined limit; however, 18 participants were selected until theoretical saturation was achieved. The sampling method was snowball sampling, whereby interviewees were asked to introduce knowledgeable individuals relevant to the research topic for subsequent interviews. The primary data were collected through interviews. In accordance with the methodological process, data analysis was carried out in three stages: open coding, axial coding, and selective coding. Initially, from the large volume of primary data, codes related to the research topic were identified. Subsequently, using the method of constant comparison, concepts were extracted from several codes, and in the same manner, other codes were transformed into concepts. Ultimately, 93 concepts were derived. In the next stage, several concepts were grouped into categories, resulting in 18 categories for this study. The findings revealed that three categories emerged as the core categories: acceptance capability, information and communication technology (ICT) infrastructure, and the level of digital literacy and awareness. The remaining categories were presented in the proposed model across five groups: causal conditions (3 categories), context or background (3 categories), intervening conditions (3 categories), strategies (3 categories), and consequences (3 categories). Subsequently, based on the indicators, components, concepts, and categories of the proposed model, a 93-item questionnaire was developed. Using the data collected, the relationships of the proposed model were examined, and the results ultimately indicated the significance of the relationships and components of the presented model.

Keywords: model design, digital financial innovation, grounded theory

1. Introduction

In recent years, the global financial landscape has undergone a profound transformation driven by the rapid rise of digital technologies, the integration of financial innovations, and the increasing reliance on data-driven systems. Digital financial innovation, which refers to the application of novel digital technologies, platforms, and strategies to improve financial services, is increasingly recognized as a catalyst for economic growth, organizational competitiveness, and social development (Abbas et al., 2024). The adoption of digital technologies in finance not only fosters efficiency and cost reduction but also enables new modes of customer interaction, advanced risk management, and the integration of sustainability goals such as green development (Zhou et al., 2022). The growing importance of digital innovation in the financial sector has been highlighted across diverse domains, from marketing to supply chain management and from organizational readiness to international competitiveness. For instance, qualitative studies have emphasized the role of customer experience in shaping digital marketing strategies, underscoring how firms can achieve sustainable competitive advantage through grounded theory approaches to digital adoption (Alizadeh et al., 2024). Similarly, the interplay between digitalization, innovation, and business growth has been emphasized in the literature, demonstrating that financial innovation not only promotes firm performance but also serves as a bridge between market competition, green technology adoption, and long-term competitiveness (Abbas et al., 2024).

The academic discourse around digital financial innovation reflects a multi-dimensional understanding of how organizations, industries, and societies engage with technological change. For example, bibliometric analyses show that digital finance in green manufacturing provides pathways for enhancing environmental performance while sustaining financial viability (Chang et al., 2022). This argument is complemented by research linking fintech innovation with green growth, where green finance acts as a mediating mechanism (Zhou et al., 2022). The increasing connection between sustainability and financial innovation highlights that the future of digital finance is not solely about technological sophistication but also about aligning with environmental and societal imperatives.

Another dimension involves organizational readiness and alignment with digital strategies. Several empirical and conceptual studies demonstrate that without sufficient readiness at the organizational and managerial levels,

financial innovation initiatives may not translate into sustainable outcomes (Darikandeh & Kheiri, 2023; Mousavi Samanani & Taleb Nia, 2024). Readiness encompasses infrastructure, digital literacy, and cultural openness, all of which contribute to shaping the effectiveness of digital transformation (Duygan et al., 2023). Moreover, leadership and organizational preparedness for adopting artificial intelligence (AI) and other emerging technologies have been identified as integral to the effective integration of innovation within financial systems (Frangos, 2022).

From a broader perspective, the digital transformation of finance has significant implications for knowledge management and organizational learning. Systematic reviews suggest that digital innovation plays a critical role in improving knowledge management systems, enabling organizations to process, share, and utilize information more effectively (Di Vaio et al., 2021). By connecting innovation with knowledge-based processes, financial institutions and firms can enhance their adaptive capabilities and respond more dynamically to changing environments. This link between knowledge and digitalization is further emphasized by research that highlights how digital innovations in knowledge management systems shape organizational development in uncertain contexts (Tavakoli Tor'ei, 2020).

The interplay of digital financial innovation with broader economic systems also deserves attention. Historical perspectives suggest that while financial innovations are not new phenomena, the digital era has introduced unprecedented regulatory challenges and opportunities (Longworth, 2020). On the one hand, digital innovations can improve efficiency, reduce transaction costs, and enhance transparency; on the other, they raise questions about regulatory oversight, legal implications, and market stability (Nasser & Razavi, 2019). Smart contracts, blockchain-based solutions, and automated digital transfers exemplify how legal frameworks must evolve to accommodate the new realities of digital finance (Du et al., 2020; Lam et al., 2019).

Blockchain technology in particular has been identified as a transformative driver in supply chain finance, demonstrating how financial innovation can restructure inter-organizational transactions and mitigate systemic risks (Du et al., 2020). At the same time, studies in the banking sector illustrate how fintech and big data analytics can improve operational efficiency and customer engagement (Wang et al., 2021). The integration of digital technology into banking services not only improves internal efficiency but also fosters financial inclusion, enabling previously

underserved populations to access advanced financial services (Khin & Ho, 2019).

The role of financial innovation in enhancing firm performance extends to both large corporations and small and medium-sized enterprises (SMEs). Empirical studies in emerging economies confirm that digital financial innovation significantly improves SME competitiveness, productivity, and resilience in the face of financial and operational constraints (Effiom & Edet, 2020). These findings resonate with studies in local banking contexts, where the ranking and selection of fintechs have been shown to critically depend on digital innovation strategies (Bahmani, 2020). Moreover, organizational knowledge and managerial characteristics act as moderators in ensuring that digital financial innovations are successfully integrated into business models, as illustrated by case studies in Iranian banking systems (Barati & Safari, 2021).

The rapid pace of digital transformation in financial markets necessitates constant attention to performance measurement and the role of capabilities. For instance, research demonstrates that digital-related capabilities, when mediated by robust performance measurement systems, significantly enhance financial performance (Nasiri et al., 2020). In this regard, innovation is not merely technological but is also embedded in managerial practices and cultural values. Intellectual capital and innovation have been found to exert strong effects on organizational financial performance, further reinforcing the need to integrate digital strategies with human and knowledge-based assets (Fazeli Kabria et al., 2021).

In the international arena, digital transformation shapes corporate innovation and global strategic positioning. Evidence from Chinese listed companies indicates that digital innovation plays a critical role in supporting international strategies and enhancing competitiveness (Gao et al., 2022). These insights emphasize the interconnection between digitalization, innovation, and globalization, reinforcing that financial innovation cannot be studied in isolation from broader market dynamics. Similarly, the COVID-19 crisis underscored the urgency of adopting digital platforms and social media innovations, particularly for small and medium-sized enterprises, where environmental and contextual factors significantly influenced adoption patterns (Rajabpour & Alizadeh, 2024).

The integration of digital financial innovation also has significant societal implications. The COVID-19 pandemic accelerated the use of digital technologies across sectors, reshaping information management practices and

highlighting the importance of adaptability in the post-crisis era (Barnes, 2020). This digital acceleration was not only an operational necessity but also a structural transformation, affecting markets, consumer behavior, and organizational resilience. Indeed, organizational resilience itself has been found to be mediated by digital financial innovation, as seen in case studies of municipalities adapting to new economic realities (Mousavi Samanani & Taleb Nia, 2024).

Furthermore, the dynamic and volatile nature of digital financial markets requires careful attention to risk management. The volatility of cryptocurrencies and their spillover effects illustrate the challenges of managing financial instability in digital environments (Shokri et al., 2021). These findings highlight the need for both robust technological infrastructure and strong governance mechanisms to mitigate risks associated with digital financial innovations. At the same time, legal and regulatory frameworks must evolve to ensure security, stability, and trust in digital financial systems (Nasser & Razavi, 2019).

Despite the challenges, the consensus across the literature suggests that digital financial innovation holds transformative potential for organizations, industries, and economies. It enhances access to finance, improves efficiency, enables sustainability-oriented growth, and fosters organizational competitiveness (Nejad, 2022). However, achieving these benefits requires careful consideration of contextual factors, strategic alignment, organizational readiness, and governance mechanisms. The diversity of findings—from case studies in banking and SMEs to international analyses and bibliometric studies—demonstrates the richness of this field and the urgent need to identify and prioritize factors that shape digital financial innovation.

2. Methods and Materials

Given that the researcher in this study aims to "identify and prioritize factors influencing digital financial innovation using the structural equation modeling approach," the research is applied in terms of purpose. In terms of data collection, information gathering, and method of analysis, it is an exploratory mixed-method study (qualitative first, followed by quantitative). Based on its nature and type, it is a cross-sectional survey.

The statistical population of this research includes capital market participants such as university professors, experts, managers, and capital market specialists. In grounded theory, data collection continues until the research reaches

saturation; that is, when new data collected show no difference from previously collected data and become repetitive. To determine the sample size, snowball sampling was used, whereby respondents were asked to introduce knowledgeable individuals related to the research subject for further interviews. In this stage, the developed questionnaire had to be distributed among managers, deputies, and senior experts specializing in the capital market. Since the target population is large and, on the one hand, the statistical

population is extensive, and on the other hand, its exact size is unknown, Cochran's second formula was used to determine the minimum required sample size. Accordingly, the required sample size was determined as 385 individuals, which formed the basis of the analysis. The study population consisted of mid-level and senior bureaucrats, and due to the homogeneity of members, convenience sampling was applied.

Table 1

Types of Data Used in This Research

Number	Type of Data	Row
10	In-depth interviews with experts and university professors	1
8	In-depth interviews with accounting specialists	

In this study, given that the research objective is to design a structural model of indigenous factors influencing behavioral management accounting, both library studies and field research methods were used for data collection. Two tools were employed: document review and questionnaire. For document review, information related to theoretical foundations and research literature was collected through library resources, articles, relevant books, and global information networks.

In this research, face validity was confirmed by domain experts, and reliability was tested using Cronbach's alpha. The coefficient for both variables was greater than 0.7, indicating the questionnaire's reliability. Each questionnaire

item included five options (strongly disagree, disagree, neutral, agree, strongly agree), allowing respondents to select one.

3. Findings and Results

According to the software output shown in below figures, the standardized path coefficients for all relationships were greater than 0.30. Therefore, it can be concluded that the items had good explanatory power. Moreover, the significance coefficients for the relationships were greater than 1.96. Thus, it can be concluded that all factor loadings and path coefficients in the model were significant.

Figure 1

Measurement Model of the Causal Conditions Variable in the Standardized Estimation State

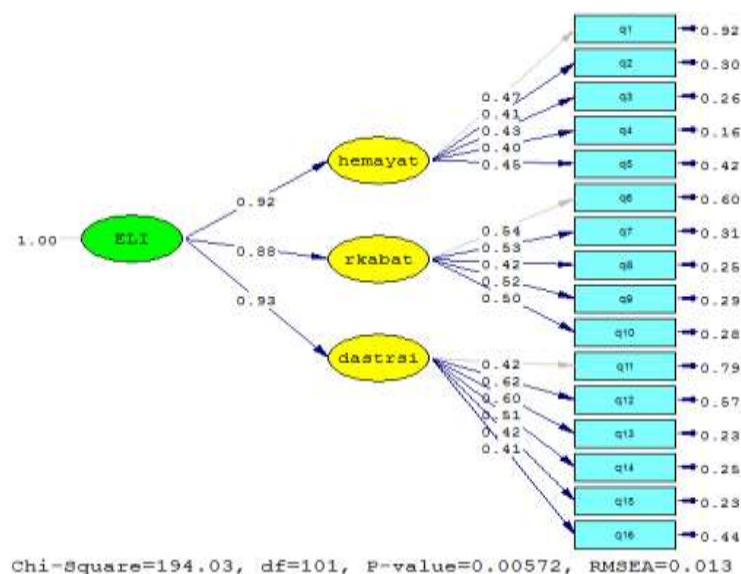


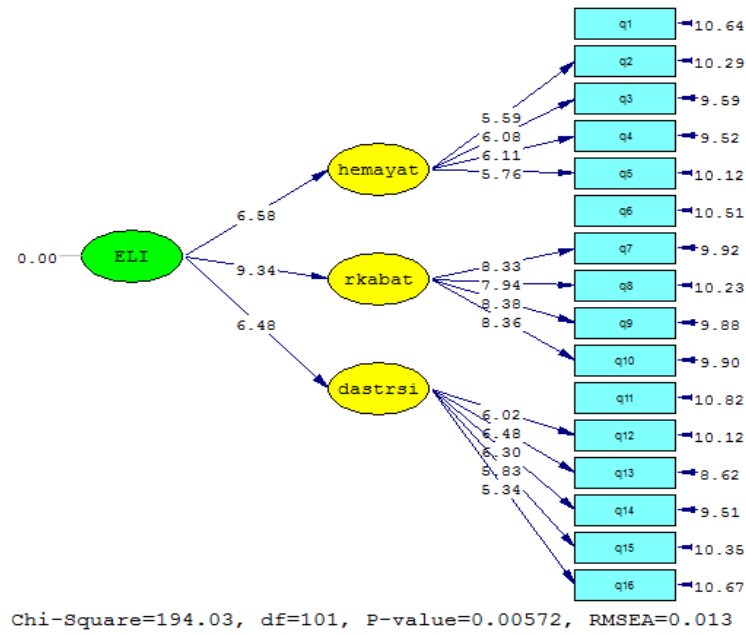
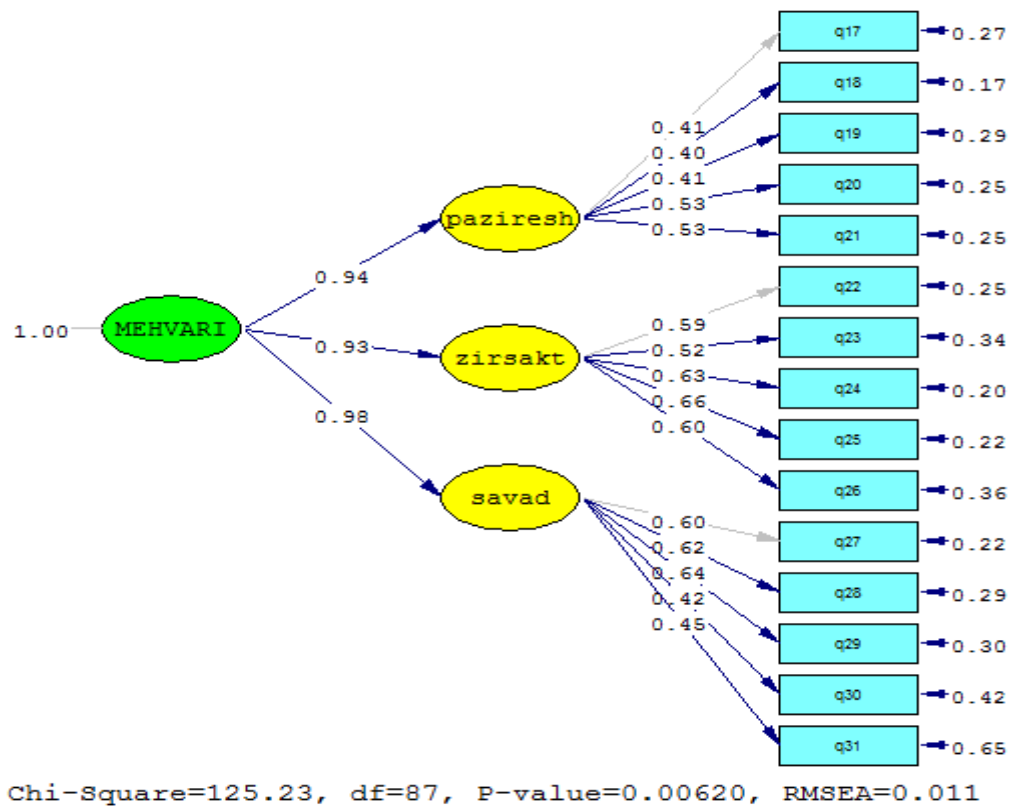
Figure 2
Measurement Model of the Causal Conditions Variable in the Significance State

Figure 3
Measurement Model of the Core Category Variable in the Standardized Estimation State


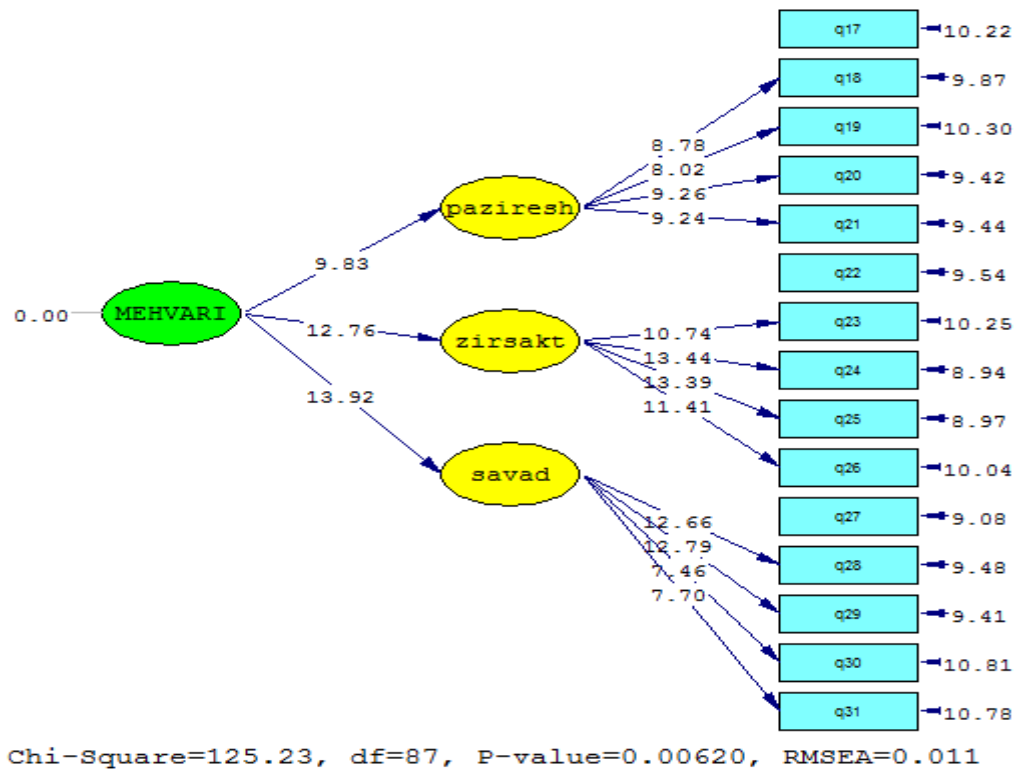
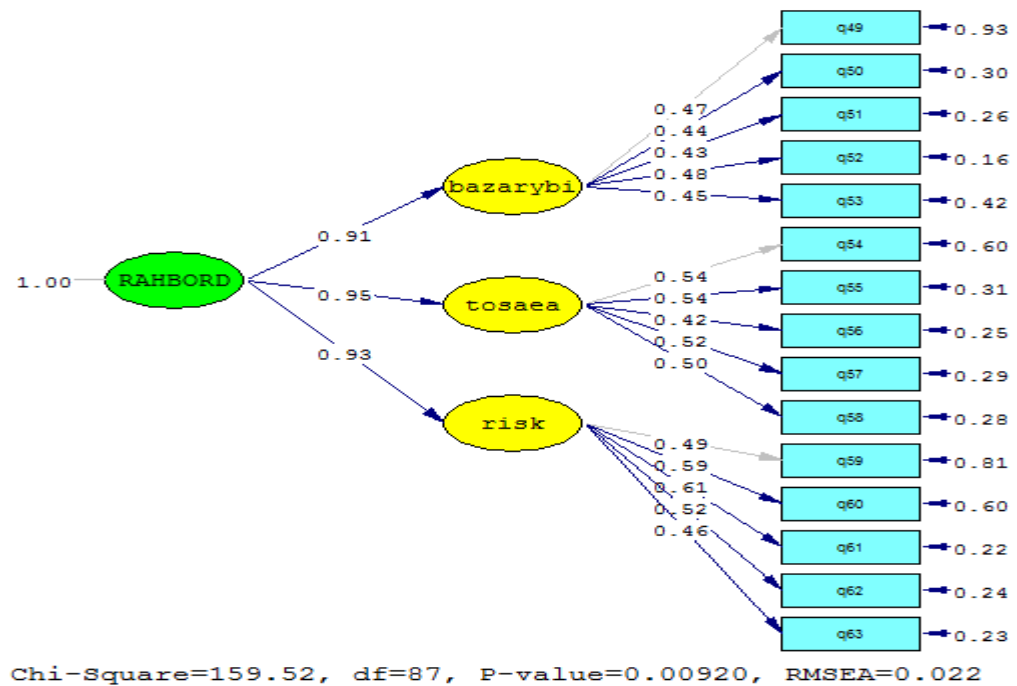
Figure 4
Measurement Model of the Core Category Variable in the Significance State

Figure 5
Measurement Model of the Strategies Variable in the Standardized Estimation State


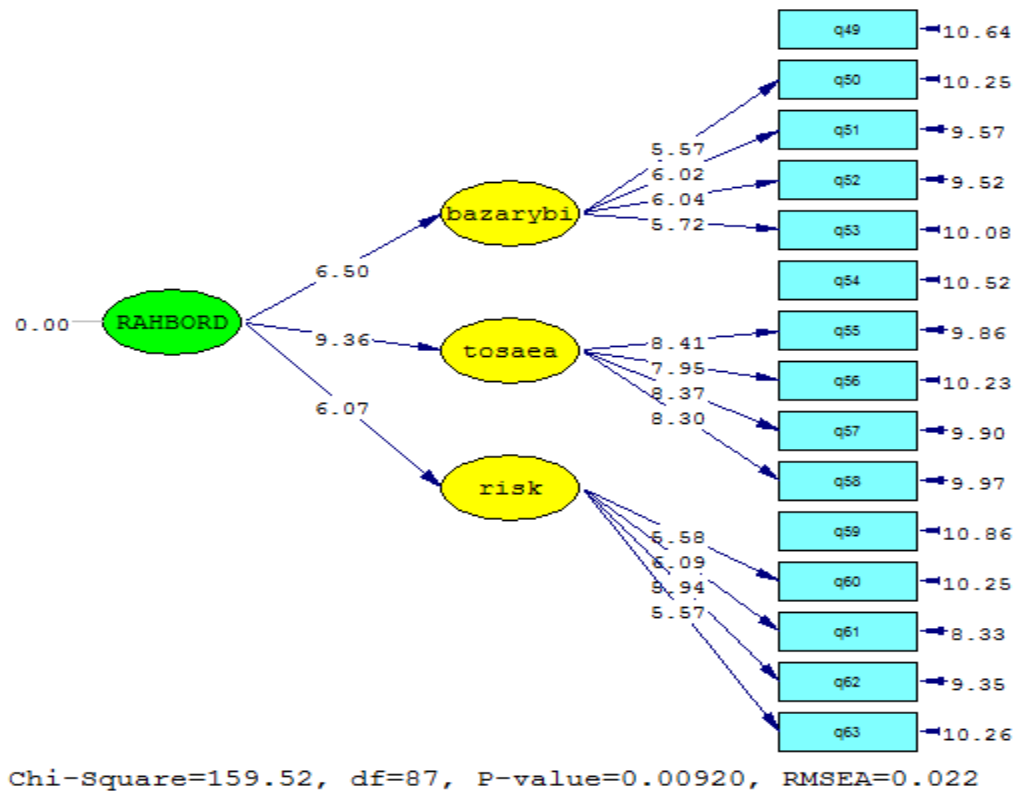
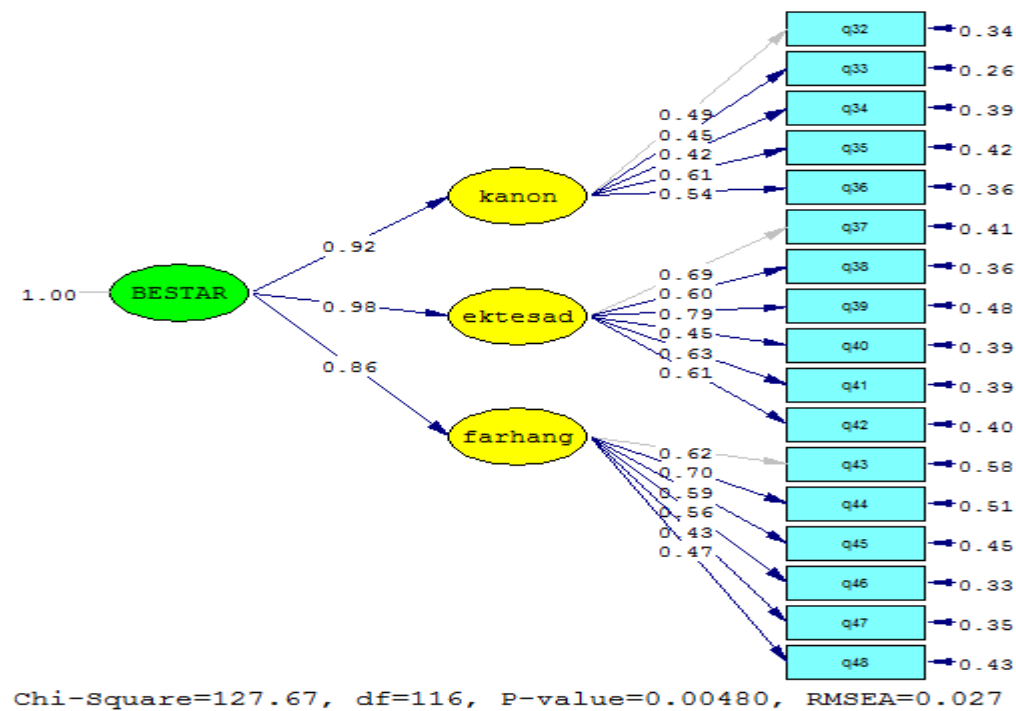
Figure 6
Measurement Model of the Strategies Variable in the Significance State

Figure 7
Measurement Model of the Context Variable in the Standardized Estimation State


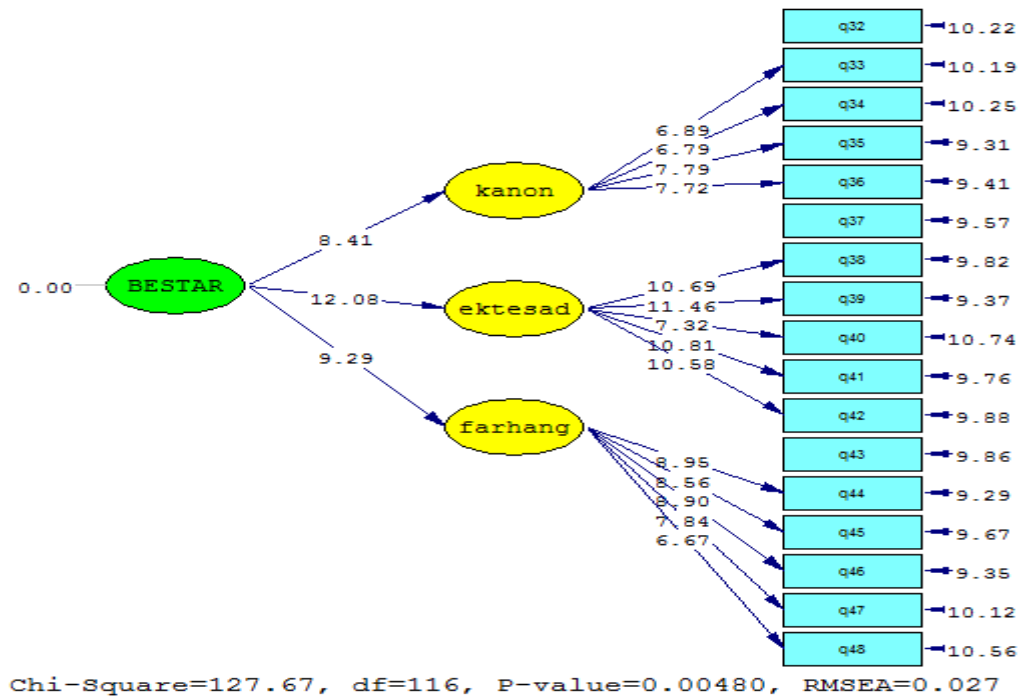
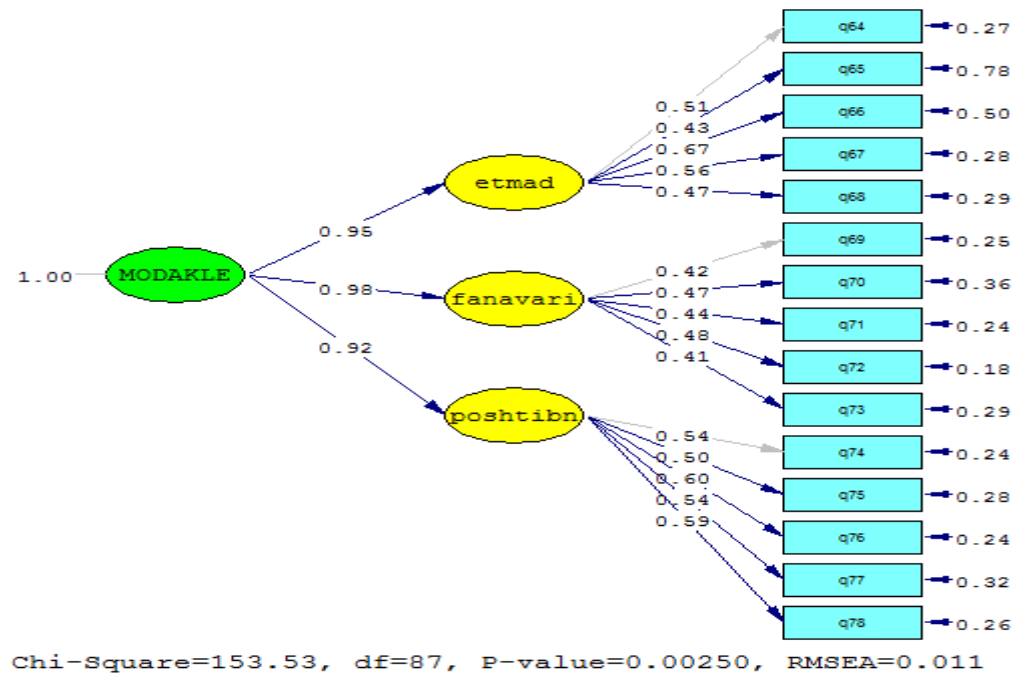
Figure 8
Measurement Model of the Context Variable in the Significance State

Figure 9
Measurement Model of the Intervening Conditions Variable in the Standardized Estimation State


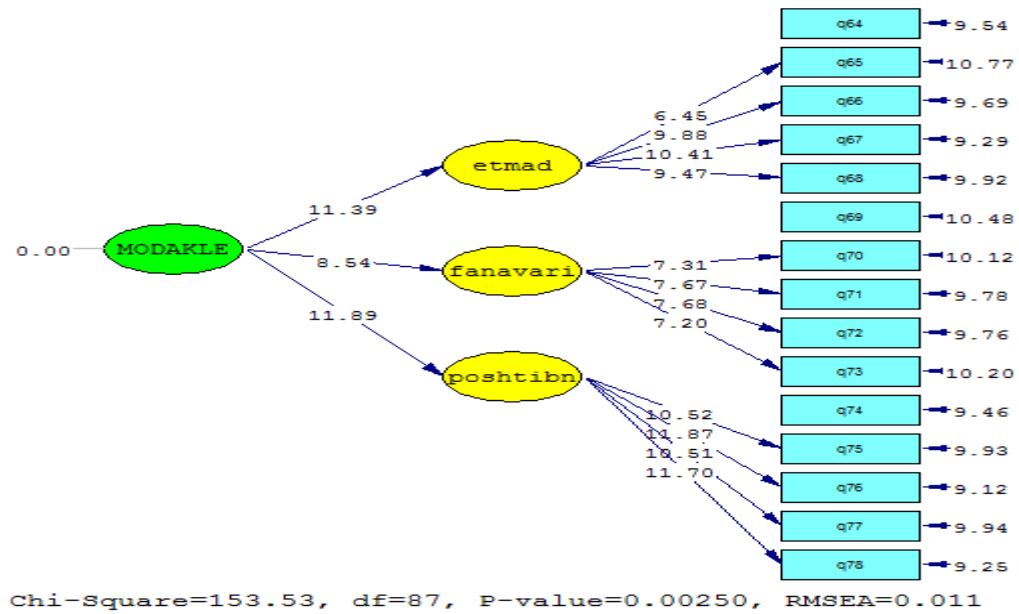
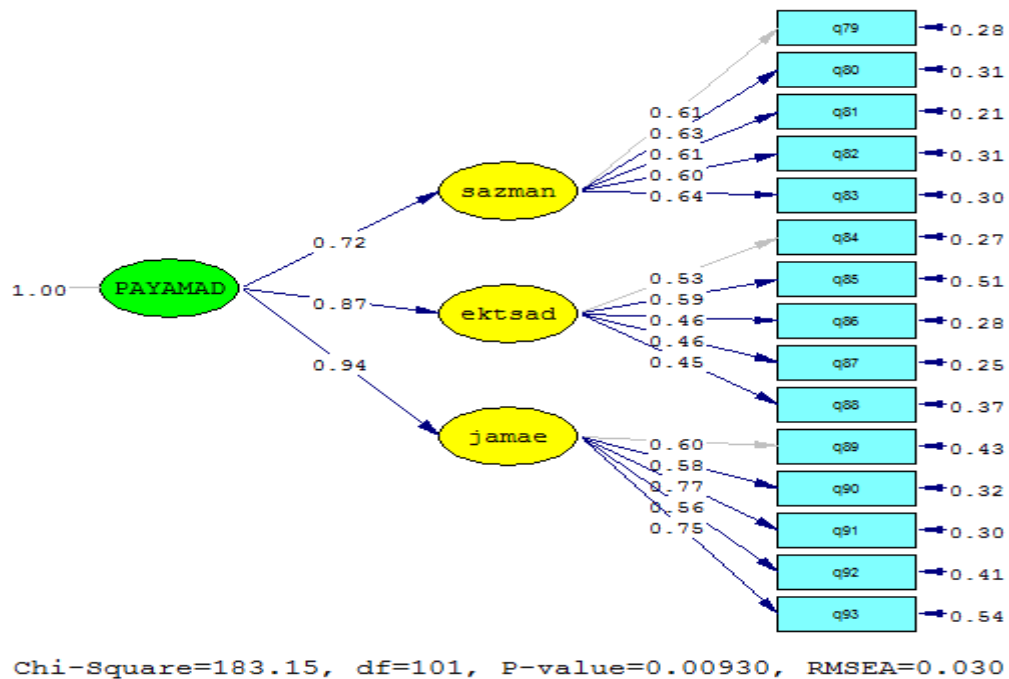
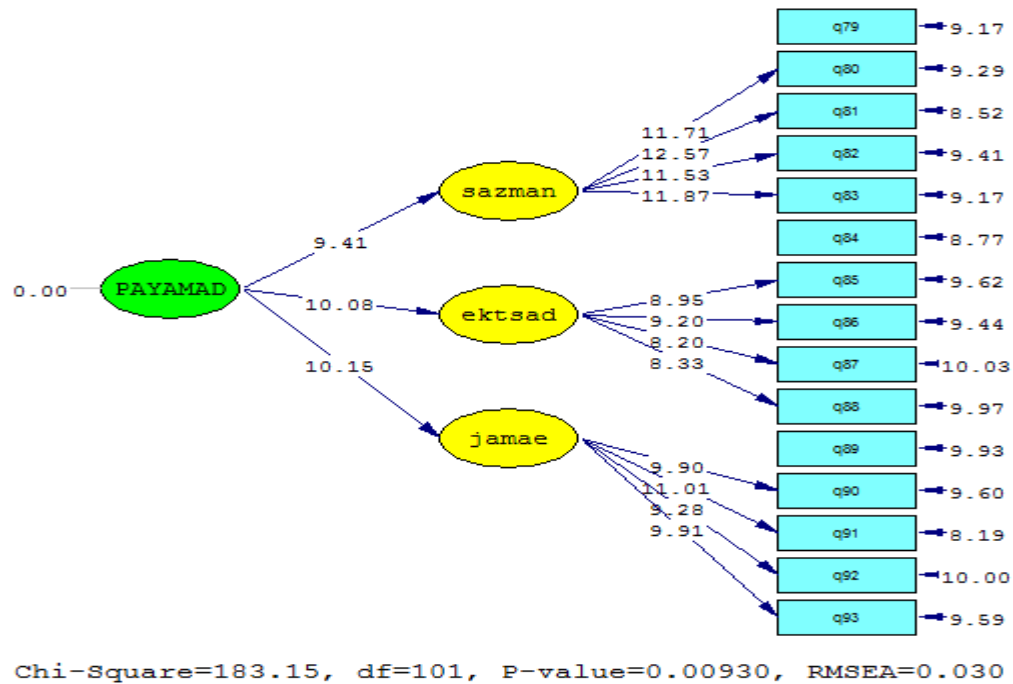
Figure 10
Measurement Model of the Intervening Conditions Variable in the Significance State

Figure 11
Measurement Model of the Consequences Variable in the Standardized Estimation State


Figure 12

Measurement Model of the Consequences Variable in the Significance State



The most important fit indices were evaluated, and the results are presented in Table 2.

Table 2

Evaluation of Goodness-of-Fit Indices

Fit Result	Outcome Variable	Intervening Conditions	Context Variable	Strategies Variable	Core Category	Causal Conditions	Excellent Values	Acceptable (Good) Values	Fit Indices
Good Fit	0.030	0.011	0.027	0.022	0.011	0.013	≤ 0.08	≤ 0.10	Root Mean Squared Error of Approximation (RMSEA)
Good Fit	0.95	0.90	0.90	0.91	0.93	0.90	≥ 0.95	≥ 0.90	Normed Fit Index (NFI)
Excellent Fit	0.96	0.91	0.95	0.90	0.91	0.96	≥ 0.95	≥ 0.90	Non-Normed Fit Index (NNFI)
Good Fit	0.95	0.93	0.96	0.91	0.90	0.93	≥ 0.95	≥ 0.90	Comparative Fit Index (CFI)
Good Fit	0.91	0.94	0.90	0.94	0.96	0.92	≥ 0.95	≥ 0.90	Incremental Fit Index (IFI)
Good Fit	0.94	0.90	0.93	0.93	0.91	0.94	≥ 0.95	≥ 0.90	Goodness of Fit Index (GFI)
Good Fit	0.82	0.89	0.83	0.88	0.91	0.83	≥ 0.90	≥ 0.80	Adjusted Goodness of Fit Index (AGFI)
Excellent Fit	0.048	0.029	0.048	0.038	0.042	0.039	≤ 0.05	≤ 0.08	Root Mean Square Residual (RMR)
Good Fit	0.077	0.074	0.075	0.062	0.072	0.071	≤ 0.05	≤ 0.08	Standardized Root Mean Square Residual (SRMR)

According to the results of confirmatory factor analysis presented in the structural model under standardized

estimation and the structural model under significance coefficients, since all significance values of the model

parameters were greater than 1.96, the overall results of the confirmatory factor analysis indicate that the proposed

model fits the data well and demonstrates an acceptable fit for the measurement model.

Figure 13

Structural Model in Standardized Estimation State

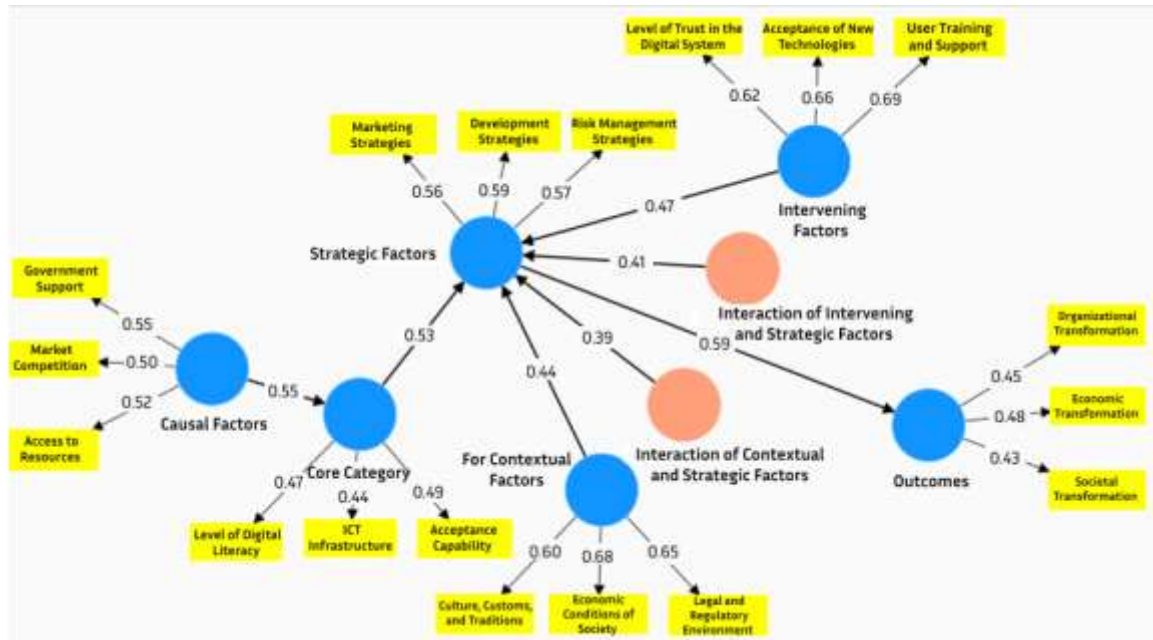
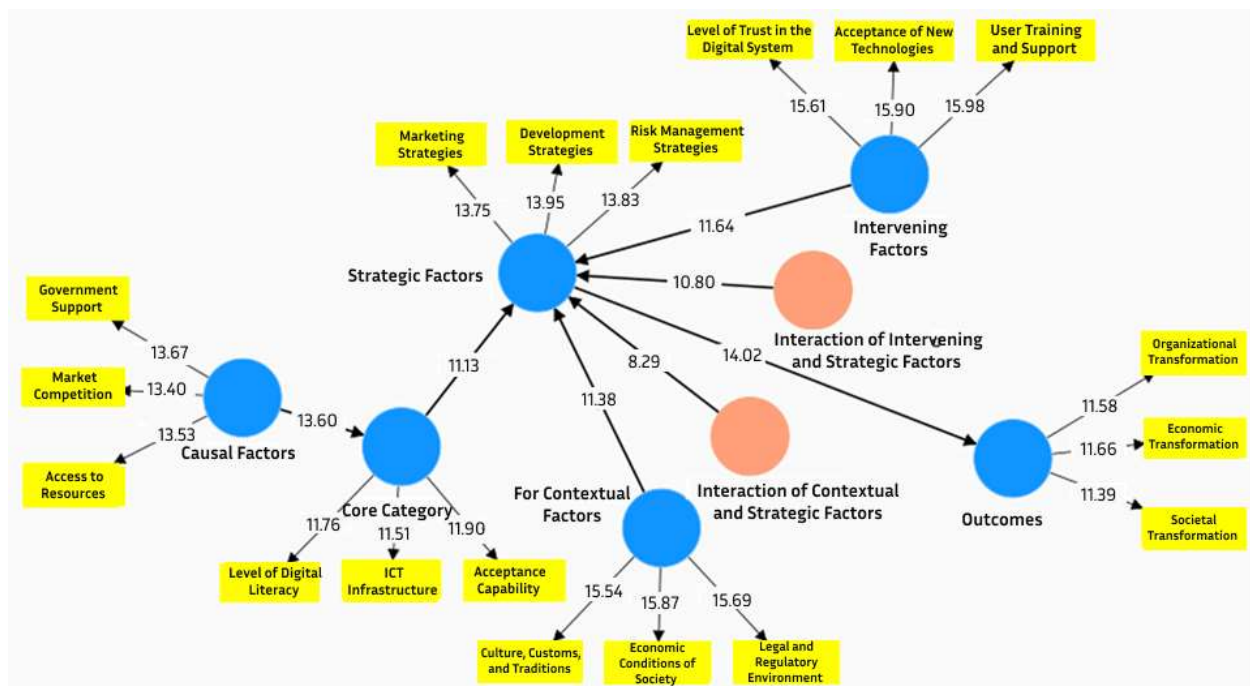


Figure 14

Structural Model in Significance Coefficients State



As shown in the table, all 58 interrelationships among latent variables met the proposed thresholds across all four

parameters. In fact, reliability, which is primarily assessed through three parameters—factor loadings, composite

reliability (CR), and Cronbach's alpha—was verified. In the above table, Cronbach's alpha values for all latent variables fall within the acceptable range of 0.6 to 0.7 or higher. Therefore, it can be claimed with high confidence that the final proposed model possesses appropriate reliability.

Moreover, validity was confirmed through both discriminant validity ($AVE > 0.5$) and convergent validity ($CR > 0.7$). Thus, the proposed model also possesses appropriate validity.

In this article, according to the GOF formula, the values of the model were applied, and the criterion was calculated as follows: the GOF value in the proposed contingency after-sales service model of Atin Part Afzar Company, based on APQC, was obtained as 0.703536. This value is higher than 0.36 and confirms the strong final fit of the proposed model. Moreover, considering the three benchmark values of 0.01, 0.25, and 0.36 as indicators of weak, moderate, and strong fit for this criterion, respectively, the obtained result of approximately 0.70 demonstrates that the model enjoys an acceptable overall fit.

4. Discussion and Conclusion

The findings of this study aimed at identifying and prioritizing the factors influencing digital financial innovation using a structural equation modeling (SEM) approach provide important insights into the dynamics shaping innovation in financial ecosystems. The results demonstrated that three key categories emerged as the central drivers of digital financial innovation: acceptance capability, ICT infrastructure, and digital literacy and awareness. These categories, functioning as the core elements of the model, were reinforced by causal conditions, contextual factors, intervening conditions, and strategic approaches that ultimately shaped organizational, economic, and societal outcomes. This configuration reflects the complexity of innovation processes and emphasizes that financial innovation cannot be achieved by isolated efforts but instead requires the interplay of technological, human, cultural, and regulatory dimensions.

The results indicated that causal conditions, such as government support, competition in the market, and access to resources, play a foundational role in enabling digital financial innovation. These findings resonate with previous works that highlight the necessity of environmental and institutional support for digital transformation in financial sectors (Abbas et al., 2024; Rajabpour & Alizadeh, 2024). Government support, for example, ensures favorable

regulatory and policy environments, while market competition stimulates innovation by pushing firms to adopt novel technologies to survive and grow (Bahmani, 2020). Furthermore, access to resources is critical in facilitating both infrastructural development and the training needed to enhance digital literacy (Nejad, 2022).

Another significant result concerns contextual factors, which included elements such as cultural norms, economic conditions, and regulatory frameworks. These factors were found to shape the environment in which innovation occurs and, as such, either accelerate or hinder its progress. For instance, cultures more open to digital transformation and with higher levels of digital literacy tend to adopt innovative financial solutions more readily (Alizadeh et al., 2024; Gao et al., 2022). Similarly, stable economic conditions and well-structured regulatory systems are essential for fostering trust in digital financial systems (Lam et al., 2019; Nasser & Razavi, 2019).

The study also highlighted the role of intervening conditions, including user training, support systems, and trust in digital platforms. These conditions act as mediating factors between structural drivers and outcomes. In particular, user education was found to significantly affect the willingness to adopt digital financial innovations. This aligns with prior studies emphasizing the importance of training and organizational readiness in digital transformation (Duygan et al., 2023; Frangos, 2022; Mousavi Samanani & Taleb Nia, 2024). The level of trust in digital systems further reinforces adoption, as individuals and organizations are less likely to engage with new financial technologies without confidence in their security and reliability (Khin & Ho, 2019; Wang et al., 2021).

Strategic factors, such as risk management strategies, marketing strategies, and development strategies, were found to be decisive in determining the trajectory of digital financial innovation. Organizations that integrated robust risk management mechanisms and proactive marketing strategies demonstrated higher adaptability in adopting innovative financial solutions. This finding echoes the arguments made by Du et al. (Du et al., 2020), who showed that blockchain-based supply chain financial innovations depend significantly on risk management strategies. Marketing strategies, meanwhile, facilitate user acceptance by increasing awareness and enhancing trust (Alizadeh et al., 2024; Chang et al., 2022).

Finally, the model revealed that the outcomes of digital financial innovation manifest across three levels: organizational transformation, economic transformation,

and societal transformation. At the organizational level, digital financial innovations contribute to improved knowledge management, efficiency, and performance (Barati & Safari, 2021; Di Vaio et al., 2021). At the economic level, innovations drive growth, competitiveness, and resilience, consistent with findings from both developed and developing contexts (Abbas et al., 2024; Effiom & Edet, 2020). At the societal level, digital innovations expand financial inclusion, enhance user experiences, and support sustainability goals (Gao et al., 2022; Zhou et al., 2022).

5. Aligning Results with Previous Studies

The findings of this research align with a broad body of literature examining the determinants and impacts of digital financial innovation. The identification of acceptance capability as a core factor mirrors prior research on the role of organizational readiness and user openness to adopting digital technologies. For example, Mousavi Samanani and Taleb Nia (Mousavi Samanani & Taleb Nia, 2024) demonstrated that organizational readiness directly influences financial resilience through digital innovation. Similarly, studies on municipalities and enterprises emphasize that readiness, combined with environmental support, significantly determines the success of digital adoption (Duygan et al., 2023; Rajabpour & Alizadeh, 2024).

The importance of ICT infrastructure is consistently echoed in prior literature. Abbas et al. (Abbas et al., 2024) argued that digitalization and infrastructure investment are critical for promoting business growth, especially when linked to green technology innovation. Comparable findings from Gao et al. (Gao et al., 2022) showed that corporate innovation and international strategy in China are strongly dependent on robust digital infrastructure. Without such infrastructure, the scalability and sustainability of financial innovations remain limited.

The role of digital literacy and awareness as a central construct further supports the arguments of earlier studies that emphasize the human element of financial innovation. Alizadeh et al. (Alizadeh et al., 2024) highlighted customer experience and user knowledge as determinants of successful digital marketing, while Khin and Ho (Khin & Ho, 2019) confirmed that digital capabilities enhance organizational performance. Similarly, Bahmani (Bahmani, 2020) identified user awareness as a critical factor in the selection of fintechs in banking contexts.

In terms of contextual and cultural factors, the findings align with Nasser and Razavi (Nasser & Razavi, 2019), who examined the legal implications of digital contracts, as well

as Longworth (Longworth, 2020), who emphasized the historical role of regulatory environments in shaping financial innovation. Cultural readiness and adaptability were also highlighted by Nejad (Nejad, 2022), who reviewed interdisciplinary approaches to financial innovations, reinforcing the argument that innovation success depends on broader societal acceptance.

The results on strategic drivers of innovation reinforce findings from Du et al. (Du et al., 2020), who showed how blockchain-based innovations depend on risk management strategies, and from Wang et al. (Wang et al., 2021), who identified data-driven approaches as central to fintech success. Similarly, Chang et al. (Chang et al., 2022) highlighted how marketing strategies in green manufacturing align with digital finance innovations, showing the interconnectedness between strategies and innovation outcomes.

The outcomes observed in this study are consistent with prior works across different dimensions. At the organizational level, the findings support Di Vaio et al. (Di Vaio et al., 2021) and Barati and Safari (Barati & Safari, 2021), who emphasized the role of innovation in improving knowledge management and organizational performance. At the economic level, results align with Abbas et al. (Abbas et al., 2024) and Effiom and Edet (Effiom & Edet, 2020), who highlighted financial innovation as a driver of competitiveness and growth. At the societal level, the findings corroborate Zhou et al. (Zhou et al., 2022), who demonstrated the role of fintech in supporting green growth, and Gao et al. (Gao et al., 2022), who linked digital innovation to sustainable development and international strategy.

The results also reinforce concerns about volatility and risk management. Shokri et al. (Shokri et al., 2021) highlighted the spillover effects of volatility among cryptocurrencies, underscoring the need for robust governance mechanisms in digital financial systems. Similarly, Barnes (Barnes, 2020) observed that post-crisis information management requires adaptive and resilient digital strategies, aligning with this study's findings on organizational and societal transformation.

Despite the strengths of this research, several limitations must be acknowledged. First, the study relied on a sample drawn primarily from experts, managers, and specialists within the capital market. While this provided valuable insights into the perspectives of knowledgeable stakeholders, the findings may not fully capture the views of other critical actors, such as end-users, policymakers, or

smaller enterprises. Second, the study adopted a cross-sectional survey design, which limits the ability to capture longitudinal dynamics of digital financial innovation and how these factors evolve over time. Third, although the study employed SEM to test relationships among constructs, the reliance on self-reported data may have introduced common method bias, potentially affecting the robustness of the results. Finally, the research was conducted within a specific national and institutional context, which may limit the generalizability of findings to other countries or financial ecosystems with different regulatory, cultural, or economic conditions.

Future studies should address these limitations by expanding the scope of participants to include diverse stakeholders such as consumers, regulators, and representatives from small and medium-sized enterprises. Longitudinal studies are recommended to examine how factors influencing digital financial innovation change over time, particularly in response to rapid technological advancements or regulatory shifts. Comparative cross-national studies could also provide valuable insights into how contextual differences—such as legal systems, cultural attitudes, or economic structures—affect innovation processes. Additionally, integrating qualitative methods such as case studies or ethnographic approaches could enrich understanding of the nuanced social and cultural dynamics that underpin adoption and implementation. Finally, future research could incorporate experimental or quasi-experimental designs to establish causal relationships between specific strategies and innovation outcomes.

For practitioners, the results of this study emphasize the need to invest in robust ICT infrastructure and foster digital literacy at all organizational levels. Policymakers should focus on creating enabling regulatory environments that balance innovation with risk management, while organizations should adopt proactive strategies to align user training, marketing, and risk management initiatives with digital transformation goals. Building trust in digital systems is paramount, requiring transparent governance mechanisms, strong cybersecurity frameworks, and continuous user education. At the same time, firms should view digital financial innovation not only as a technological challenge but also as an opportunity to contribute to economic resilience and societal well-being by aligning innovation efforts with broader sustainability objectives.

Authors' Contributions

Authors contributed equally to this article.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethics Considerations

In this research, ethical standards including obtaining informed consent, ensuring privacy and confidentiality were considered.

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