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Explanation and Evaluation of the Intellectual Capital Model in the Tose'e Ta'avon Bank

ABSTRACT

Intellectual capital is one of the most important organizational assets, through which organizations can strengthen their position in today's competitive environment and achieve leadership in innovation and value creation. Accordingly, the present study aims to design an optimal model of intellectual capital in the Tose'e Ta'avon Bank. This research is exploratory in purpose and survey-based in nature. In the qualitative phase, interviews were conducted with 25 experts to identify the main and sub-themes that define intellectual capital. In the quantitative phase, using random sampling and Cochran's formula, 75 individuals were selected as the statistical sample. In this phase, various statistical tests were used to measure and examine the relationships between the main and sub-themes. Data analysis in the qualitative section was performed through thematic analysis, while in the quantitative section, it was carried out using structural equation modeling (SEM) with the aid of SPSS and LISREL software. Based on the results of the thematic analysis, intellectual capital consists of four main themes and forty-eight sub-themes. The findings of the structural equation modeling revealed that the impact coefficients of all questions and latent variables—corresponding to the four dimensions of the intellectual capital evaluation model: human capital, structural capital, relational capital, and innovation capital—were significant and exceeded 0.50. Moreover, the significance levels of these coefficients were greater than 1.96, indicating statistical validity. The intellectual capital evaluation model, as a reliable and sustainable instrument, can be effectively applied to enhance management performance in the Tose'e Ta'avon Bank. The results of the study demonstrate that the structural parameters of the intellectual capital model are statistically significant.

Keywords: Intellectual Capital, Human Capital, Structural Capital, Relational Capital, Innovation Capital

Introduction

In the evolving landscape of the knowledge-based economy, intellectual capital (IC) has emerged as a critical strategic asset for organizational success and sustainability. Unlike tangible resources that depreciate over time, IC—comprising human, structural, relational, and innovation capital—creates continuous value through learning, adaptation, and knowledge creation [1]. In the global financial and service sectors, where competition increasingly depends on innovation and intangible value creation, effective management and measurement of IC are essential to achieving sustainable competitive advantage [2]. Within this context, banks and financial institutions, particularly those operating in developing economies, face mounting pressure to harness intellectual capital as a driver of efficiency, innovation, and risk mitigation [3].

Recent studies indicate that intellectual capital plays a decisive role in improving organizational performance, increasing productivity, and strengthening market position [4, 5]. IC not only influences financial outcomes but also enhances decision-making, customer satisfaction, and employee engagement through the integration of human knowledge and organizational processes [6]. Furthermore, the transition from resource-based to knowledge-based economies has intensified the demand for accurate IC measurement models, as traditional accounting methods often fail to capture intangible value creation [7, 8].

The significance of IC in banking has been underscored in various studies showing its positive effects on financial stability, innovation capacity, and customer trust [9, 10]. In particular, intellectual capital supports banks in achieving operational resilience and competitiveness by fostering innovation and knowledge-sharing cultures [11]. Given the knowledge-intensive nature of financial services, IC becomes a foundational asset for managing uncertainty, responding to regulatory changes, and promoting digital transformation [12]. In this sense, banks that effectively utilize IC are better positioned to implement innovative strategies and maintain customer confidence in a rapidly changing economic environment [13].

Intellectual capital also enhances organizational innovation and strategic performance through the dynamic interaction of its components. Human capital—comprising skills, knowledge, experience, and creativity—constitutes the core driver of innovation and value creation [14]. Structural capital, including organizational systems, processes, and technological infrastructure, facilitates the conversion of individual knowledge into collective organizational capabilities [15]. Relational capital strengthens external relationships with clients, partners, and stakeholders, reinforcing the organization's reputation and trustworthiness [16]. Finally, innovation capital integrates these resources to foster continuous improvement and sustainable development [17, 18].

The literature increasingly emphasizes the interconnectedness of IC and innovation performance. Empirical findings confirm that IC not only enhances operational efficiency but also contributes to sustainable innovation and digital transformation [12, 19]. For instance, organizations leveraging intellectual assets tend to adapt more effectively to digital technologies, enabling agile decision-making and rapid innovation [2]. This aligns with the knowledge-based view of the firm, which asserts that knowledge and intellectual resources constitute the primary foundation for competitive advantage in dynamic markets [20]. Accordingly, IC functions as both a resource and a capability—facilitating strategic alignment, innovation capability, and organizational learning [4, 21].

Moreover, intellectual capital acts as a mediating mechanism between leadership practices, knowledge-sharing behaviors, and innovation outcomes [22]. Effective leadership ensures that IC resources are strategically directed toward innovation, thereby enhancing firms' adaptive capacity and resilience [23]. As organizations increasingly adopt data-driven and digitalized structures, intellectual capital becomes integral to business intelligence and strategic agility [24, 25]. These findings highlight the role of IC not only as a measurement of intangible value but also as a transformative tool for innovation-driven performance [17].

At the national and sectoral levels, IC contributes to knowledge-based economic development by improving human capabilities, fostering organizational learning, and promoting innovation ecosystems [23]. In this context, the banking sector serves as a pivotal institution for channeling intellectual resources toward sustainable economic growth [26]. However, despite the recognized importance of IC, its systematic evaluation and management remain underdeveloped, particularly in public and cooperative banking systems [27]. The lack of standardized models and assessment mechanisms limits banks' ability to transform intangible resources into measurable outcomes [7].

Recent advances in IC management have attempted to address these gaps by developing multidimensional evaluation frameworks combining human, structural, and relational elements [6]. These frameworks emphasize the integration of intangible asset measurement with strategic management practices, ensuring that knowledge creation and innovation align with organizational goals [5]. For instance, in developing economies, investment in human capital and technological infrastructure has been shown to positively influence organizational innovation and performance [15, 28]. Similarly, meta-

synthesis approaches to IC modeling have demonstrated the importance of aligning intangible resources with the firm's strategic vision [4].

The relationship between IC and financial performance is well documented in empirical literature. Studies reveal that efficient utilization of intellectual resources directly enhances profitability, productivity, and organizational sustainability [13, 29]. Furthermore, intellectual capital efficiency varies across the business life cycle, influencing firm value at different developmental stages [29]. For banking institutions, IC contributes not only to financial stability but also to risk management, service quality, and customer loyalty [3, 10]. Consequently, the evaluation of IC performance provides critical insights into how knowledge assets generate economic and social value [14, 20].

From a strategic management perspective, the integration of IC into organizational processes supports both operational excellence and innovation culture. The synergy among human capital development, structural innovation, and relational networks ensures that knowledge flows efficiently throughout the organization [11, 16]. Empirical evidence indicates that organizations with strong IC foundations demonstrate superior adaptability to environmental uncertainty and market turbulence [18, 19]. In particular, intellectual capital enhances firms' absorptive capacity—the ability to identify, assimilate, and exploit external knowledge—which is essential for long-term innovation [17].

In the context of emerging markets, such as Iran, intellectual capital plays an increasingly vital role in fostering innovation and performance within financial institutions [23]. Cooperative banks, as hybrid institutions combining commercial efficiency with social objectives, rely heavily on intellectual resources to achieve developmental goals [27]. The Tose'e Ta'avon Bank of Iran, in particular, operates within a complex environment that demands both financial prudence and innovation in service delivery. Understanding and optimizing IC components within this institution can significantly improve its operational efficiency, innovation capacity, and contribution to the broader knowledge economy [9].

Despite extensive global research on IC, there remains a need for contextualized models tailored to specific sectors and cultural environments. For instance, while Western models often focus on market-based indicators, developing countries require frameworks that consider institutional, regulatory, and socio-cultural factors [8, 26]. Moreover, existing studies highlight the challenges of measuring intangible assets in cooperative and public banks, where value creation extends beyond financial metrics to include social and developmental outcomes [15]. Therefore, designing a comprehensive intellectual capital model that captures the multidimensional nature of IC in such contexts is crucial for both academic understanding and managerial application [4, 21].

In summary, intellectual capital has evolved into a central paradigm for organizational competitiveness, innovation, and sustainable development across sectors. The effective measurement and management of IC enable organizations to transform intangible knowledge assets into tangible economic and social value [5, 18]. Nevertheless, empirical gaps persist regarding the structure, measurement, and application of IC in cooperative banking systems. Accordingly, this study aims to design and evaluate a comprehensive intellectual capital model for the Tose'e Ta'avon Bank of Iran.

Methodology

The present study is exploratory—fundamental in its purpose and is classified as a mixed-methods research in terms of data characteristics. The study aims to measure and model intellectual capital. The statistical population of this research consists of two groups, as follows:

a. Qualitative Section Statistical Population:

The qualitative population includes experts, senior managers, and senior specialists of the Tose'e Ta'avon Bank, as well as academic professors familiar with banking topics. Participants were selected purposefully using the snowball sampling method. After a comprehensive review of the literature on intellectual capital and an examination of existing measurement and evaluation models, interviews were conducted until theoretical saturation was reached. This occurred after conducting interviews with 25 participants, leading to the identification of the main components and corresponding items.

b. Quantitative Section Statistical Population:

The quantitative population consists of managers from various departments and senior specialists of the Tose'e Ta'avon Bank. Based on the collected information, the total population size was estimated at 93 individuals. Using Cochran's formula, a sample size of 75 participants was calculated, and they were selected through a simple random sampling method.

Since the research includes both qualitative and quantitative phases, two separate instruments were used for data collection. In the qualitative phase, semi-structured interviews were employed, while in the quantitative phase, a researcher-made questionnaire was designed. The questionnaire components and subcomponents are as follows:

- **Intellectual Capital** is divided into four components: human capital, structural capital, customer capital, and innovation capital. Human capital comprises three subcomponents: competence, skills and capabilities, and attitude and motivation.

- **Structural Capital** includes three subcomponents: organizational systems and structure, information and communication technology (ICT) infrastructure, and internal processes.

- **Customer Capital** encompasses three subcomponents: client relations, collaboration and networking, and customer loyalty.

- **Innovation Capital** consists of three subcomponents: innovation mechanisms, technological innovation, and administrative innovation.

It is noteworthy that SPSS and LISREL software were used for data analysis.

Findings and Results

The findings of this research are divided into two stages. In the first stage, before conducting interviews, the researcher collected relevant information about the topic through a review of the literature. During the interviews, information about the research topic was provided to the 25 participants, who then responded to a set of structured and organized questions. Through these interviews with experts, the components of intellectual capital were identified. In this process, all relevant factors were determined using interview data and live coding. Regarding the coding method, it should be noted that this approach defines the most frequent and prominent expressions, references, and words by calculating their frequency percentage and then presents the identified factors to the researcher. Based on the expert interviews, the subcomponents of intellectual capital are presented in Table 1.

Table 1

Subcomponents of Intellectual Capital

No.	Component	No.	Component	No.	Component	No.	Component
1	Vision	13	Organizational Brand	25	Relationship-Building Ability	37	Analytical Thinking
2	Organizational Intelligence	14	Cultural Intelligence	26	Motivation	38	Innovation Capital
3	Productivity	15	Database	27	Information Infrastructure	39	Crisis Management
4	Idealism	16	Self-Confidence	28	Organizational Skills	40	Teamwork
5	Meritocracy	17	Knowledge Management	29	Relational Capital	41	Organizational Trust

6	Code of Ethics	18	Openness to Differences	30	Human Capital	42	Social Responsibility
7	Work Environment Features	19	Emotional Intelligence	31	Competitive Intelligence	43	Self-Motivation
8	Bureaucratic Structure	20	Training	32	Loyalty	44	Customer Orientation
9	Hope	21	Organizational Culture	33	Organizational Commitment	45	Resource Development
10	Leadership	22	Structural Capital	34	Executive Intelligence	46	Organizational Creativity
11	Sense of Mission	23	Value Creation	35	Mental Imaging	47	Empowerment
12	Independence of Judgment	24	Cohesion	36	Self-Efficacy	48	Integration

According to the results presented in Table 2, the identified components of intellectual capital in the Tose'e Ta'avon Bank can be classified into 48 elements. The findings show that intellectual capital consists of four dimensions: human capital (motivation, training, meritocracy, knowledge management, self-confidence, executive intelligence, self-motivation, teamwork, cultural intelligence, organizational intelligence, independence, hope, emotional intelligence, competitive intelligence, empowerment, and self-efficacy), relational capital (leadership, loyalty, analytical thinking, cohesion, organizational commitment, resource development, integration, organizational creativity, customer orientation, social relationship-building ability, and code of ethics), structural capital (vision, bureaucratic structure, organizational skills, organizational trust, information infrastructure, work environment features, organizational culture, databases, and sense of mission), and innovation capital (mental imaging, value creation, idealism, productivity, organizational brand, social responsibility, crisis management, and openness to differences).

To test the validity and acceptability of the proposed model, a questionnaire consisting of 48 items was designed and distributed among respondents. The questionnaire used a five-point Likert scale to assess the degree of agreement or disagreement with statements related to each component of the model, ranging from "strongly disagree" to "strongly agree." The demographic characteristics of the 75 respondents are presented in Table 2.

Table 2

Demographic Characteristics of Respondents

Variable	Indicator	Frequency	Relative Frequency
Gender	Male	59	0.79
	Female	16	0.21
Age (years)	25–35	10	0.13
	36–45	32	0.43
	46–55	25	0.33
	Above 55	8	0.11
	Doctorate	17	0.23
Education Level	Master's	22	0.29
	Bachelor's	36	0.48
Work Experience (years)	5–10	12	0.16
	10–15	24	0.32
	15–20	30	0.40
	Above 20	9	0.12

Descriptive findings regarding mean, standard deviation, skewness, and kurtosis of the research variables were analyzed. To examine reliability, Cronbach's alpha (as a traditional measure) and composite reliability (as a modern measure) were employed. The extracted variance criteria were used to evaluate the measurement models. The results are reported in Table 3.

Table 3

Descriptive and Reliability Indices of Variables

Variable	Mean	Median	Mode	Variance	Std. Deviation	Skewness	Kurtosis	Cronbach's Alpha	Composite Reliability
Human Capital	41.01	38	35	37.34	6.08	0.787	-0.055	0.943	0.734

Structural Capital	26.62	24	20	41.23	7.01	0.648	-0.518	0.916	0.724
Relational Capital	20.80	20	18	32.73	5.976	0.598	-0.512	0.942	0.691
Innovation Capital	32.41	21	19	40.86	4.45	0.651	-0.523	0.897	0.682

Based on the results in Table 4, the observed mean scores derived from respondents' perceptions were reported for the research variables. The skewness and kurtosis coefficients ranged between -2 and +2, indicating that the data distribution for all variables was normal. The Cronbach's alpha and composite reliability values exceeded 0.70, confirming internal consistency and the reliability of the indicators for each variable within the measurement models. The extracted variance was greater than 0.50, suggesting high construct validity and measurement adequacy of the variables based on their respective indicators.

For data analysis and statistical inference, LISREL software was used to test the conceptual model and examine the research hypotheses. Construct validity of the study variables and the factor loadings derived from each were tested using confirmatory factor analysis, as presented in Table 4.

Table 4

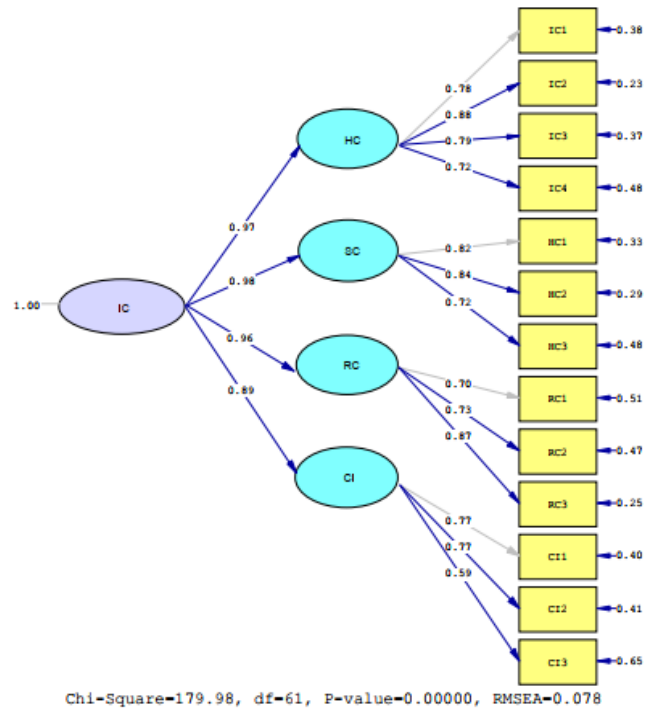
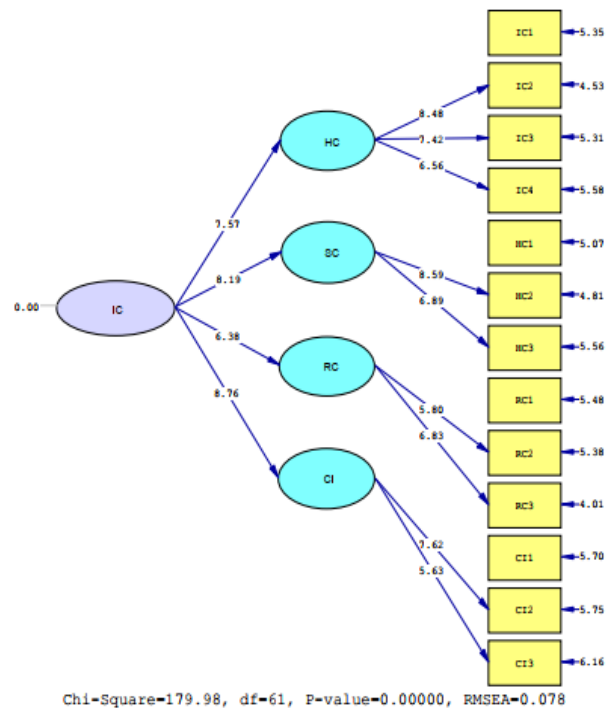
Results of Factor Analysis

Component	Indicator	Factor Loading (λ)	t-value	Component	Indicator	Factor Loading (λ)	t-value	Component	Indicator	Factor Loading (λ)	t-value
Competence	Q1	0.63	10.24	IT Infrastructure	Q18	0.79	10.30	Collaboration and Networking	Q33	0.53	11.50
	Q2	0.55	8.10		Q19	0.88	10.60		Q34	0.63	9.60
	Q3	0.86	7.12		Q20	0.70	7.80		Q35	0.69	8.70
	Q4	0.74	13.60		Q21	0.67	7.50		Q36	0.78	8.60
	Q5	0.87	6.23		Q22	0.70	8.50		Q37	0.80	8.70
Skills and Capabilities	Q6	0.81	9.30	Internal Processes	Q23	0.67	11.60	Customer Loyalty	Q38	0.52	10.40
	Q7	0.62	8.40		Q24	0.54	10.30		Q39	0.58	6.50
	Q8	0.74	10.20		Q25	0.88	9.10		Q40	0.59	12.60
	Q9	0.57	8.40		Q26	0.86	8.90		Q41	0.55	10.50
	Q10	0.69	9.40		Q27	0.78	12.20		Q42	0.78	8.80
Attitude	Q11	0.66	8.30	Organizational Structure	Q28	0.72	11.60	Technological Innovation	Q43	0.61	8.60
	Q12	0.57	8.01		Q29	0.57	10.10		Q44	0.63	12.60
	Q13	0.59	7.60		Q30	0.62	10.60		Q45	0.76	10.70
	Q14	0.79	9.80		Q31	0.69	11.70		Q46	0.54	9.50
	Q15	0.69	7.70		Q32	0.51	9.50		Q47	0.76	10.70
Motivation	Q16	0.62	10.60	Customer Relations				Administrative Innovation	Q48	0.66	11.60
	Q17	0.53	6.50								

The results in Table 4 indicate that all factor loadings exceeded 0.50, suggesting that the variance shared between each construct and its indicators was greater than the measurement error variance, confirming the model's reliability. Furthermore, all t-values were greater than 1.96, indicating statistical significance.

Figure 1

Standardized Path Coefficients (Factor Loadings)

**Figure 2***t-Value Significance Coefficients*

According to the model fit results, the chi-square ratio (χ^2/df) was less than 3, RMSEA was below 0.08, and PNFI was greater than 0.50. The GFI and AGFI values exceeded 0.80, and at least three out of five indices (NFI, NNFI, GFI, RFI, IFI) were above 0.90. As shown in Table 5, the measurement model initially exhibited inadequate fit, requiring modification; however, the structural model demonstrated an excellent fit after refinement.

Table 5

Model Fit Indices

Fit Index	Acceptable Range	Measurement Model	Result	Structural Model	Result
χ^2/df	Between 1–3	3.47	Accepted	2.95	Accepted
RMSEA	< 0.08	0.087	Rejected	0.078	Accepted
PNFI	> 0.50	0.57	Accepted	0.709	Accepted
GFI	> 0.80	0.72	Rejected	0.88	Accepted
AGFI	> 0.90	0.91	Accepted	0.83	Accepted
NFI	> 0.90	0.94	Accepted	0.92	Accepted
CFI	> 0.90	0.84	Rejected	0.92	Accepted
RFI	> 0.90	0.91	Accepted	0.93	Accepted
IFI	> 0.90	0.85	Rejected	0.93	Accepted

The findings confirm that after model modification, the structural model achieved a satisfactory level of goodness-of-fit, indicating strong construct validity and internal consistency of the intellectual capital model developed for the Tose'e Ta'avon Bank.

Discussion and Conclusion

The findings of the present study revealed that the intellectual capital (IC) model developed for the Tose'e Ta'avon Bank consists of four main components—human capital, structural capital, relational capital, and innovation capital—each encompassing several subcomponents that collectively explain the dynamics of knowledge-based value creation in banking organizations. The results of the structural equation modeling indicated that all factor loadings exceeded the threshold of 0.50 and that the t-values were greater than 1.96, confirming that each of the four IC dimensions had a statistically significant effect on the overall IC construct. Furthermore, the model exhibited strong fit indices ($\chi^2/df < 3$, RMSEA < 0.08, and GFI > 0.80), demonstrating that the designed structure is both empirically valid and theoretically coherent. These findings support the assumption that IC serves as a multi-dimensional construct capable of explaining organizational efficiency, innovation capability, and competitive positioning within the banking industry [4, 5].

The significance of the human capital component suggests that the knowledge, competencies, motivation, and creativity of employees are the core drivers of value creation in cooperative banking systems. The results showed that subcomponents such as empowerment, training, and self-efficacy had particularly strong loadings, confirming that investment in employee development directly contributes to performance improvement. This finding aligns with the argument that human capital forms the foundation of IC, representing the tacit and explicit knowledge embedded within individuals [1]. Previous studies have similarly emphasized that the development of employee knowledge, attitudes, and problem-solving skills enhances organizational innovation and adaptability [11, 14]. Moreover, in the context of Iranian banks, human capital has been shown to significantly influence service performance and customer satisfaction, primarily through competence and motivation [9]. The current study extends these findings by demonstrating that human capital, when integrated with organizational systems and cultural mechanisms, becomes a strategic enabler for cooperative banking institutions.

The results concerning structural capital highlight the importance of organizational systems, information infrastructure, and process integration in supporting intellectual performance. The structural capital dimension demonstrated high internal consistency and reliability, confirming its mediating role between human capital and innovation capital. This finding supports earlier research emphasizing that effective internal structures, databases, and ICT systems are essential for transforming individual knowledge into collective organizational intelligence [6, 15]. Furthermore, the presence of robust structural mechanisms facilitates knowledge retention, reduces operational inefficiencies, and increases organizational learning

capability [24]. The study's results suggest that the Tose'e Ta'avon Bank's performance and innovation potential depend heavily on the extent to which it can institutionalize knowledge-sharing mechanisms, improve its IT infrastructure, and streamline decision-making processes. These conclusions resonate with the findings of [2], who emphasized that structural systems and cloud-based intellectual capital management frameworks can significantly enhance organizational agility and value creation.

Relational capital emerged as another major determinant of IC within the bank, with subcomponents such as leadership, customer loyalty, and communication skills demonstrating high factor loadings. The strength of relational capital indicates that sustained relationships with clients, stakeholders, and employees serve as intangible resources that foster trust, reputation, and long-term stability. This result corroborates the argument that relational networks are strategic assets for achieving competitive advantage in service-oriented organizations [16, 22]. In cooperative banking, where social trust and customer loyalty are critical, relational capital enhances not only market reputation but also social legitimacy [10]. Similar findings by [3] confirm that relational capital significantly reduces risk-taking behavior while improving financial stability and stakeholder confidence in Asian emerging markets. Additionally, effective leadership practices contribute to strengthening relational capital, as leaders act as mediators who align interpersonal relations with organizational goals [23]. Thus, relational capital functions as a critical interface between internal competencies and external market expectations, reinforcing the Tose'e Ta'avon Bank's position within the national financial ecosystem.

Innovation capital, as the fourth major dimension, was found to be a crucial outcome of the synergy between human, structural, and relational capitals. The inclusion of elements such as creativity, crisis management, and technological innovation underscores that intellectual capital does not only preserve organizational knowledge but also generates new knowledge. The findings are consistent with the notion that innovation is the dynamic expression of intellectual capital [17, 18]. According to the results, innovation capital positively influenced overall organizational effectiveness by promoting adaptive learning and creative problem-solving. This supports [19], who demonstrated that digitalization and intellectual capital jointly drive sustainable open innovation, especially in knowledge-intensive sectors. In the Tose'e Ta'avon Bank, innovation capital contributes to designing new financial products, improving digital services, and optimizing operational processes—ultimately translating intellectual resources into tangible organizational performance.

Furthermore, the results of confirmatory factor analysis demonstrated a strong interrelationship among all four IC dimensions, validating the holistic nature of the intellectual capital framework. This supports prior meta-synthesis studies that emphasize the interdependence of intellectual capital components in generating long-term value [4]. The interconnectedness observed between human and innovation capital is particularly noteworthy, suggesting that knowledge-based competencies and creative mindsets are essential precursors to technological and administrative innovation [11, 25]. The integration of human skills and structural efficiency further enables organizations to convert intangible resources into marketable outcomes, aligning with the perspective that intellectual capital operates as a unified system of interrelated sub-capitals [20].

The analysis also confirmed that IC significantly contributes to both operational and financial performance in the banking context. The strong structural model fit supports the findings of [29], who demonstrated that intellectual capital efficiency positively affects firm financial performance throughout different stages of the business life cycle. Likewise, the relationship between IC and organizational learning found in this study parallels the conclusions of [21], who argued that a learning-

oriented IC model fosters innovation and progress within educational systems. Similarly, in the service sector, [30] found that green intellectual capital, mediated by strategic human resource capabilities, improves service quality—consistent with the current study’s observation that human and innovation capital interact to promote sustainable performance. Collectively, these findings suggest that IC, when strategically managed, enhances both tangible and intangible performance metrics.

In alignment with global evidence, the current study demonstrates that intellectual capital is indispensable for achieving digital transformation and knowledge-based growth in financial institutions. The Tose’e Ta’avon Bank’s IC structure, which integrates cultural intelligence, teamwork, and knowledge management, mirrors the patterns found in modern organizations leveraging digital transformation for value creation [12]. Moreover, the results highlight that fostering an innovation-oriented culture and implementing knowledge-sharing systems lead to superior adaptability and organizational resilience [5]. The strong model fit obtained for innovation capital reinforces [28], who found that intellectual capital and corporate social responsibility jointly enhance financial performance and stakeholder trust.

The study’s findings also underline the contextual relevance of intellectual capital models in developing economies. As [26] and [27] argued, economic institutions in Islamic and developing countries must adapt IC frameworks to local governance structures and cultural realities. The Tose’e Ta’avon Bank, as a semi-public financial institution, relies on both social capital and ethical responsibility, dimensions that are deeply intertwined with IC in the Iranian context. The inclusion of components such as social responsibility, integrity, and moral charter in the present model confirms that IC extends beyond economic productivity to encompass ethical and societal dimensions of value creation [23]. This multidimensional conceptualization aligns with [8], who emphasized that measuring intangible assets requires considering cultural and institutional contingencies.

Overall, the findings reinforce the argument that intellectual capital is a vital determinant of organizational competitiveness and sustainable performance in financial institutions. The validated model confirms that the Tose’e Ta’avon Bank’s intellectual capital system—anchored in human expertise, robust structures, strategic relationships, and continuous innovation—provides a strong foundation for enhancing knowledge management, service quality, and stakeholder trust. The results contribute to the growing body of literature that views IC as both an input and an outcome of strategic learning and innovation [24, 31]. By establishing an empirically grounded and contextually relevant model, this study extends theoretical understanding and provides a practical framework for measuring and managing IC within cooperative banking systems.

Despite its robust methodology and comprehensive analysis, this study has several limitations. First, the research was confined to the Tose’e Ta’avon Bank, which limits the generalizability of the results to other banking institutions or industries. Second, the use of self-reported data in the quantitative phase may have introduced response bias, as participants might have overestimated their organization’s intellectual capital capabilities. Third, while the model incorporated four main dimensions, other potential variables such as digital literacy, emotional intelligence, and institutional culture could also play mediating or moderating roles but were not included. Moreover, the cross-sectional nature of the study restricts the ability to infer causal relationships between IC components and performance outcomes. Finally, the qualitative data, though rich, were limited to a specific number of expert interviews, which may not fully capture the diversity of views present across all organizational levels.

Future studies should consider longitudinal designs to explore how intellectual capital evolves over time and how its effects on performance manifest in different business cycles. Expanding the sample to include multiple banks or financial

institutions across different regions would enhance external validity and provide comparative insights. Researchers could also apply advanced analytical methods such as dynamic modeling or machine learning to assess complex interdependencies among IC dimensions. Additionally, future research should examine the role of digital transformation and artificial intelligence in enhancing IC efficiency, particularly in banking systems undergoing technological transitions. Finally, qualitative case studies exploring the lived experiences of managers and employees could provide deeper insights into the behavioral and cultural dynamics underlying intellectual capital development.

Managers should prioritize the systematic development of human capital through continuous training, empowerment programs, and knowledge-sharing initiatives. Strengthening structural capital by investing in advanced information systems and integrated management processes will facilitate effective knowledge dissemination and retention. Leaders should foster relational capital by promoting transparent communication, ethical practices, and long-term stakeholder engagement. Additionally, to enhance innovation capital, organizations should cultivate a culture that encourages creativity, experimentation, and adaptive learning. Finally, aligning intellectual capital management with strategic goals and digital transformation initiatives will enable cooperative banks to achieve both economic performance and social responsibility, ensuring sustainable competitive advantage in the evolving financial landscape.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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