

## Original Research Article

# The Impact of Intellectual Capital and Good Corporate Governance on Bank Value with the Mediating Effect of Financial Performance: Evidence from Iran

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The value of a company is important to shareholders, investors, managers, creditors, and other stakeholders in their assessment of the company's future, its impact on the estimation of investment risk and returns, and stock prices. Therefore, examining the factors affecting a company's value is crucial. Intellectual capital, as a determinant in creating competitive advantage and value, plays a special role and is considered as an intangible asset of companies. Theoretical background and empirical evidence suggest that intellectual capital directly influences a company's value and performance. Moreover, the need for corporate governance arises from the potential conflict of interest between individuals within the company's structure, which can affect its value. As banks' shares play an important role in the Tehran Stock Exchange, we examine the impact of intellectual capital and good corporate governance on bank value, with the mediating effect of financial performance. The statistical population of this study includes 17 banks listed on the Tehran Stock Exchange over the period from 2017 to 2021. The results indicated that intellectual capital significantly affects, in contrast to corporate governance, which does not have a significant effect on bank value. Additionally, financial performance mediating the link between intellectual capital and bank value is accepted based on the Baron and Kenny (1986) method for mediation. The findings also show that the mediating effect of financial performance on the relationship between good corporate governance and bank value is confirmed according to the Zhao et al., 2010 procedure. Moreover, the results indicated that adding Good Corporate Governance as another independent variable relatively increases the explanatory power of the model.

**Keywords:** Intellectual Capital, Good Corporate Governance, Financial Performance, Bank Value, Tehran Stock Exchange

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## 1 Introduction

The significance of a company's value and how to maximize it motivates researchers to examine the factors affecting corporate value, especially in companies that have implemented corporate governance. A company's objective, which may be even more beneficial than profit maximization, is maximizing company value. Profitability is often considered a long-term factor, and setting objectives for profitability helps strike a balance between wealth maximization and the other relevant objectives, such as growth, risk avoidance, and sustainability. On the other hand, a company's value may be impacted by factors like corporate governance and intellectual capital. Intellectual capital refers to the value derived from a company's employees' knowledge, training, skills, or any proprietary information that may bring competitive advantage to the company. Intellectual capital refers to the value derived from a company's employees' knowledge, training, skills, or any proprietary information that may bring competitive advantage to the company.

Organizations face new challenges to sustain and establish themselves, and addressing these challenges necessitates a stronger focus on developing and improving skills and capabilities. This is accomplished through organizational knowledge and intellectual capital, which enable organizations to improve their performance in the business world. Intellectual capital and knowledge have been recognized as sustainable strategies for organizations to gain and sustain a competitive advantage. (Firer and Williams, 2003).

Within an organization, intellectual capital is considered an intangible asset. These resources can increase a company's value due to their competitive advantage. Such competitive advantages can determine a company's performance because they are linked to the organization's ability to produce, distribute, and implement knowledge (Andreeva et al., 2021).

In today's knowledge-driven economy, organizational capabilities rely heavily on knowledge and intellectual capital. It is essential for managers to identify the capabilities required to sustain a competitive advantage. Intellectual capital and Knowledge assets are increasingly serving as strategic tools for enhancing business performance and fostering continuous innovation. Therefore, companies are not just producing goods and services; they must also create added value to remain in the new economy. In this era, the primary challenge for managers is to create a conducive environment that fosters the growth and development of human intellect within knowledge-based organizations. Currently, a company's competitive advantage stems from intangible assets and intellectual capital, which are developed by cultivating strong customer relationships, acquiring essential experience, and

leveraging organizational knowledge, techniques, and specialized skills. (Gerami et al., 2022).

The new knowledge-based economy potentially offers unlimited resources because the human capacity for creating knowledge is boundless. Intangible assets are rapidly replacing physical assets. The incorporation of knowledge into products and services, emphasis on quality over quantity, viewing the workforce as "knowledge workers" rather than "physical laborers," and shifting cost structures—where production costs become less significant compared to other expenses—are among the factors that have changed the rules of business and competition.

On the other hand, good corporate governance has been an essential and extensively studied subject. Corporate governance becomes relevant when a corporate entity is established, and ownership is separated from the management of the company. Thus, financial performance improves with the implementation of corporate governance, which in turn increases investor confidence and has a positive impact on the company's value. (Lukviarman, 2016).

The capital market is affected by the business outcomes of banks and corporations listed on the stock exchange. Banks listed with publicly traded shares and demonstrating good performance increase their value. The primary goal of banks, according to banking theory, is to maximize wealth or the value of the bank (Abdollahpur et al., 2021).

Bank value can be affected by factors such as independent board members and institutional ownership (Valizadeh & Khodaei, 2022). As the number of active investors in capital markets grows, the banking capital market becomes more organized, and the ownership of bank shares shifts from individuals to institutions, laying the foundation for institutional shareholders. What draws particular attention is the increasing presence of institutional investors among the owners of banks and public companies, and the impact this active presence can have on governance practices and the stock prices of these entities.

Therefore, we explore the influence of good corporate governance and intellectual capital on the value of a company. Additionally, we consider the influence of financial performance as a mediator due to its bidirectional effect.

The structure of the paper is as follows: Following the introduction, section two provides the theoretical background. Section three explicates the empirical literature review, and section four elaborates the methodology. Section five is devoted to findings. Section six concludes the paper with the concluding remarks.

## 2 Theoretical Background

The fluctuation in stock prices does not always align with shareholder expectations. As a result, stock price volatility does not necessarily indicate an increase in company value, even if shareholders expect a high value for the company. Corporate value requires effective corporate governance to build investor trust, especially among domestic investors. The role of domestic investors is crucial in reducing dependency on foreign investors and stabilizing stock price fluctuations (Lestari et al., 2021).

The value of the company stands among the most significant economic indicators to measure the status of the company. Several factors can affect this index (AliKhani and Mostakhdem, 2016). The financial performance of the company, such as the return on the company's assets, is one of these factors that exert both direct and indirect impacts on it. The return of the company is also affected by many factors. (Dehghan Khavari et al., 2023b). The importance of company value and how to maximize it has encouraged researchers to explore this concept, particularly in companies that have implemented corporate governance. Agency theory provides a framework for understanding the connection between corporate governance and company value. Agency theory posits that when a manager acts as an agent (management) to manage the company, the potential for an agency conflict arises due to the differing personal interests of the agent. Internal structures, such as corporate governance frameworks, are established by companies to effectively control these problems (Rahmanian & Badiyab, 2023).

The necessity of corporate governance arises from conflicts of interest among stakeholders within the company's structure. The issue of agency (conflict of interest) stems from two major causes: first, each stakeholder has different objectives and preferences, and second, none has complete information about the actions, knowledge, and preferences of others. In the absence of effective corporate governance mechanisms, managers may act in their own interests rather than those of the shareholders (Faghani et al., 2019).

Corporate governance, therefore, plays a critical role in aligning the interests of managers with those of the shareholders by implementing structures that mitigate conflicts of interest and agency problems. This is essential for ensuring that the value of the company is maximized in a manner that benefits all stakeholders involved.

Definitions of corporate governance cover a wide range of perspectives, and its concept holds significant importance. Corporate governance can be viewed traditionally through the lens of agency theory, which highlights the relationship between shareholders and company management. Corporate

governance, viewed from another perspective, represents a complex network of relationships that extends beyond companies and their shareholders. It encompasses interactions with a diverse array of stakeholders, including employees, customers, vendors, bondholders, and many others. (Hassas Yeganeh et al., 2013).

Various theoretical frameworks have been developed to understand and evaluate corporate governance. These frameworks address corporate governance in distinct ways, employing varied terminologies and perspectives based on specific academic backgrounds. However, they all share a common objective: ensuring the preservation of the resources and interests of all stakeholders, not just shareholders (Sahari & Pourzamani, 2022).

Corporate governance includes several key indicators, such as board size and independence, ownership concentration, institutional ownership, and managerial ownership. Corporate governance practices are important not only for state-owned banks but also for increasing efficiency, reducing internal conflicts, and facilitating the smooth transfer of assets and positions in small and medium-sized private enterprises. Implementing corporate governance in such organizations is crucial for enhancing company value, as better financial performance can increase corporate value. Furthermore, market trust in a company's performance also leads to stock price fluctuations. Information about profitability is included within a company's financial statements, providing vital data to management and other interested parties, such as investors.

A company's financial performance, reflected in its profitability, can influence investor policies regarding investments. A company's ability to generate profits can attract investors to invest in the business. On the other hand, low profitability can cause investors to lose their capital. Thus, high profitability can boost a company's value by attracting foreign investment and improving performance. Therefore, every business entity strives to increase its profitability, as a higher profitability level ensures the long-term survival of the business entity. Banks are essential contributors to the economic growth and stability of a country. (Gangi et al., 2019).

Banks play a crucial and undeniable role as facilitators and drivers of economic and trade cycles. Also, they help institutions that generate wealth, and as providers of essential services to local, national, and international communities. (Dehghan Khavari et al., 2023a). On the other hand, economic development in recent decades has increasingly relied on intangible assets. With the rise of the knowledge-based economy, the foundations of competitive advantage based on tangible assets have gradually diminished,

and intangible capital has played a more critical role in organizational performance. Among intangible assets, intellectual capital holds significant importance. Today, intellectual capital has become the most crucial factor for business success and the main driver of maintaining a competitive advantage and creating company value. Organizations worldwide, with varying intensity, have begun to recognize this importance and are moving toward greater utilization of knowledge. Intellectual capital is crucial for driving organizational innovation and fostering the growth of knowledge within a company. The perspective of managers has shifted from creating value through physical assets to generating value through intellectual capital (Kafili et al., 2022).

Intellectual capital represents a valuable asset that reflects an organization's capacity to generate wealth. It is an intangible asset, derived from effectively utilizing human resources, enhancing organizational performance, and building external relationships, without any physical or tangible form. These characteristics create value within the organization, and because this value is entirely internal, it cannot be bought or sold (Noshad & Zanjirdar, 2022).

Intellectual capital consists of four categories: human capital, customer capital, innovation capital, and structural capital. These components need to be supported by a series of interconnected and continuous relationships. Greater emphasis is placed on the relationships between these components rather than on the components themselves (Chen et al., 2005). The Organization for Economic Cooperation and Development (OECD) categorizes intellectual capital into two main types: human capital and organizational (structural) capital, describing intellectual capital as the economic value of these two intangible asset groups (Petty et al., 2009).

To measure intellectual capital, Pulic (2004) introduced the Value-Added Intellectual Coefficient (VAIC) model in 1997, developed it in 1998, and completed it in 2000. The fundamental assumption of this method is that intellectual capital cannot function independently; it requires both physical and financial capital to create value for the company (Pulic, 2004; Tsai and Gu, 2007). In other words, a company's intellectual ability, measured by the intellectual value-added coefficient, reflects the overall efficiency and capability of a company in using all intellectual and physical resources to create value. A higher intellectual value-added coefficient indicates better utilization of the company's potential by its management (Pulic, 2004).

However, decisions related to intellectual capital in the companies, much like other managerial decisions, often face agency problems. In other words, the efficiency of intellectual capital in companies is affected by agency costs.

On the other hand, corporate governance mechanisms are recognized as the most important tools for reducing agency problems and enhancing oversight of managerial performance (Keshtkar & Dadbeh, 2022).

Corporate governance theory posits that a company's performance is dependent on both its tangible and intangible assets. Economic studies emphasize that creating value beyond physical and financial assets is largely reliant on intangible assets. Therefore, intellectual capital, as an intangible asset, is a fundamental driver of economic growth and development. Knowledge management tools and methodologies help companies identify and assess their capabilities in maintaining and achieving sustainable competitive advantages, which ultimately contributes to realizing knowledge-based economic objectives. Accordingly, intellectual capital can play a crucial role in improving company and organizational performance.

In addition to its direct impact on company performance and value through enhancing productivity and efficiency, intellectual capital can also affect company performance indirectly by affecting factors such as profitability and company size. As a result, investigating how intellectual capital influences company performance, as well as its effectiveness on financial performance and consequently the company's value, can assist managers, investors, and other stakeholders in making better strategic decisions and choosing higher-yielding investments (Rahmanian & Badiyab, 2023).

It is expected that the positive performance of intellectual capital and corporate governance will affect the financial performance of companies and indirectly affect their value. Therefore, the study's conceptual model can be characterized by the mediating role of financial performance. (Anik et al., 2021).



*Figure 1. Research Model*

*Source: Anik et al., 2021*

Intellectual capital represents an asset that reflects an organization's capability to generate wealth. Unlike tangible assets, it is intangible and lacks a physical form. It is obtained through the utilization of resources related to human capital, organizational performance, and external relationships. All these features contribute to the creation of value within the organization, and this value, being a completely internal phenomenon, cannot be bought or sold. A determinant factor in improving economic efficiency is corporate governance, which encompasses a set of relationships among the management of a company, its board of directors, shareholders, and other stakeholders. Corporate governance provides a framework through which the objectives of the enterprise are established, methods for achieving those objectives are determined, and performance oversight is implemented. This governance structure creates the necessary incentives for management to achieve the company's objectives and facilitates effective oversight. In this way, companies utilize their resources more efficiently.

Corporate governance primarily targets the long-term survival of the economic entity, aiming to protect shareholders' interests against organizational management. A strong corporate governance has always been a key factor in the successful operations of companies. When companies have good and robust corporate governance, they can place greater importance on

intellectual capital and leverage it as a competitive advantage. Thus, effective and appropriate corporate governance leads to an increase in intellectual capital within the organization. Furthermore, it is through strong corporate governance that companies can enhance their long-term value. As the company's value increases, shareholders are more inclined to invest in it, leading to increased liquidity and growth in company size and productivity. The absence of an adequate corporate governance system in companies can result in an inability to attract and retain the organization's intellectual capital, which can negatively impact performance. According to the explanations, the conceptual model is presented in Figure 1.

### 3 Empirical Literature Review

Rahmanian and Badiyab (2023) examined the relationship between corporate governance, profitability and company size with company value and the mediating role of intellectual capital in this relationship. The research was tested using a sample consisting of 142 companies listed on the Tehran Stock Exchange during the 2019-2019. The results indicate that corporate governance does not have a significant effect on intellectual capital and company value. Also, the effect of profitability on intellectual capital and company value was confirmed. Company size also had a significant impact on company value, while its impact on intellectual capital was not confirmed. Furthermore, no evidence was found to suggest that intellectual capital significantly influences company value. Finally, the results showed that the mediating role of intellectual capital is not accepted.

Keshkar and Dadbeh (2022) explored how intellectual capital efficiency and corporate governance influence financial distress. The statistical population of this research is all the companies admitted to the Tehran Stock Exchange in 2013 to 2018, and the sample number was 105 companies selected by the method of systematic elimination. The results of the research show that the quality of corporate governance has a significant effect on financial performance. The findings indicate that the efficiency of intellectual capital does not have a meaningful impact on financial distress.

Gerami et al., (2022) analyzed how knowledge management influences intellectual capital, social capital, and innovation within companies, using a structural equation model. The research revealed a strong and positive connection between knowledge management, intellectual capital, and social capital. Furthermore, knowledge management has a significant impact on

innovation. On the other hand, knowledge management positively and significantly affects innovation through the mediation of intellectual capital and social capital.

Kafili et al., (2022) investigated the impact of intellectual capital on the financial performance of pharmaceutical companies. Data from 26 pharmaceutical companies listed on the Tehran Stock Exchange between 2011 and 2020 was examined through panel regression analysis. The findings show that the efficiency of utilized capital, human capital efficiency, and structural capital efficiency positively impact the financial performance of pharmaceutical companies. However, the efficiency of utilized capital has a greater effect on the financial performance of pharmaceutical companies. The effectiveness of capital utilization plays a more significant role in shaping the financial performance of pharmaceutical companies.

Niwash et al. (2022) found that the performance and success of the company are determined by various factors including tangible resources and the external environment. In other words, the ability to implement the innovation strategy and the company's ability to absorb external technology-based knowledge can lead to a special capability in which intellectual capital plays an important role.

Valizadeh and Khodaei (2022), analyzed how the quality of internal audits influences the connection between corporate governance standards and overall firm performance. The statistical population of the study consisted of companies listed on the Tehran Stock Exchange over the period 2012 to 2019. Corporate governance quality was assessed using various indices, including the proportion of institutional shareholders, the level of independence among board members, and the presence of financial and accounting experts within the board's composition. For measuring the quality of internal audit performance, they utilized indices such as the expertise of the internal audit manager, the longevity of the internal audit unit, and the status of outsourcing the internal audit unit. The findings indicate a strong positive connection between the effectiveness of the internal audit unit, the quality of corporate governance, and overall firm performance. However, the quality of the internal audit unit does not moderate the relationship between corporate governance quality and firm performance.

Dalwai et al., (2021) examined the relationship between intellectual capital, bank stability, and risk-taking in emerging Asian markets. The research studied a sample of 204 banks from 12 Asian countries the period 2010-2019. The results showed that there was a significant relationship between intellectual capital, bank stability, and risk-taking.

Abdollahpur et al. (2021) analyzed how institutional ownership influences the connection between intellectual capital and firm value in companies listed on the Tehran Stock Exchange. The intellectual capital served as the independent variable, firm value as the dependent variable, and institutional ownership as the moderating variable. The sample included 113 companies listed on the Tehran Stock Exchange over the period 2011 to 2017. The results of panel regression indicated that the value-added intellectual capital has a positive and significant effect on firm value, while the ownership structure as a moderating variable has a negative and significant effect on the relationship between value-added intellectual capital and firm value, thereby moderating this relationship.

Olarewaju and Msomi (2021) examined the impact of intellectual capital on financial performance of 56 South African public insurance companies for 2008-2019. The results revealed a clear and substantial connection between return on assets, intellectual capital, and overall financial performance. Human capital and structural capital components are also significantly and directly related to return on assets, while capital employed has an inverse and non-significant relationship with return on assets. Also, there is a U-shaped relationship between intellectual capital and financial performance. Therefore, insurance policymakers and managers should prioritize the development and optimization of intellectual capital, as it serves as a key driver for gaining a competitive edge, enhancing financial performance, and fostering wealth generation.

Subramaniam and Youndt (2020) studied the impact of intellectual capital efficiency on capital structure with respect to the role of risk and profitability. Based on a comprehensive dataset of Italian companies from 2018, this paper examines how intellectual capital affects a firm's financial leverage in the period from 2008 to 2019. The findings reveal that companies with substantial intellectual capital tend to have lower financial leverage, greater profitability, and a higher propensity for risk-taking compared to those with limited intellectual capital.

Nazir and Afza (2018) investigated the moderating role of discretionary earnings management affects the relationship between corporate governance and firm value. They found that the effect of corporate governance on firm value and reducing the agency problem is positive and significant. Corporate governance also reduces managers' opportunistic behavior to manipulate earnings. In addition, the moderating role of managers' opportunistic behavior

to manipulate earnings on the relationship between corporate governance and firm value is significant and its effect is negative.

Therefore, in this research, the effect of intellectual capital and good corporate governance on bank value has been investigated due to the necessity and importance of the banking sector in the Tehran Stock Exchange as well as the importance of these two variables. According to the literature review, all cases have been analyzed for the first time in Iran's economy and the banking sector of the stock exchange. Also, the mediating role of financial performance as an influencing variable on the relationship between bank value and the two variables of intellectual capital and good corporate governance has been investigated.

#### 4 Methodology

The research method is correlational and examines the relationship between the variables. The statistical sample has been selected from banks listed on the stock exchange. The research period will cover a five-year period from 2017 to 2021, during which 17 banks were chosen. The sample is selected based on the following criteria:

- 1) The banks should have been listed on the Tehran Stock Exchange by the end of March 2017.
- 2) The fiscal year of the banks ends by the end of March each year.
- 3) The banks should not have changed their fiscal year during the research period.
- 4) The necessary information for data extraction should be available.

We employ Tobin's Q ratio to measure the value of banks. Tobin's Q ratio is primarily used as a measure of value. The ratio is obtained by dividing the market value of the bank's assets by the replacement cost of those assets. Here, a simplified model of Q is used, which can be calculated as follows:

$$Q = \frac{Mve+Bvd}{Bva}$$

Where:

- **Q:** Value of the bank
- **Mve:** Market value of the bank's common stock
- **Bvd:** Book value of the bank's liabilities
- **Bva:** Book value of the bank's assets

We have employed four criteria to measure the Corporate Governance Quality Index (GCG):

- 1) **Board Independence (Ind):** Calculated as the ratio of non-executive board members to total board members.
- 2) **Institutional Ownership (Ins):** Represents the shares held by institutions, organizations, banks, insurance companies, etc. It is the percentage of the company's shares owned by banks, insurance companies, financial institutions, holding companies, organizations, and government companies. To calculate the percentage of institutional shareholders in each company, the number of shares held by institutional shareholders is divided by the total number of common shares of the company at the beginning of the period.
- 3) **Management Ownership (MAO):** The amount of shares held by bank managers.
- 4) **Audit Quality (AQ):** If the auditor of the company is from the auditing organization or the Mobin Rahbar Institute, the value assigned is one; otherwise, it is zero.

Finally, following Mehrani and Noruzi (2015), the sum of the scores of each of the above indices (except for the management ownership index, which is calculated inversely and then summed) is divided by the maximum score (4 points). A higher score indicates a higher quality of corporate governance.

**Intellectual Capital (IC):** The intellectual capital of a bank is measured as an independent variable based on the market-to-book value method. This is a well-known method for measuring intangible assets and intellectual capital. This value is calculated through the difference between the market value and the book value of the bank. The following formula can be used to calculate intellectual capital (Anvari Rostami and Saraji, 2005):

$$IC = \frac{RC - RI}{WACC}$$

Where:

- **IC:** Intellectual Capital
- **RC:** Bank revenue
- **RI:** Average industry revenue
- **WACC:** Weighted average cost of capital of the bank

**Return on Assets ratio (ROA):** It is used to measure the bank's financial performance. This ratio is obtained by dividing net profit by the company's total assets.

Additionally, we employ the following control variables:

**Bank Size (Size):** The logarithm of the total assets of the bank.

**Financial Leverage (LEV):** The ratio of debt to equity.

### Bank Age (Age).

We employed two methods to examine the hypotheses. Initially, the mediating effect of financial performance is analyzed in two separate models regarding the relationship between intellectual capital and bank value, as well as corporate governance and bank value. Then, this mediating effect is examined in the context of a complete model to evaluate the impact of another independent variable in the model.

The initial approach follows Baron and Kenny's (1986) framework, which involves testing three hypotheses, or steps, to analyze the mediating role of financial performance in the connection between intellectual capital and bank value.

The first step is that the independent variable (intellectual capital) has a significant relationship with the dependent variable (bank value).

The second step is that the independent variables have a significant relationship with the mediating variable (financial performance).

The third step is to examine the significant relationship between the mediating variable and the dependent variable, while the independent variable is also in the equation. In other words, in this step, we explored the effect of intellectual capital and financial performance on bank's value. An important point is that when the mediating variable enters the regression equation, if the relationship between the independent variable (intellectual capital) and the dependent variable (bank value) becomes insignificant, then the variable in question (financial performance) is a full mediator. If the relationship between the independent and dependent variables remains significant, but the effect decreases (by at least 10% compared to its effect in the first step), the mediating variable's role will be partial.

Thus, Baron and Kenny (1986) believed that full mediation occurs when the independent variable(s) has no effect on the dependent variable in the third equation. However, if in the third equation the independent variable has less effect on the dependent variable than in the second equation, then the mediating variable's effect will be partial. Similar steps are applied to corporate governance as well. The mentioned steps can be expressed in the following equations:

In the first step, we estimate the effect of intellectual capital (or good corporate governance) on bank value, meaning that the bank's value is considered as a function of intellectual capital (or good corporate governance).

$$Q_{it} = \alpha_0 + \alpha_1 IC_{it} + \alpha_2 Size_{it} + \alpha_3 Age_{it} + \alpha_4 Lev_{it}$$

$$Q_{it} = \alpha_0 + \alpha_1 GCG_{it} + \alpha_2 Size_{it} + \alpha_3 Age_{it} + \alpha_4 Lev_{it}$$

In the second stage, financial performance is considered as a function of the bank's intellectual capital (or good corporate governance). In other words, we estimate the effect of intellectual capital (or good corporate governance) on financial performance.

$$ROA_{it} = \alpha_0 + \alpha_1 IC_{it} + \alpha_2 Size_{it} + \alpha_3 Age_{it} + \alpha_4 Lev_{it}$$

$$ROA_{it} = \alpha_0 + \alpha_1 GCG_{it} + \alpha_2 Size_{it} + \alpha_3 Age_{it} + \alpha_4 Lev_{it}$$

In the third stage, intellectual capital and the bank's financial performance, are considered as determinants of the bank's value.

$$Q_{it} = \alpha_0 + \alpha_1 IC_{it} + \alpha_2 ROA_{it} + \alpha_3 Size_{it} + \alpha_4 Age_{it} + \alpha_5 Lev_{it}$$

$$Q_{it} = \alpha_0 + \alpha_1 GCG_{it} + \alpha_2 ROA_{it} + \alpha_3 Size_{it} + \alpha_4 Age_{it} + \alpha_5 Lev_{it}$$

For the complete model, the following equations are estimated for the three stages.

$$Q_{it} = \alpha_0 + \alpha_1 IC_{it} + \alpha_2 GCG_{it} + \alpha_3 Size_{it} + \alpha_4 Age_{it} + \alpha_5 Lev_{it}$$

$$ROA_{it} = \alpha_0 + \alpha_1 IC_{it} + \alpha_2 GCG_{it} + \alpha_3 Size_{it} + \alpha_4 Age_{it} + \alpha_5 Lev_{it}$$

$$Q_{it} = \alpha_0 + \alpha_1 IC_{it} + \alpha_2 GCG_{it} + \alpha_3 ROA_{it} + \alpha_4 Size_{it} + \alpha_5 Age_{it} + \alpha_6 Lev_{it}$$

The second approach is Zhao et al., (2010) method. They stated that the first stage of Baron and Kenny's test, which involves examining the relationship between the independent and dependent variables, is not only unnecessary but also misleading. This is because the overall effect of the independent variable on the dependent variable includes both the direct and indirect effects of the independent variable on the dependent variable. However, the mediator variable should only be assessed in the presence of an indirect effect.

In fact, mediator models are designed to examine and test indirect effects, and direct effects are less commonly the focus of study. Simply put, to demonstrate the mediating effect, the indirect effect of the independent variable along with the mediator variable must be measured in a single model. Therefore, they employed two stages (the second and third stages) of regression to examine the mediating effect.

## 5 Findings

Before estimating the regression models, the Chow test and the F-Limer statistic are employed to determine whether to choose between the panel data method and the pooled data method. The null hypothesis of this test indicates that each cross-sectional unit has the same intercepts (necessitating the use of pooled data), while the alternative hypothesis suggests that each cross-sectional unit has different intercepts (requiring the use of panel data). Based on the Chow test and the F-Limer statistic, the null hypothesis suggesting the suitability of estimating the models using pooled data is rejected. The results of this test indicate the necessity of using panel data for the estimation of the models. Furthermore, the Hausman test results indicate the rejection of the fixed effects' method.

In the next stage, two separate models are estimated using independent variables. Then, to examine the effect of the second variable, we estimated and analyzed the complete model.

Table 1

### *Results of the First Stage Estimation*

(Model 1: Intellectual Capital as Independent Variable and Bank Value as Dependent Variable; Model 2: Good Corporate Governance as Independent Variable and Bank Value as Dependent Variable)

	IC Model			GCG Model		
	Coef.	T Value	Prob.	Coef.	T Value	Prob.
IC	-1.73	-3.16	0.002	-	-	-
GCG	-	-	-	0.26	0.27	0.78
Size	-1.59	-3.92	0.00	-2.20	-2.29	0.026
Lev	-0.11	-0.10	0.91	-0.73	-0.52	0.60
R-Squared	0.41			0.43		
F-Statistic (Prob.)	2.35 (0.005)			1.75 (0.057)		
Durbin- Watson	2.28			2.50		

Source: Research Findings

This table presents the estimation results of two models. In Model 1, intellectual capital (IC) is the independent variable, and in Model 2, good corporate governance (GCG) is the independent variable. The results show that in the IC model, the IC variable is significant with a negative coefficient. In the GCG model, the GCG variable is not significant. Additionally, the size variable is significant in both models, while the leverage (Lev) variable is not significant in either model.

In the first stage, in the models where the independent variables are examined separately, the variable of intellectual capital is significant and has a negative effect on the bank's value, confirming Baron and Kenny's first hypothesis. In contrast, the effect of good corporate governance on bank value is not significant, so its effect cannot be examined from the Baron and Kenny method, necessitating the use of the second method. Based on the results from both models at this stage, the criteria for the model can be well understood. The explanatory power of both models is acceptable considering the number of influencing variables on bank value. The overall significance of both models is also confirmed.

Table 2

*Results of the Second Stage Estimation*

(Model 1: Intellectual Capital as Independent Variable and Financial Performance as Dependent Variable; Model 2: Good Corporate Governance as Independent Variable and Financial Performance as Dependent Variable)

	IC Model			GCG Model		
	Coef.	T Value	Prob.	Coef.	T Value	Prob.
IC	0.003	5.82	0.00	-	-	-
GCG	-	-	-	0.01	1.85	0.06
Size	0.02	4.53	0.00	0.02	13.56	0.00
Lev	-0.08	-5.26	0.00	-0.10	-8.05	0.00
R-Squared	0.96			0.92		
F-Statistic (Prob.)	61.6 (0.00)			42.7 (0.00)		
Durbin-Watson	2.44			2.09		

Source: Research Findings

In the second stage (Table 2), in the models where the independent variables are examined separately, the intellectual capital variable is significant and has a positive effect on the bank's financial performance, confirming Baron and Kenny's second hypothesis. Additionally, the effect of good corporate governance on the bank's financial performance is significant and positive at the 90% level, thereby confirming the first hypothesis of Zhao et al., (2010) Based on the results obtained from both models at this stage, the criteria for the model can be well understood. The explanatory power of both models is acceptable. The overall significance of both models is also confirmed.

Table 3

*Results of the Third Stage Estimation*

(Model 1: Intellectual Capital and Financial Performance as Independent Variable, and Bank Value as Dependent Variable; Model 2: Good Corporate Governance and Financial Performance as Independent Variable, and Bank Value as Dependent Variable)

	IC Model			GCG Model		
	Coef.	T Value	Prob.	Coef.	T Value	Prob.
IC	-1.59	-2.72	0.00	-	-	-
GCG	-	-	-	0.39	0.73	0.46
ROA	-10.7	-2.94	0.00	-12.4	-4.27	0.00
Size	-1.35	-3.27	0.00	-1.16	-1.71	0.09
Lev	-1.24	-1.3	0.19	-1.20	-1.30	0.19
R-Squared	0.43			0.38		
F-Statistic (Prob.)	2.39 (0.00)			1.90 (0.026)		
Durbin-Watson	2.32			2.34		

Source: Research Findings

In the third stage (Table 3), in the models where the independent variables are examined separately, the intellectual capital variable has a significant negative effect on the bank's value. The effect of financial performance on bank value is also significant. Notably, the impact of intellectual capital has decreased from -1.73 to -1.59, indicating a reduction of approximately 10% in its effect. This supports Baron and Kenny's third hypothesis. Thus, the mediating effect of financial performance on the relationship between intellectual capital and bank value, according to Baron and Kenny's method, is confirmed.

On the other hand, the effect of good corporate governance on bank value is not significant; however, the effect of financial performance on bank value is significant at this stage. Therefore, according to Zhao et al., (2010) method, the study confirms that financial performance plays a mediating role in the relationship between good corporate governance and bank value. Based on the results from both models at this stage, the criteria for the model can be well understood. The explanatory power of both models is acceptable considering the number of affecting variables on bank value. The overall significance of both models is also confirmed.

Table 4

*Results of the First Stage Estimation*

(Intellectual Capital and Good Corporate Governance as Independent Variable, and Bank Value as Dependent Variable)

	<b>Coef.</b>	<b>T Value</b>	<b>Prob.</b>
IC	-1.79	-3.07	0.00
GCG	0.48	0.67	0.50
Size	-1.65	-3.46	0.00
Lev	-0.11	-0.10	0.91
R-Squared	0.41		
F-Statistic (Prob.)	2.21 (0.00)		
Durbin-Watson	2.28		

Source: Research Findings

In this first stage, the intellectual capital variable has a significant negative effect on bank value, while the effect of good corporate governance is not significant. The size variable also shows a significant negative effect, while leverage does not show a significant effect. The explanatory power of the model, indicated by the R-squared value, is acceptable, and the overall significance of the model is confirmed as shown in the Table 4.

In the first stage, in models where independent variables are examined within a model, the intellectual capital variable is significant and has a negative effect on bank's value, confirming Baron and Kenny's first hypothesis. Meanwhile, the effect of corporate governance on the bank's value is not significant; thus, its effect cannot be analyzed from Baron and Kenny's method, and the second method needs to be considered. Based on the results from both models at this stage, the explanatory power of the two models is acceptable given the number of variables affecting the bank's value. The significance of both models is also confirmed. Additionally, although the corporate governance variable, which has no significant effect, was added to the model, the explanatory power of the model remains acceptable.

It is worth mentioning that a reason for estimating the two models separately in the first section is to examine the effects of independent variables individually and without the effect of other variables in the model. As observed, corporate governance had no significant effect on the company's value in separate models. Moreover, in the complete model, which includes both variables, it also has no significant effect on the company's value. Therefore, it is thus confirmed that this variable has no significant effect on either the separate model or the complete model.

Table 5

*Results of the Second Stage Estimation*

(Independent Variables: Intellectual Capital and Corporate Governance of the Bank; Dependent Variable: Financial Performance)

	<b>Coef.</b>	<b>T Value</b>	<b>Prob.</b>
IC	0.007	2.41	0.01
GCG	0.016	3.20	0.00
Size	0.02	4.06	0.00
Lev	-0.07	-4.59	0.00
R-Squared	0.95		
F-Statistic (Prob.)	39.3 (0.00)		
Durbin-Watson	2.49		

Source: Research Findings

In the second stage, in models where independent variables are examined together, both the intellectual capital and corporate governance variables are significant and have a positive effect on the bank's financial performance, confirming Baron and Kenny's second hypothesis as well as Zhao et al., (2010)'s first hypothesis. Based on the results from both models at this stage, the criteria of the model can be well understood. The explanatory power of the two models is acceptable. The significance of both models is also confirmed as shown in the Table 5.

Table 6

*Results of the Third Stage Estimation*

(Independent Variables: Intellectual Capital, Corporate Governance, and Financial Performance; Dependent Variable: Bank Value)

	<b>Coef.</b>	<b>T Value</b>	<b>Prob.</b>
IC	-1.62	-2.81	0.00
GCG	0.73	0.99	0.32
ROA	-11.5	-3.14	0.00
Size	-1.42	-3.06	0.00
Lev	-1.31	-1.35	0.17
R-Squared	0.44		
F-Statistic (Prob.)	2.31 (0.00)		
Durbin-Watson	2.32		

Source: Research Findings

In the third stage, in models where independent variables are examined together, intellectual capital has a significant and negative effect on the bank's value. Meanwhile, the effect of corporate governance on a bank's value is not significant. The effect of financial performance on bank value is also

significant. Therefore, considering that the effect of intellectual capital has decreased from -1.79 to -1.64, which indicates a reduction of about 10% in its effect, this confirms Baron and Kenny's third hypothesis. Thus, the mediating effect of financial performance on the relationship between intellectual capital and bank value is confirmed according to Baron and Kenny's method.

However, since corporate governance did not have a significant effect on bank value in the first stage, the mediating effect of financial performance is not confirmed based on Baron and Kenny's method. But due to the significant effect of corporate governance on the bank's financial performance in the second stage and the significant effect of financial performance on bank value in this stage, it can be concluded that financial performance has a mediating effect on the relationship between corporate governance and bank value based on Zhao et al., (2010) method.

According to the results of both models in this stage, the criteria of the model can be well understood. The explanatory power of the two models is acceptable given the number of variables affecting the bank's value. The significance of both models is also confirmed. It is important to note that in the complete model, where both independent variables are included, the explanatory power is higher compared to the two separate models. The complete model has better explained the behavior of bank value at this stage.

## 6 Concluding Remarks

The importance of company value and how to maximize it encourages researchers to study corporate value, especially in companies that have implemented corporate governance and addressed intellectual capital. In a knowledge-driven economy, intellectual capital plays a key role in generating knowledge and boosting organizational value. This is because intellectual capital is one of the most important factors in creating competitive advantage and value, holding significant importance as one of the most crucial intangible assets of companies. The theoretical background and empirical evidence suggest that this asset has a direct impact on a company's value and performance. On the other hand, corporate governance, as a topic emphasizing corporate strategy and shareholder rights, plays a role in reducing conflicts between the interests of shareholders and managers, which can affect company value. This issue is particularly vital for banks to maximize bank value.

Therefore, we examined the direct effects of intellectual capital and good corporate governance on bank value. Also, we investigated the mediating effect of banks' financial performance on this relationship. To this end, we

employed the Baron and Kenny, as well as Zhao et al., (2010) methods to analyze the mediating effect. We also utilized separate models (where independent variables are analyzed individually) and a complete model (where independent variables are analyzed together) to evaluate the independent effects of the variables and the significance of the models. Additionally, this allows for the examination of the effect of adding a second independent variable on the explanatory power and the interactions between the two variables.

The results indicated that intellectual capital has a significant effect on bank value in both models, which aligns with the findings of Sahari and Pourzamani (2022). Intellectual capital also has a significant effect on bank financial performance, which corresponds with the results of Gerami et al., (2022), Kafili et al. (2022), and Chen et al., (2005). Furthermore, according to the Baron and Kenny method, the financial performance variable has a significant mediating effect on the relationship between these two variables, consistent with the results of Noshad and Zanjirdar (2022), Baradaran et al. (2012), Firer and Williams (2003). Additionally, intellectual capital has a significant positive effect on banks' financial performance in the second stage of both models.

The main point in this regard is to examine the mediating role of financial performance, so that it can reduce the severity of the negative effect of intellectual capital on the value of the bank. In both models, financial performance can improve the effectiveness of intellectual capital. In other words, due to the benefits derived from shareholders and higher profits, the use and utilization of intellectual capital can be fruitful in increasing the value of the company.

The value of the company is created from tangible and intangible sources or a combination of both. A noteworthy point is that the results indicated that intellectual capital has a negative effect on bank value, suggesting that bank value has not been derived from the intellectual capital within the organization. Instead, bank values depend on factors outside the bank. Here, according to the estimates and results of the model, intellectual capital structures have not created added value and, as a result, value in the bank. In other words, banks have not been able to use their intellectual capital to enhance their value. This result indicates a lack of attention to the intangible resources of banks in the Iranian economy.

The results regarding good corporate governance also show that this variable has no significant effect on bank value in any of the models. However, a bank's financial performance has a significant effect on bank value in both

models, indicating the confirmation of the mediating effect of financial performance based on Zhao et al., (2010) method on the relationship between corporate governance and bank value, which is an important finding. The findings in this section align with the works of Zeinali (2019), Giroud and Mueller (2010) and Su and He (2012).

Another result is that the explanatory power of the model increases relatively with the addition of another independent variable. In other words, intellectual capital and good corporate governance have been able to explain bank value behavior better than the separate models.

Based on the results, investors are advised to consider the governance structure of companies, and the indicators related to good corporate governance when making decisions on investment, as the ownership structure of companies affects their financial performance. Additionally, banks need to consider intellectual capital indicators in value creation, so that the value arises from intellectual and innovative factors.

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