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Investigating the Impact of Intellectual Capital on the Financial Performance of Companies Active in the Tehran Stock Exchange

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Abstract

Purpose: The value of intellectual capital is one factor that affects the value of companies. The present research examines the relationship between intellectual capital, market value and financial performance of companies. The value-added coefficient of intellectual capital measures the efficiency of three data types.

Design/methodology/approach: These data include used capital (financial and physical), human and structural capital. Analytically, this study uses a regression method to examine the separate impacts of capital efficiency, including human and structural capital efficiency and the efficiency of used (physical) capital, on market value and financial performance in relation to 10 companies in 2019. The research results show that the relationship between the efficiency coefficient of intellectual capital and market value (book-to-market ratio) is insignificant.

Findings: This research finding confirms the growing gap between companies' market value and book value. The results of the obtained tests also indicate that the coefficient of intellectual capital has a positive and significant effect on the company's financial performance (return on asset ratio).

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1. Introduction

Intellectual capital is becoming a decisive factor in a company's long-term profit and performance in the knowledge-based economy. Knowledge and its application are the basis of economic growth and prosperity, and everyone has accepted that intellectual capital is very useful in using knowledge resources. Intellectual capital, knowledge creation organizations and communication are essential in today's competition. Considering the characteristics of intellectual capital, including 1) Intellectual assets, which are non-competitive; 2) Intellectual assets that can be used simultaneously for several specific purposes; 3) Ability, which is one of the essential criteria for the superiority of intellectual assets over physical assets, and 4) Human capital, which are structural and relational, they cannot be converted into personal property. Corporate governance, on the other hand, refers to the control procedures in the company that ensure that the activities and interests of the management are aligned with the interests of the shareholders. Important indicators for evaluating the effectiveness of corporate governance, including the composition and other characteristics of the board of directors, such as the number of members, the experience of members, the number of non-executive members, the number of people with financial education and their gender, the number of independent individuals, the percentage of ownership by members and institutional investors, the existence of the company's audit committee, the audit firm and the auditor's opinion, the factors of the bonus plan and options, signs of shareholder dissatisfaction, signs of weak internal control, etc. Additionally, if they are not identified and disclosed in corporate governance, companies can suffer irreparable losses. Some of these losses are as follows:

1. Small shareholders may be deprived of access to information related to intangible assets held in private meetings with large shareholders.
2. If managers use information obtained through internal decisions regarding intangible assets without the knowledge of other investors, the probability of trading based on confidential information increases.
3. The risk of incorrect company valuation increases, and this makes bankers and investors consider a higher level of risk for the organization.
4. The cost of capital increases.

When such information is disclosed, uncertainty regarding the organization's future outlook is reduced, a more accurate evaluation of the company is made, and the cost of capital is reduced. Corporate governance is necessary because of the conflict of interests of participants (beneficiaries) in the company structure. The principle of representation (conflict of interest) itself is caused by two major factors: first, each participant has different goals and preferences, and second, each participant does not have complete information about the other's actions, knowledge, and preferences. Obviously, assuming the lack of effective corporate governance enforcement mechanisms, this separation will allow managers to act in accordance with their

own interests rather than the interests of shareholders(Hilt, 2008). (Berle & Means, 1991) In fact, in today's economy, the importance of intangible assets (such as human skills, organizational structure, relationships with other sectors of society, etc.) is increasing. Science and knowledge have replaced financial and physical capital as the most essential capital. In the knowledge-based economy, intellectual capital creates value for the organization, and in today's world, the success of any organization depends on its ability to manage such assets. Since intellectual capital can maintain the life and competitive power of companies and measure the organization's ability to create wealth, today we see the growing importance of intellectual capital as an effective tool to increase competition(Dastgir & Mohammadi, 2018). This intangible asset, which is obtained through assets related to human resources, organizational performance and relationships outside the organization, cannot be bought and sold(Mojtehed Zadeh et al., 2010). The lack of a suitable corporate governance system in companies leads to the inability to attract and maintain the organization's intellectual capital. Therefore, solid and appropriate corporate governance leads to increased intellectual capital in the organization. On the other hand, intellectual capital reduces agency problems and issues by reducing information asymmetry between managers and beneficiaries. If the point of view of agency theory is discussed, since corporate governance emphasizes information transparency and eliminating information asymmetry, strong corporate governance is expected to prevent management from abusing existing and created intellectual capital in the company by using supervisory and management mechanisms. Therefore, it can be expected that based on the principle of accountability of the company managers to their shareholders regarding the preservation, use and recognition of the resources resulting from the intellectual capital created within these organizations, the optimal use of this vast capacity created for more profitability, the company required the managers to respond. Considering the common goal of both corporate governance factors and intellectual capital, which both emphasize maximizing shareholders' wealth, disclosing information and creating organizational structures, etc., to disclose information and sustainability in companies, it is possible to find standard dimensions in corporate governance that can be extended to intellectual capital and create a new model of intellectual capital dimensions based on the principles of corporate governance for companies.

2. Literature Review

Efficient and effective management of companies always requires appropriate tools and techniques to understand contemporary management issues. Today, the flow of the economy and the criteria of value creation have changed, and intangible resources and intellectual capital are new levers to face

these environmental and structural changes. To positively impact a company's future value, it is necessary to have a better understanding of intellectual capital and the tools available to identify, measure, and manage this critical factor for creating value. Increasingly, business performance requires active management of intellectual capital and intangible resources to achieve sustainable returns for shareholders. The management accounting guideline published by the American Institute of Certified Public Accountants (AICPA) determines five basic steps for the successful management of intellectual capital:

1. Identifying the company's intellectual capital
2. Delineation of key factors of value
3. Measuring intellectual capital
4. Management of intellectual capital
5. Intellectual capital reporting(Rezaei et al., 2009).

In the first stage, the definition of intellectual capital and its identification criteria should be determined to determine the value of the organization's intellectual assets based on this. Determining what items are part of intellectual capital is essential because it can help the organization achieve its goals. In the second stage, intellectual capital is evaluated regarding value drivers. Value drivers are factors that cause changes in the value of intellectual capital and influence it. These drivers must be specified based on a strategic plan and targeted program. In the third stage, accurate and meaningful management information is collected in relation to measuring intellectual capital performance. In the fourth step, the management information collected in the previous step is used to analyze performance and improve management operations in training and decision-making in the organization. In the last stage, external reports are provided regarding the organization's performance in the field of intellectual capital during one or more financial periods. These reports will be helpful for internal and external shareholders and other people who have interests in the company(Dastgir et al., 2013).

In a research, “Designing a Culture-centered Intellectual Capital Model in Iranian Universities”, Shahin Ghiasi et al. identified the main dimensions and indicators of the culture of intellectual capital in Iranian universities and analyzed them using an interpretive structural model(Ghiasi et al., 2020). The results of this research show that ethical managers and students familiar with Iranian-Islamic culture are the independent variables of this research, and the rest are interface variables and have high dependence and directivity. In fact, changing these variables is necessary to change the status of intellectual capital in university culture.

In their study, “Investigating the impact of corporate governance on intellectual capital”, Kherdyar and Alami Shamami investigated the economic consequences of corporate governance on intellectual capital from the perspective of stock market investors. Additionally, a significant inverse relationship was observed between corporate governance in companies with high intellectual capital value(Kherdyar & Alami Shamami, 2017).

In the research “Investigation of the Effect of Intellectual Capital on the Financial

Vulnerability of Companies with the Structural Equation Modelling Approach," Ali Sufi and Nusrat (2016) showed several reasons for the importance and necessity of studying intellectual capital. First, the non-profit sector's strategic attention is directed towards mental resources, and the ability to accept the challenges imposed by the external environment increases. Second, intellectual capital is crucial in improving organizational performance and competitiveness. The research results indicate that intellectual capital has a positive relationship with the financial vulnerability of companies. Furthermore, among the components of intellectual capital, the efficiency of structural capital has a negative relationship with financial vulnerability, and the efficiency of human capital and used capital has a positive and significant relationship with financial vulnerability.(Ali Sufi & Nusrat, 2016)

In a research, (Ur Rehman et al., 2022) investigated the efficiency of intellectual capital and the performance of Islamic banks(Shojaei & Baghbanian, 2009). The research results showed that structural capital efficiency and relational capital efficiency are essential drivers of high performance in Islamic banks. Moreover, the efficiency of human capital has a negative effect on the performance of banks. Bank size and foreign ownership are also essential drivers of bank performance.

In their research "Determinants of Operational Performance from the Perspective of Intellectual Capital," Li et al. concluded that operational performance includes human, process, and customer capital and is affected by investment in human resources, intellectual capital, and management consulting(Li et al., 2019).

Shatrevich *et al.* addressed dynamic intellectual capital modelling to create a company that is value-added through intellectual capital(Shatrevich et al., 2015). Intellectual capital is one of this model's essential and effective components, which improved the value-added situation and, in other words, the company's performance.

3. Research Hypotheses

The following hypotheses have been considered to achieve the goals of the research:

3-1. First hypothesis

Companies with higher value of intellectual capital relative to market value have higher book value.

3-2. Second hypothesis

companies with higher intellectual capital have higher returns on assets.

4. Research Variables

4-1. Independent Variables

4-1-1. The efficiency of contributed capital

This coefficient shows the added value created using tangible physical assets. That is, for one IRR of tangible physical assets, several IRRs of added value are obtained.

4-1-2. The efficiency of human capital

This coefficient indicates the added value created by the employees, which means how many IRRs of added value have been obtained for one IRR of salary cost.

4-1-3. Efficiency of structural capital

This coefficient indicates the value-added created by the company's existing processes and structures. This means that a percentage of the company's value-added is due to structural capital.

4-1-4. Intellectual value-added coefficient

The sum of three indicators of efficiency of capital used, human capital efficiency and structural capital efficiency, is included.

4-2. Dependent Variables

4-2-1. Ratio of market value to book value

The market value ratio to book value is calculated by dividing the market value by the book value of ordinary shares.

Share price at the end of the year × number of shares = Market Value

Shareholders' Equity = Book Value

4-2-2. The Rate of Return on Assets

Financial performance has been measured using the return on assets index.

Return on Assets = Net Profit/Total Assets

4-2-3. Return on Assets (ROA) Criteria

The index is the relationship between the company's profitability and total assets. This gives an idea of how effectively management uses assets to generate profit.

4-3. Statistical Sampling

This research examines the financial statements and attached notes related to companies admitted to the Tehran Stock Exchange for a one-year period between 2016 and 2020.

5. Research Method

This research is descriptive, and in terms of its purpose, it is an applied research. Moreover, since this research examines the current state of the variables by collecting information through past information, it is included in the descriptive-retrospective studies. This research aims to provide a suitable method for evaluating the effect of intellectual capital on companies' market value and financial performance to test these methods in the Tehran Stock Exchange experimentally. For this purpose, the value of each company's intellectual capital for one year was calculated using the Pulic method. Then, in the next step, the main and sub-hypotheses of the research were evaluated using statistical tests.

6. Research Model

Due to managers' increasing understanding of the role of intangible assets in creating a competitive advantage, several methods have been developed to measure intellectual capital(Namazi & Ebrahimi, 2009). Pulic developed a simple method to measure intellectual capital. He states that an organization's market value is created by the used capital and intellectual capital and is used through structural capital and human capital. Pulic's method provides guidelines for providing information about the effectiveness of value creation of an organization's tangible assets (capital employed) and intangible assets (human capital and structural capital). Pulic called this method the intellectual value-added coefficient. Calculating the intellectual value-added coefficient is done quickly because it indirectly measures intellectual

capital by measuring the efficiency of capital used, efficiency of human capital and efficiency of structural capital. In the present research, Pulic's intellectual value-added coefficient model measures intellectual capital for the following reasons.

The intellectual value-added coefficient method is straightforward and transparent, providing a standard measurement basis. Other intellectual capital methods are limited in the following ways. They use information that is specific to some companies or nations. They use unique financial and non-financial indicators that cannot be easily combined into a single comprehensive standard. They are proportional to the characteristics of a particular company. Hence, the possibility of using them to perform comparative analysis among a broad and diverse sample of companies is reduced.

All data used in this method are extracted from audited financial statements; Therefore, the performed calculations are objective and attainable. This method has been used in many researches (Maditinos et al., 2011)

Pulic's model has five steps as follows(Namazi & Ebrahimi, 2009).

6-1. First Stage

determination of value-added (VA). Based on the perspective of the company's stakeholders, the value-added is calculated as follows:

$$VA = OUTPUT - INPUT$$

OUTPUT = Total income from the sale of goods and services

INPUT = The total cost of purchased materials, components and services

According to this point of view, any person or group that is affected by the events of the business unit should be interested in the business unit. This group of beneficiaries includes shareholders, employees, financial providers, government and society. Therefore, in measuring performance, a criterion such as the value-added of the beneficiaries is better than the accounting profit, which only indicates the shareholders' return. So, the value-added calculation can be expressed according to the following equation:

$$VA = S - B - DP = W + I + T + NI$$

where (*NI*) is equal to the profit after tax deduction

R = Changes in retained earnings

S = The outcome of selling

B = The total price of goods sold and services provided

DP = Depreciation

W = Salaries and wages of employees

I = Interest

DD = Dividends

T = Tax

6-2. Second Stage

Determining the efficiency of the used capital (physical & financial)

In this model, to present a complete picture of the efficiency of value-creating resources, physical and financial capital must be considered. This efficiency is obtained from the following relationship:

$$VACA = VA \div CE$$

Value-added capital employed (VACA)

The capital employed is equal to the book value of the company's total assets minus its intangible assets.

6-3. Third Stage

Determining the efficiency of human capital

According to this model, all employee expenses are considered human capital.

Human capital (HU), which is equal to the total cost of salaries and wages of the company.

6-4. Fourth Stage

Determining the efficiency of structural capital

$$STVA = SC \div VASC = VA\text{-}HU$$

Structural capital efficiency (STVA)

Structural capital of the company (SC)

6-5. Fifth Stage

Determining the coefficient of intellectual value-added

$$VAIC = VACA + VAHU + STVA$$

7. Research Findings

First, we examined the relationship between the ratio of market value to book value and intellectual capital and its components using the following model:

$$M/B = a0 + a1VACA + a2VAHU + a3STVA + e$$

7-1. First Hypothesis Test

Table 1. Summary of regression model coefficients

Variable	F-Test		Coefficient of determination	t-Test		Model coefficients
	Test statistic	Significance level		Test statistic	Significance level	
Constant value	10.5	0.00	0.066	3.18	0.002	1.10
VACA				3.16	0.002	0.145
VAHU				0.85	0.393	0.049
STVA				2.88	0.004	0.166

1. Since the significance level of the F test statistic (0.00) is less than 0.05, which indicates the significance of the relationship between the changes in the ratio of market value to book value and changes in independent variables at the 99% confidence level, the model validation result is positive.
2. The significance level of the t-test statistic is greater than 0.05 for the coefficient of the independent variable of human capital efficiency (0.393); Therefore, the value of this coefficient is removed from the regression equation.

3. The significance level of the coefficient of the independent variable of the efficiency of capital employed (0.002) and the coefficient of the independent variable of the efficiency of the structural capital (0.004) is less than 0.05; Therefore, the non-zeroness of these coefficients is accepted, and their amount is determined as 0.145 and 0.166 units, respectively. Considering that structural capital's efficiency has the highest coefficient in the regression equation (0.166), structural capital is more effective in determining companies' market value than other intellectual capital components.

7-2. Second Hypothesis Test

In the following, we investigated the relationship between the rate of return on assets and the intellectual capital of its components using the following model.

$$ROA= b0 + b1VACA + b2VAHU + b3STVA + e$$

Variable	F-Test		Coefficient of determination	t-Test		Model coefficients
	Test statistic	Significance level		Test statistic	Significance level	
Constant value	81.72	0.00	0.329	-5.132	0.00	-0.183
VACA				11.25	0.00	0.438
VAHU				2.21	0.028	0.108
STVA				5.26	0.00	0.258

According to the above table, there is a significant relationship between intellectual capital and rate of return on assets. In this context, the following points are presented:

1. Since the significance level of the F-test (0.00) statistic is less than 0.05, this indicates the significance of the relationship between the changes in the asset return rate and the changes in the independent variables at the 99% confidence level, so the model validation result is positive.
2. According to the significance level of the t statistic, the significance level of the coefficient of the independent variable of the efficiency of the capital employed (0.00), the independent variable of the efficiency of the human capital (0.028) and the independent variable of the efficiency of the structural capital (0.00) is less than 0.05. Therefore, the non-zeroness of these coefficients is accepted, and their amounts are determined as 0.438, 0.108 and 0.258 units, respectively.
3. Since the efficiency of employed capital has the highest coefficient (0.438) in the regression equation, we conclude that employed capital is more effective in boosting companies' profitability than other intellectual

capital components. The fitted model is, therefore, as follows:

ROA = -0.183 + 0.438 VACA + 0.108 VAHU + 0.258 STVA

8. Conclusion

The result obtained from the statistical analysis showed that there is no significant relationship between the intellectual capital and the market value of the company. This result is the same with the studies of Chen et al, Maditinos et al. Based on the theoretical basis of the research and the history of the research conducted, the results of the research related to the relationship between intellectual capital and the ratio of market value to book value indicate that about 86.62% of the value of the companies is not reflected in the financial statements.(Chen et al., 2005; Maditinos et al., 2011)

This finding confirms the previous empirical research that stated the existence of a growing gap between the market value and book value of companies. Maditinos et al. conducted research in 2011 on the Greek market, concluding that 40.96% of companies' value is not reflected in their financial statements. Furthermore, Li et al. (2019) conducted research on the American market and concluded that about 80% of the companies' market value was lost in their financial statements. The result obtained from the statistical analysis of the second hypothesis showed that there is a significant relationship between intellectual capital and the rate of return on the company's assets. The result mentioned above is the same as the research of Zéghal and Maaloul (2010) and (Bontis et al., 1999), but not the same as the study of (Maditinos et al., 2011) in the Greek market. The results of the second hypothesis test confirm that intellectual capital is important in increasing an institution's performance and profitability. Although accepted accounting standards prevent more recognition of intellectual capital in financial statements, investors have understood the value of intellectual capital in their decisions and consider it very necessary for the better performance of companies. Despite the increasing importance of intangible assets, especially moral and intellectual capital, in companies, today's accounting systems cannot calculate the company's performance corresponding to intellectual capital transparently and appropriately.

9. Suggestions for Future Research

Evaluation card methods such as dynamic evaluation of intellectual capital and balanced assessment should be used to measure intellectual capital.

The effect of intellectual capital on financial performance should be investigated using market-based performance criteria such as Tobin's Q, stock returns and revenue growth.

The relationship between intellectual capital and non-financial performance, such as customer and employee satisfaction, should also be examined.

References

Ali Sufi, H., & Nusrat, S. (2016). Investigating the impact of intellectual capital on the financial vulnerability of companies with the approach of structural equation modeling. *Research in Accounting and Economic Sciences*, *2*(3), 37–56.

Berle, A., & Means, G. (1991). *The Modern Corporation and Private Property*. Routledge.

Bontis, N., Dragonetti, N. C., Jacobsen, K., & Roos, G. (1999). The knowledge toolbox: A review of the tools available to measure and manage intangible resources. *European Management Journal*, *17*(4), 391–402. https://doi.org/10.1016/S0263-2373(99)00019-5

Chen, M., Cheng, S., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual Capital*, *6*(2), 159–176. https://doi.org/10.1108/14691930510592771

Dastgir, M., Arab Salehi, M., Amin Jafari, R., & Akhlik, H. A. (2013). The impact of intellectual capital on the company's financial performance. *Financial Accounting and Audit Research*, *6*(21), 1–36.

Dastgir, M., & Mohammadi, K. (2018). Intellectual Capital, the Inexhaustible Treasure of the Organization. *Tadbir Quarterly*, *29*, 24–54.

Ghiasi, S., Mehralizadeh, Y., Husseinpoor, M., & Nasiri, M. (2020). Designing a Model for Culture-Oriented Intellectual Capital in Iranian Universities. *Scientific Journal of Islamic Management*, *28*(2), 193–219.

Hilt, E. (2008). When did ownership separate from control? Corporate governance in the early nineteenth century. *The Journal of Economic History*, *68*(3), 645–685.

Kherdyar, S., & Alami Shamami, B. (2017). *Examining the impact of corporate governance on intellectual capital*. 1–18.

Li, Y., Song, Y., Wang, J., & Li, C. (2019). Intellectual capital, knowledge sharing, and innovation performance: Evidence from the Chinese construction industry. *Sustainability*, *11*(9), 2713–2733.

Maditinos, D., Chatzoudes, D., Tsairidis, C., & Theriou, G. (2011). The impact of intellectual capital on firms' market value and financial performance. *Journal of Intellectual Capital*, *12*(1), 132–151.

Mojtehed Zadeh, V., Alavi Tabari, S. H., & Mehdizadeh, M. (2010). The Relationship of Intellectual Capital (Human, Customer and Structural) and the Performance of Insurance Industry. *Accounting and Auditing Review*, *17*(2), 109–119.

Namazi, M., & Ebrahimi, S. (2009). Investigating the Impact of Intellectual Capital on the Current and Future Financial Performance of Companies Listed in Tehran Stock Exchange. *Accounting and Auditing Research*, *1*(4), 4–25.

https://doi.org/10.22034/iaar.2009.105174

Rezaei, F., Hemmati, H., & Shamlou, B. (2009). Intellectual Capital and Performance based on Value and Intellectual Capital. *Quarterly Journal of Accounting & Auditing Research*, *7*, 18–65.

Shatrevich, V., Ščeulovs, D., & Gaile-Sarkane, E. (2015). Dynamic intellectual capital model in a company. *Business, Management and Economics Engineering*, *13*(1), 76–94.

Shojaei, A. N., & Baghbanian, M. (2009). INVESTIGATING THE RELATIONSHIP OF INTELLECTUAL CAPITAL AND ORGANIZATIONAL PERFORMANCE IN BANKING INDUSTRY: A CASE STUDY OF KURDISTAN. *Industrial Management*, *4*(9), 107–117 .

Ur Rehman, A., Aslam, E., & Iqbal, A. (2022). Intellectual capital efficiency and bank performance: Evidence from islamic banks. *Borsa Istanbul Review*, *22*(1), 113–121. https://doi.org/10.1016/j.bir.2021.02.004

Zéghal, D., & Maaloul, A. (2010). Analysing value added as an indicator of intellectual capital and its consequences on company performance. *Journal of Intellectual Capital*, *11*(1), 39–60. https://doi.org/10.1108/14691931011013325

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