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Determinants of firm value in the emerging economy: The roles of intellectual capital, financial performance and firm-specific characteristics

Hang Thanh Truong[1*], Phong Ba Le[2], Ha Thu Dang[3], Que Thi Nguyen[4]
[1,4]School of Economics, Hanoi University of Industry, Hanoi, Vietnam; truongthanhhang@haui.edu.vn (H.T.T.). nguyenthique@haui.edu.vn (Q.T.N.).
[2]School of Languages & Tourism, Hanoi University of Industry, Ha Noi, Vietnam; lebaphong@haui.edu.vn (P.B.L.)
[3]Faculty of Finance and Accounting, International School, Vietnam National University, Hanoi, Vietnam; hadt@vnuis.edu.vn (H.T.D.).

Abstract: The purpose of this paper is to investigate the relationship between intellectual capital (IC) and firm value in an emerging economy, with a focus on the mediating role of financial performance and the moderating effect of firm-specific characteristics. This study uses panel data from 200 listed companies in Vietnam from 2017 to 2023 and employs structural equation modeling (SEM) combined with Dominance Analysis to assess the relative importance of factors and integrate causality research. The research findings indicate that financial performance plays a significant mediating role in transmitting the positive effect of IC on firm value, while the direct effect of IC is negative. This suggests that the value created by IC is not being fully recognized and reflected in stock prices in the short term. Among the components of IC, capital employed efficiency has the strongest contribution to firm value, followed by human capital efficiency and structural capital efficiency. The study, therefore, concludes that the key channel for transforming intellectual capital into firm value is improving the financial performance of businesses. The research results offer important practical implications for businesses in emerging markets in strategically investing in intellectual capital development, optimizing financial performance, and strengthening organizational structure to achieve sustainable firm value growth.

Keywords: *Emerging markets, Financial performance, Firm value, Intellectual capital.*

1. Introduction

In the current global landscape, the fourth industrial revolution, also known as Industry 4.0, is gaining momentum. This shift is causing a strong transition from an industrial economy, where capital, tangible assets, and machinery are the primary production resources, to a knowledge economy. In this new economy, knowledge, innovation, technology, and high-quality human resources are the driving forces of growth. The rapid advancement of information technology, big data, artificial intelligence, and the Internet of Things has significantly altered the structure of the world economy. As a result, the role of intangible assets has become increasingly crucial in shaping and enhancing corporate value. Literature indicates that in the knowledge economy, knowledge creation, dissemination, and application are the primary drivers of growth, wealth creation, and employment for society [1, 2]. In this context, intellectual capital (IC) is recognized as a "strategic capital" that determines the competitive advantage and sustainable development of enterprises [3-5].

Many studies have shown that IC is a core strategic resource that plays a central role in enhancing Competitiveness and increasing corporate value. IC is considered a driving force for innovation, improving operational efficiency, and creating a foundation for sustainable business development,

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* Correspondence: truongthanhhang@haui.edu.vn

especially in emerging economies in Asia. Investing in and effectively exploiting IC helps firms strengthen their long-term competitive advantage and increase market value, although this impact may not be reflected immediately in the short term. Empirical studies also confirm that IC is an endogenous asset that brings economic benefits in the future and is a fundamental factor in shaping corporate value [6-9]

In Vietnam, firms are currently undergoing a significant transformation towards a growth model that prioritizes knowledge, innovation, and intangible assets in their operations. This shift is largely driven by the impact of the 4.0 Industrial Revolution and the country's increasing integration into the global market. However, despite the growing importance of intangible assets such as brands, technology, knowledge, and creativity, their value is not fully reflected in financial statements. As a result, there is a significant gap between the book value and market value of enterprises. This highlights the urgent need to assess and quantify the impact of IC on financial performance and enterprise value, particularly in the context of Vietnam as an emerging economy with a developing knowledge market.

There have been numerous published studies examining the relationship between IC and enterprise value [10-14]. However, the empirical results are still scattered and inconsistent, particularly in emerging markets. Many of these studies only focus on analyzing and measuring the direct impact of IC on enterprise value, without addressing the intermediary mechanism, specifically, financial efficiency, through which IC translates into enterprise value. Additionally, there is a lack of research on the differences between knowledge-intensive industries and traditional industries in this relationship.

This study aims to examine the impact of IC on corporate value through the mediating role of financial performance, while also testing for differences between industry groups in Vietnam. The study utilizes the SEM linear structural model and Dominance Analysis to quantify the relative contribution of each factor in the model. The research results not only contribute to theory by clarifying the transmission mechanism between IC, financial performance, and corporate value but also have practical significance by providing important empirical evidence to support managers in planning knowledge-based development strategies. The article structure, in addition to the problem statement, will include the following sections: Theoretical Basis, Research Overview and Hypothesis Development, Research Methods, Results and Discussion, and Conclusion and Implications.

2. Theoretical Basis, Research Overview, and Hypothesis Development

2.1. Resource-Based View

In the field of strategic management and corporate finance, Barney [15]'s Resource-Based Theory (RBV) is considered an important theoretical foundation. This theory emphasizes that a business's sustainable competitive advantage does not only originate from market conditions or industry position, but mainly from tangible and intangible resources and internal capabilities that the business possesses.

Firm's certain resources must simultaneously satisfy the following four attributes in order to create a sustainable competitive advantage: (1) Valuable - helps the firm exploit opportunities and/or neutralize threats in the business environment; (2) Rare - few current or potential firms can possess it; (3) Imperfectly imitable - difficult to be copied or replicated by competitors; and (4) Non-substitutable - no other equivalent resource can perform the same function [15]. Based on this theoretical framework, the RBV explains why IC can become a resource that provides a sustainable competitive advantage to firms. The components of IC - including human capital (HC), structural capital (SC) and relational capital (RC) - according to studies by Stewart [4], Nimtrakoon [13], Sveiby [16], Xu and Li [17], Xu and Wang [18] and Yao et al. [19] all fully converge the above four attributes to be considered a strategic resource.

Specifically, HC is the set of knowledge, skills, and experience of employees in an organization, along with knowledge formed through cooperation between individuals and departments. HC is often considered a valuable and rare resource because it directly increases labor productivity, promotes innovation, and improves the adaptability of the enterprise. This is the initial foundation for creating and improving the financial performance of the enterprise.

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SC, according to Edvinsson and Malone [3] and Barney [15], includes knowledge management systems, processes, technology, databases, intellectual property (patents, copyrights, trademarks), and corporate culture. SC is difficult to imitate because it is closely linked to the specific internal structure, processes, and culture of each organization. Thanks to that, SC helps firms maintain stability and strengthen long-term competitiveness.

RC represents the value that a business derives from its relationships with customers, suppliers, distributors, partners, and brand reputation. According to Chen et al. [10], Barney [15], Henry [20], and Sullivan Jr and Sullivan Sr [21], RC is an irreplaceable resource because it helps maintain customer loyalty, build trust, and create barriers to entry for competitors, thereby strengthening the business's competitive position in the market.

Because IC converges the four characteristics of a strategic resource: valuable, rare, difficult to imitate, and non-substitutable- according to Edvinsson and Malone [3], Chen et al. [10] and Barney [15] IC not only improves short-term financial performance but is also recognized by the market as a core resource that contributes to increasing the value of the business. This explains why IC is increasingly seen as a central element in modern corporate governance and valuation.

2.2. Research Overview and Research Hypothesis

2.2.1. Research Overview

In recent years, there have been many published studies on IC, especially studies using the value-added IC (VAIC) coefficient to measure and analyze the direct impact of IC on business performance. Most of the empirical results show that firms with high levels of IC often achieve superior financial performance, measured through indicators such as return on assets (ROA) and return on equity (ROE).

Many empirical studies have consistently confirmed that IC has a positive and significant impact on financial performance as well as the sustainable growth of enterprises. IC has been shown to be an important factor in improving operational efficiency in the manufacturing, banking, and pharmaceutical industries, and plays a core role in financial performance in the context of the knowledge economy. Empirical evidence shows that IC not only improves profitability through indicators such as ROA and ROE but also strengthens the long-term competitiveness of enterprises in emerging markets [18, 22-26]. In the same vein, scholars have confirmed the positive relationship between IC and performance, emphasizing the role of IC in creating a competitive advantage and improving the business results of enterprises [27, 28].

Recent studies continue to strengthen the link between intellectual capital and financial performance, while also exploring the differences in this relationship across industry contexts and crises. A study examining the changing impact of intellectual capital factors on the financial performance of high- and medium-high-tech companies in Portugal [29] found that human capital efficiency maintained a positive effect both before and during the COVID-19 crisis, while the influence of capital employed efficiency and structural capital efficiency changed significantly during the crisis. Conversely, evidence from Indian state-owned enterprises indicates that the efficiency of intellectual capital and its components does not improve profitability and productivity, but primarily drives revenue growth, while confirming that the 2008 global economic crisis negatively impacted the financial performance of Indian state-owned enterprises [30].

In addition, another line of research focuses on the relationship between IC and firm value, measured by Tobin's Q or the market price-to-book ratio (P/B). Empirical evidence consistently demonstrates that IC plays a dual role in enhancing corporate performance, by not only improving firms' financial efficiency but also contributing to greater market valuation. These findings collectively confirm that IC acts as a strategic resource linking internal financial performance with the external perception of firm value in the capital market [14, 31, 32]. According to Xu and Liu [6] IC is an important driving force for competitiveness and value creation in the knowledge economy, and the MVAIC (Modified VAIC) measurement model is considered to better reflect the essence of IC than the

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original VAIC model of Pulic [33]. Empirical evidence further reinforces that IC exerts a positive influence on firm value, with its effects being especially pronounced over the long term and within emerging market contexts. These consistent findings highlight the strategic role of IC in sustaining corporate value growth in developing economies [7, 8, 34]. However, there are also studies with conflicting results, such as Wang et al. [7] IC has a negative impact on corporate value at the present time, or [35-37] IC has no impact on corporate value.

Recent evidence in emerging markets continues to demonstrate the significant role of intellectual capital in enhancing firm value, while expanding the model by incorporating additional governance mechanisms. Evidence from India suggests the importance of intellectual capital in the creation and development of firm value, thereby highlighting the need to develop a more comprehensive accounting system to better measure intellectual resources, reflecting the true value of businesses in emerging economies [38]. Similarly, research in Indonesia, using the SEM-PLS model, indicates that intellectual capital positively impacts firm value, while clarifying the positive role of corporate risk management and social responsibility in reinforcing market value [39].

Several previous studies [13, 40, 41] have simultaneously tested both relationships, between IC and financial performance and firm value, and have shown a positive impact of IC on both aspects. However, conflicting results have also been recorded, indicating that IC only has a significant impact on financial performance but has not shown a clear impact on firm value in the market [35, 42, 43]. In particular, recent studies have extended the approach by testing the mediating mechanism, in which financial performance acts as a channel for transmitting the impact of IC on firm value [9, 36]. The results confirm that financial performance is a significant mediating variable, helping to convey the positive impact of IC on firm value.

In recent research trends, studies are increasingly focusing on clarifying the mechanisms of intellectual capital's impact rather than just examining its direct effects. Empirical research in Pakistan shows that intellectual capital and its components have a positive influence on operational efficiency and market value, and this relationship is also moderated by the financial stability of businesses [44]. In the commercial banking sector of the European Union, financial and human capital efficiency have a positive and significant impact on the creation of added value for banks [45].

Based on the above arguments, it can be seen that intellectual capital tends to directly impact both financial performance (ROA) and firm value (Tobin's Q); however, the extent and direction of this impact depend on the research context. Recent studies further demonstrate that the impact of intellectual capital on financial performance and firm value varies widely, depending on the industry context, the components of intellectual capital, and economic crises. Most current studies still primarily focus on examining the direct relationships, while lacking empirical evidence on the mediating role of financial performance in the value transformation process brought about by intellectual capital in the context of emerging markets such as Vietnam, where the industry structure and the level of knowledge-based economy are rapidly changing.

This research gap opens up a new approach, allowing this study to apply structural equation modeling (SEM) combined with dominance analysis to simultaneously examine the direct and indirect impacts of intellectual capital (IC) and its components on firm value through financial performance, as well as to assess the differences in the roles and contributions of IC and its components in creating firm value in emerging markets.

2.2.2. Research Hypothesis

According to Barney [15], RBV, the sustainable competitive advantage of an enterprise, comes from owning and exploiting resources with four VRIN characteristics: valuable, rare, inimitable, and non-substitutable. On that basis, many scholars consider IC as a strategic intangible resource, fully converging these attributes, helping enterprises create and maintain sustainable competitive advantage [13, 17-19].

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The three components of IC, human capital (HC), structural capital (SC), and relational capital (RC), are the foundation for an organization's ability to innovate, create, and learn. When managed and developed effectively, these resources help optimize processes, increase productivity, improve product quality, and promote technological innovation, thereby enhancing financial performance [3, 46].

Empirical evidence from Nimtrakoon [13], Xu and Wang [18], and Vishnu and Kumar Gupta [27] all confirm the positive impact of IC on financial performance (ROA, ROE). In emerging markets such as Vietnam and Indonesia, this relationship is further demonstrated by Soewarno and Ramadhan [9], Nguyen and Doan [14], Zhang et al. [25], and Vo and Tran [47], emphasizing the role of IC in improving the productivity, competitiveness, and performance of enterprises in the era of the knowledge economy.

Based on the theoretical basis and empirical evidence mentioned above, this study proposes the following hypothesis:

H_{1a}: IC has a positive impact on financial performance

H_{1b}: Human capital has a positive impact on financial performance.

H_{1c}: Structural capital has a positive impact on financial performance.

H_{1d}: Capital employed has a positive impact on financial performance.

H_{1e}: Relational capital has a positive impact on financial performance.

According to RBV, IC is considered a strategic intangible resource that helps firms create sustainable competitive advantages, improve operational efficiency, and enhance investor confidence in long-term growth prospects. As a result, firms with high IC are often valued higher by the market, as shown by indicators such as Tobin's Q [6, 46]. IC not only supports innovation and process optimization but also contributes to building brand and reputation, enhancing the ability to exploit market opportunities. The components of IC, human, structural, and relational, help enhance innovation capacity, resource efficiency, and strengthen corporate position, thereby promoting market value [6, 13].

Empirical evidence from many studies has confirmed the positive relationship between IC and firm value. Empirical research consistently indicates that IC is a crucial determinant of corporate valuation in the market. A growing body of evidence shows that firms with higher levels of IC tend to achieve superior market value, particularly in emerging economies. This is because investors associate IC with sustainable profitability and long-term growth potential. Over time, the literature has converged on the idea that the influence of IC on firm value becomes more apparent in the long run. This is because markets gradually recognize and internalize the contribution of intangible assets to firm performance [7, 9, 14, 28, 31, 32, 36, 46, 48].

Based on the theoretical arguments and empirical results mentioned above, this study proposes the following hypothesis:

H_{2a}: IC has a positive impact on firm value.

H_{2b}: Human capital has a positive impact on firm value.

H_{2c}: Structural capital has a positive impact on firm value.

H_{2d}: Financial capital has a positive impact on firm value.

H_{2e}: Relational capital has a positive impact on firm value.

The financial performance of a company, often reflected through the return on assets (ROA), shows the efficiency in using assets and capital to generate profits. A high ROA reflects the ability to exploit and manage resources effectively, helping the company increase its ability to generate stable net cash flow and sustainable profits in the future. According to the signaling theory, positive financial results act as a positive signal to the market, showing that the company has good financial health, high competitiveness, and long-term growth potential. At that time, investors react positively, increasing the stock price and market valuation of the company.

From the perspective of resource-based theory, financial performance is not only the result of exploiting intangible resources such as IC but also the bridge that transforms the value of these resources into enterprise value. In other words, financial performance is the intermediary channel

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through which IC is recognized by the market. When enterprises manage intellectual resources well, their operational and innovation capabilities are enhanced, thereby improving financial performance and gradually being reflected in market value (Tobin's Q).

Empirical studies have reinforced the positive relationship between financial performance and firm value. Chen et al. [10] and Appuhami [40] asserted that financial performance is an important mediator between IC and firm value. Similarly, Soewarno and Ramadhan [9] and Choirunnisyah and Aisyah [36] found that firms with high financial performance tend to achieve higher market valuations, due to investors' positive assessment of profitability, governance, and sustainable growth. Recently, Wang et al. [7] and Dharmakeerthi and Ranjani [8] further demonstrated that financial performance plays a mediating role in transmitting the impact of IC on firm value, especially in emerging economies where capital markets are gradually maturing. Thus, both theory and empirical evidence show that financial performance is a key factor reflecting operational health and development prospects, and is also a mechanism for transmitting value from internal capacity to market value. Based on the theoretical basis and empirical studies mentioned above, this study proposes the following hypothesis:

H_5: Financial performance has a positive impact on firm value.

According to the resource-based theory, Barney [15] IC is an intangible resource that can help firms optimize operations, improve processes, and increase productivity, thereby enhancing financial performance reflected through the ROA indicator. When the financial performance of a business improves, the capital market reacts positively, and signals about profitability and resource efficiency are converted into higher business value through the investor's valuation mechanism.

Because IC is an intangible asset that is difficult to observe directly, investors often cannot immediately assess the effectiveness of IC use, but instead rely on financial indicators such as ROA to reflect the level of exploitation and effective operation of IC in business operations. Therefore, ROA plays an important role as a transmission channel, demonstrating the indirect impact of IC on business value through the transformation of knowledge and internal capacity into tangible financial results.

Empirical studies have reinforced this mediating mechanism. Chen et al. [10] and Appuhami [40] were the first to demonstrate that financial performance plays an important mediating role in the relationship between IC and firm value. Similar results are found in recent studies by Soewarno and Ramadhan [9], Choirunnisyah and Aisyah [36], and Dang et al. [49], which show that IC indirectly affects firm value through the financial performance channel, especially in the context of emerging economies where information about intangible assets is not fully reflected in the market.

Based on the theoretical basis and empirical evidence mentioned above, this study aims to clarify the transmission mechanism of IC value through financial performance and proposes the following hypotheses (see Figure 1):

H_{4a}: Financial performance plays a mediating role in the relationship between IC and firm value.

H_{4b}: Financial performance plays a mediating role in the relationship between human capital and firm value.

H_{4c}: Financial performance plays a mediating role in the relationship between structural capital and firm value.

H_{4d}: Financial performance plays a mediating role in the relationship between capital employed and firm value.

H_{4e}: Financial performance plays a mediating role in the relationship between relational capital and firm value.

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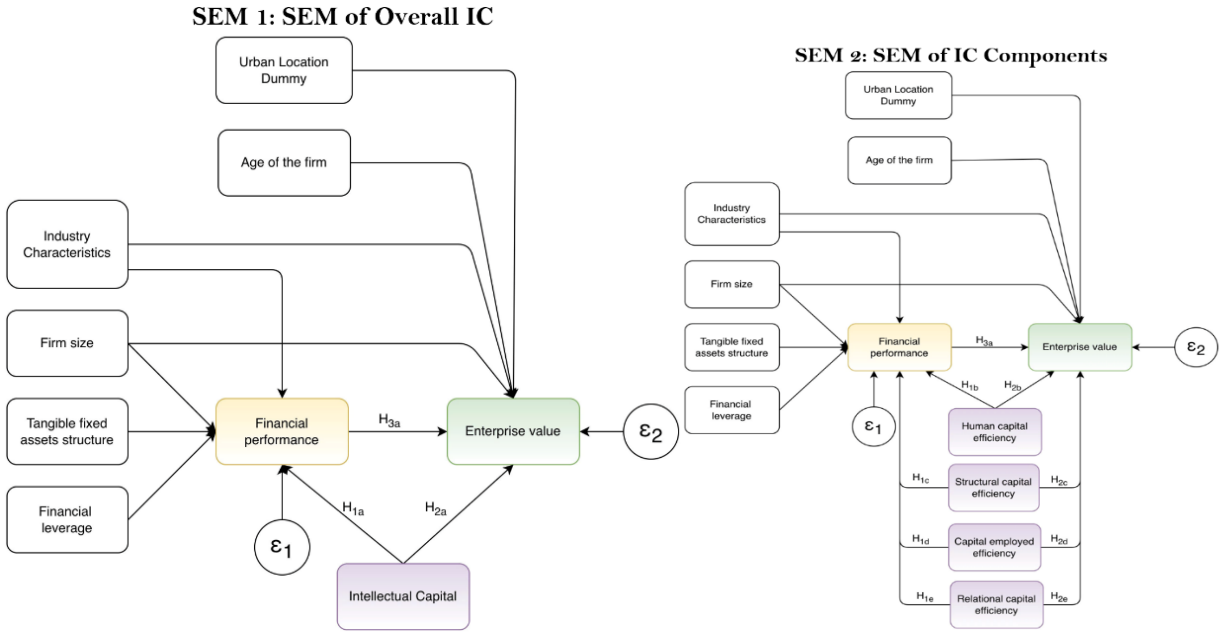

Figure 1.
Structural research model.

3. Research Methodology

3.1. Data and Sampling

The study utilizes secondary data collected from audited financial statements of listed companies on the Ho Chi Minh City Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) during the period 2017-2023. The data source is extracted from the FiinPro-X database, a financial information platform licensed by Hanoi University of Industry, which ensures accuracy, regular updates, and high reliability. From an initial pool of 745 listed companies, the study filters out and excludes companies lacking complete data or missing critical information necessary for variables in the model, particularly those used to calculate the IC index (MVAIC) and other financial indicators. After this screening process, 200 enterprises remain, forming the final research sample with 1,400 observations (200 enterprises over 7 years). The collected data were pre-processed using Microsoft Excel to clean, code, and compute variables such as ROA, Tobin's Q, MVAIC, and its components, along with control variables.

3.2. Variable Measurement

All items in this study have been developed by prior works to measure the latent factors in the proposed research model (see Table 1). The study tested the hypotheses through two SEM models with four equations, specifically:

Model SEM 1: SEM of Overall IC (MVAIC)

Model 1 tests the overall impact of aggregate IC (MVAIC) on firm value through the mediating role of financial performance.

(1) $ROA = \beta_0 + \beta_1 MVAIC + \beta_2 SIZE + \beta_3 LEV + \beta_4 TANG + \beta_5 INDUSTRY + e$

(2) $TOBINSQ = \alpha_0 + \alpha_1 ROA + \alpha_2 MVAIC + \alpha_3 SIZE + \alpha_4 INDUSTRY + \alpha_5 FIRMAGE + \alpha_6 CITY + e$

Model SEM 2: SEM of IC Components (HCE, SCE, CEE, RCE)

Model SEM 2 decomposes IC into its four components (HCE, SCE, CEE, and RCE) to examine their differential direct and indirect effects on firm value via financial performance.

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(3) $ROA = \beta_0 + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 RCE + \beta_5 MVAIC + \beta_6 SIZE + \beta_7 LEV + \beta_8 TANG + \beta_9 INDUSTRY + e$

(4) $TOBINSQ = \alpha_0 + \alpha_1 ROA + \alpha_2 HCE + \alpha_3 SCE + \alpha_4 CEE + \alpha_5 RCE + \alpha_6 SIZE + \alpha_7 INDUSTRY + \alpha_8 FIRMAGE + \alpha_9 CITY + e$

Equations (1), (2), (3), and (4) were estimated using the SEM model in Stata 17. The SEM model fit indices, including χ^2/df, CFI, TLI, RMSEA, and SRMR, were considered to assess the overall model's adequacy. The direct, indirect, and total effects were analyzed to confirm the mediating role of financial performance (ROA). Subsequently, the study performed a Dominance Analysis to evaluate the relative importance of the variables within the model.

3.2.1. Control Variables

In addition to the four main hypotheses, the study includes control variables to reduce bias due to omitted variables and ensure the accuracy of the estimates. Specifically*: Enterprise size (SIZE).* Consistent with previous research, Xu and Liu [6], Wang et al. [7], Zhang et al. [25], and Essel [50], SIZE is measured by the natural logarithm of total assets. *Financial leverage (FL):* reflects the ratio of debt to total assets. Empirical studies have highlighted that excessive leverage negatively affects firm financial performance by reducing operational efficiency and increasing the likelihood of financial distress. Consequently, the level of debt utilization must be properly controlled within the model to ensure unbiased estimation of corporate performance relationships [18, 35]. *Fixed asset structure (TANG)*: is calculated as the ratio of tangible fixed assets to total assets. Essel [50] and Olawale et al. [51] demonstrate that asset structure affects operating performance, reflecting the difference between knowledge-intensive and asset-intensive firms. *Industry characteristics (INDUSTRY)*: Forte et al. [52] and Goswami and Maji [53] found that industry type is a moderator of the relationship between IC and firm performance. Therefore, the dummy variable INDUSTRY is coded as 1 for a knowledge-intensive industry and 0 for a traditional industry to control for differences in technology, R&D intensity, and intangible assets. *Firm age (FIRMAGE)*: represents maturity, experience, and knowledge accumulation capacity. Aybars and Öner [35] and Tunggal and Ngatno [54] show that older firms are more efficient and valuable. Geographic location (CITY): studies by Gennaioli et al. [55], Combes et al. [56], and Roberts et al. [57] show that firms located in large cities have advantages in infrastructure, human resources, and knowledge networks.

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Table 1.
Measurement of variables.

Variable name	Type	Symbol	Measurement	Source
Enterprise value	Dependent	Tobin'sQ	Tobin'sQ = (Market Capitalization + Preferred stock value + Totaldebt)/ Total assets	Soewarno and Ramadhan [9]; Nguyen and Doan [14]; Ahmed, et al. [31]; Marcellina, et al. [32]; Tanjung, et al. [34]; Aybars and Öner [35]; Anik, et al. [37] and Subaida, et al. [42]
IC	Independent	MVAIC	MVAIC = HCE + SCE + CEE + RCE HCE (Human capital efficiency) = VA/HC SCE (Structural capital efficiency) = SC/VA CEE (Capital employed efficiency) = VA/ CE RCE (Relational capital efficiency) = RC/VA VA (Value added) = Operating profit + Employee Costs + Depreciation + Amortisation HC (Human capital) = Total employee costs SC (Structural capital) = VA – HC CE (Capital employed) = Total assets – Intangible assets RC (Relational capital) = Total selling, marketing, and advertising costs	Xu and Liu [6]; Nimtrakoon [13]; Buenaño, et al. [26]; Vishnu and Kumar Gupta [27]; Aybars and Öner [35]; Bayraktaroglu, et al. [58]; Ulum, et al. [59] and Nazari and Herremans [60]
Financial performance	Independent	ROA	ROA = Net profit/Total assets	Xu and Liu [6]; Soewarno and Ramadhan [9]; Xu and Wang [18]; Zhang et al. [25]; Buenaño et al. [26]; Vishnu and Kumar Gupta [27] and Aybars and Öner [35].
Firm size	Control variable	SIZE	SIZE= Ln(Total Asset)	Xu and Liu [6]; Wang, et al. [7]; Zhang, et al. [25]; Tanjung, et al. [34]; Aybars and Öner [35]; Anik, et al. [37] and Essel [50].
Financial leverage	Control variable	FL	FL = Total debt/Total assets	Wang, et al. [7]; Xu and Wang [18]; Buenaño, et al. [26]; Marcellina, et al. [32]; Aybars and Öner [35]; and Nguyen and Doan [14]
Tangible fixed assets structure	Control variable	TANG	TANG = Tangible fixed assets/ Total assets	Essel [50] and Olawale, et al. [51]
Industry Characteristics	Control variable	INDUSTRY	Dummy variable: equals 1 if the enterprise is in a knowledge-intensive industry; equals 0 if it is in a traditional industry.	Forte, et al. [52] and Goswami and Maji [53]
Urban location dummy	Control variable	CITY	Dummy variable: Equals 1 if the enterprise is headquartered in a centrally managed city, 0 otherwise	Gennaioli, et al. [55]; Combes et al. [56] and Roberts, et al. [57]
Age of the firm	Control variable	FIRMAGE	Number of years the business has been in operation	Aybars and Öner [35] and Tunggal and Ngatno [54]

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4. Research Results and Discussion

4.1. Descriptive Statistics and Correlation Matrix

The authors performed descriptive statistics of variables according to the average, maximum, minimum values, standard deviation, and number of observations, summarized in Table 2.

Table 2.
Descriptive statistics of variables.

Variable	Mean	Maximum value	Minimum value	Standard deviation	Number of observations
TOBINSQ	1.338	17.173	0.190	0.932	1,400
MVAIC	1.841	109.876	-4022.877	107.872	1,400
ROA	0.074	0.547	-0.280	0.086	1,400
SIZE	28.119	34.135	23.788	1.659	1,400
FL	0.442	1.295	0.004	0.227	1,400
TANG	0.883	1	0.127	0.192	1,400
INDUSTRY	0.155	1	0	0.362	1,400
CITY	0.63	1	0	0.483	1,400
FIRMAGE	29.495	148	2	18.681	1,400

The results of testing the potential correlation phenomenon between variables through Table 3 show that the pairwise correlation coefficients between all variables are less than 0.6, indicating that there is no autocorrelation phenomenon between variables. In addition, the variance inflation factor (VIF) tests were performed separately to test the potential multicollinearity phenomenon for the two equations, ROA and Tobin's Q. The results in Table 4 show that all VIF values are below 2, with the average VIF values being 1.08, 1.16, 1.02, and 1.09, respectively. These results demonstrate that there is no multicollinearity phenomenon in both structural equations, and the dataset ensures suitability for SEM estimation and dominance analysis.

Table 3.
Testing correlation coefficients between variables.

	TOBINSQ	MVAIC	ROA	SIZE	FL	TANG	INDUSTRY	CITY	FIRMAGE
TOBINSQ	1.0000								
MVAIC	-0.0099	1.0000							
ROA	0.5159	0.0971	1.0000						
SIZE	0.1505	0.0681	0.0149	1.0000					
FL	-0.1675	0.0169	-0.4003	0.3669	1.0000				
TANG	0.0375	-0.0135	0.0582	0.0576	0.0441	1.0000			
INDUSTRY	0.1939	0.0113	0.2043	0.0386	-0.1444	0.0430	1.0000		
CITY	0.0622	-0.0254	0.0126	0.0113	-0.0326	-0.0861	0.0421	1.0000	
FIRMAGE	0.1490	0.0275	0.0579	0.1106	-0.0212	-0.0297	-0.0040	0.0713	1.0000

Table 4.
Multicollinearity test between variables.

Equation	Dependent Variable	Independent Variables	Mean VIF	Max. VIF	Conclusion
(1)	ROA	MVAIC, FL, SIZE, INDUSTRY, TANG	1.08	1.19	No multicollinearity
(2)	ROA	HCE, SCE, CEE, RCE, FL, SIZE, INDUSTRY, TANG,	1.16	1.32	No multicollinearity
(3)	TOBINSQ	MVAIC, ROA, INDUSTRY, FIRMAGE, SIZE, CITY	1.03	1.06	No multicollinearity
(4)	TOBINSQ	HCE, SCE, CEE, RCE, ROA, INDUSTRY, FIRMAGE, SIZE, CITY	1.10	1.30	No multicollinearity

4.2. SEM Estimation Results

4.2.1. Assessment of Model Fit

The SEM structural model regression results in Table 5 show that the overall fit indices indicate that the SEM model proposed by the authors confirms the suitability of the data set according to Hair et

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al. [61] and Kline [62]. Specifically, the ratio of chi-square to degrees of freedom (χ^2/df) of the SEM 1 and SEM 2 structural models is 0.429 and 0.043, respectively, both less than 2. The p-values for the SEM 1 and SEM 2 models are 0.788 and 0.997, respectively, indicating that both models are not significantly different from the saturated model. The two indices indicate that these are two good models, and the data sets of the two models are entirely suitable. The CFI index for SEM 1 and SEM 2 models is equal to 1.000, and the Tucker–Lewis TLI is 1.010 and 1.020, respectively, both exceeding 0.90, which indicates a good incremental fit. The root mean square error of approximation for both models (RMSEA = 0.000) and the standardized mean square residual (SRMR1 = 0.005 and SRMR2 = 0.001) are within the acceptable range (< 0.08), confirming that the model fits well with the empirical data of enterprises in the Vietnamese stock market. The coefficient of determination, CD1 = 0.269 (R2 of the whole model), CD2 = 0.352 (R2 of the whole model), shows that the overall model SEM 1 and SEM 2 explain 26.9% and 35.2% of the variation of the dependent variable, which is enterprise value, respectively.

Table 5.
Structural Equation Model (SEM) Fit Indexes.

Fit Index	Value		Threshold		Evaluation	
	SEM 1	SEM 2	SEM 1	SEM 2	SEM 1	SEM 2
Chi-square/df (χ^2/df)	0.429	0.043	< 2.00	< 2.00	A very suitable model	A very suitable model
Comparative Fit Index (CFI)	1.000	1.000	> 0.90	> 0.90	Great	Great
Tucker–Lewis Index (TLI)	1.010	1.020	> 0.90	> 0.90	Great	Great
RMSEA	0.000	0.000	< 0.08	< 0.08	Excellent	Excellent
SRMR	0.005	0.001	< 0.08	< 0.08	Very low, suitable model	Very low, suitable model
Coefficient of Determination (CD)	0.269	0.352			The overall model explains 26.9% of the variation in the dependent variable, which is firm value.	The overall model explains 35.2% of the variation in the dependent variable, which is firm value.

4.2.2. Analysis of Direct, Indirect, and Total Impacts
4.2.2.1. The Effects of IC
4.2.2.1.1. Overall IC (MVAIC)

The regression results of the structural model SEM 1 - SEM of Overall IC (MVAIC) in Figure 2 and Table 6 indicate that IC has a positive and highly statistically significant impact on financial performance ($\beta = 0.00007$, $p < 0.01$). However, the direct impact of IC on firm value is negative and also statistically significant ($\beta = -0.0006$, $p < 0.01$). Conversely, the indirect impact of IC through the transmission mechanism of financial performance (ROA) is positive and statistically significant ($\beta = 0.0004$, $p < 0.01$). This suggests that IC enhances firm value primarily by improving the firm's profitability rather than directly influencing market value. The combined effect of these two channels shows that the total impact of IC on enterprise value is no longer statistically significant, reflecting a compensation phenomenon between the two opposing impacts (direct negative and indirect positive). This outcome reflects common characteristics in emerging markets such as Vietnam, where IC genuinely creates intrinsic value and enhances operational efficiency, but the capital market has not fully incorporated this value into stock prices (Tobin's Q). In other words, the market valuation of intellectual assets and innovation capacity remains slow and does not fully align with the actual contribution of IC.

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4.2.2.1.2. Components of IC (HCE, SCE, CEE, RCE)

When extending the model with each component of IC - SEM 2: SEM of IC Components (HCE, SCE, CEE, RCE) - the results in Figure 2 and Table 6 show that all four components of IC have a positive and statistically significant impact on financial performance (ROA). However, among them, only human capital (HCE) shows a direct impact on firm value, and this impact is negative and statistically significant (β = -0.0006, $p < 0.01$). In contrast, the indirect impact of all four components, HCE, SCE, CEE, and RCE, through financial performance is positive and statistically significant, reinforcing the conclusion that IC and its components increase firm value mainly through improving profitability (ROA). Notably, the total impact of CEE and SCE on firm value is statistically significant, while the total impact of HCE and RCE is no longer statistically significant, reflecting that the negative direct effect of human capital has partially eliminated its positive indirect effect through financial performance.

Thus, both SEM models indicate that IC, especially through its structural, relational, and employed capital components (SCE, RCE, CEE), is a core resource that helps firms increase their financial performance and market value in the long run, although the Vietnamese market has not yet fully reflected the actual value of intellectual assets in the short run.

4.2.2.2. Impact of Financial Performance on Enterprise Value

The regression results of both models (shown in Figure 2 and Table 6) indicate that financial performance has a positive and significant impact on enterprise value, with estimated coefficients of β = 5.40119 and β = 5.40176 ($p < 0.01$), respectively. This result helps to prove that financial performance really plays the role of the main transmission channel linking IC with market value, stock value (Tobin's Q) of the enterprise. This result confirms that financial performance is the main transmission channel linking IC and market value of the enterprise, reflected through the stock price index (Tobin's Q). Vietnamese enterprises that achieve higher financial performance will be valued higher by the market because investors see financial performance as a signal of resource exploitation capacity, profitability, and future growth potential. This empirical evidence not only strengthens hypothesis H_3 but also clarifies the key mediating role of financial performance in the value transmission mechanism from IC to enterprise value.

Thus, with the regression results presented in Figure 2 and Table 6, hypotheses H_{1a}, H_{1b}, H_{1c}, H_{1d}, H_{1e}, H_3, H_{4a}, H_{4b}, H_{4c}, H_{4d}, and H_{4e} are accepted, and hypotheses H_{2a}, H_{2b}, H_{2c}, H_{2d}, and H_{2e} are rejected.

The results of the hypothesis tests were obtained after investigating the control roles of related variables. Specifically, firm size and industry both show strong positive effects on ROA and Tobin's Q in both models ($p < 0.01$), confirming their importance as control factors. Larger firms tend to be more profitable and have higher valuations, consistent with economies of scale, while firms operating in more knowledge-intensive sectors are more profitable and have higher valuations because they use more intellectual and human capital in their operations.

Financial leverage (FL) in both models has a negative impact on ROA ($p < 0.01$) and thus reduces firm value, which is consistent with the trade-off theory, indicating that excessive debt reduces firm financial performance.

Tangible asset growth (TANG) has a positive and statistically significant impact on financial performance in model 1, indicating that firms with a higher proportion of tangible assets tend to achieve better returns. At the same time, the overall impact of tangible asset growth on firm value is positive and statistically significant, implying that the effective use of tangible assets not only improves firm financial performance but also helps to enhance firm value. The age variable of the enterprise in both models has a positive and statistically significant impact on enterprise value, showing that enterprises with a long and long-standing operating period will have management experience, enhanced brand reputation, and the ability to adapt and accumulate over time, helping enterprises increase investor confidence and be more highly valued by the market.

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The dummy variable CITY has a positive impact on firm value and is statistically significant at the 10% level in both models. The results show that firms headquartered in centrally-run cities often achieve higher market valuations due to advantages in infrastructure, high-quality human resources, a dynamic business environment, and benefits from better access to financial institutions or state management agencies.

Thus, the regression results of the structural models SEM 1 and SEM 2 have reinforced the theoretical argument that IC and the four components of IC all contribute to increasing corporate value, both directly and indirectly, through improving and enhancing the financial performance of the enterprise, while the intrinsic characteristics of the enterprise help support and promote this relationship.

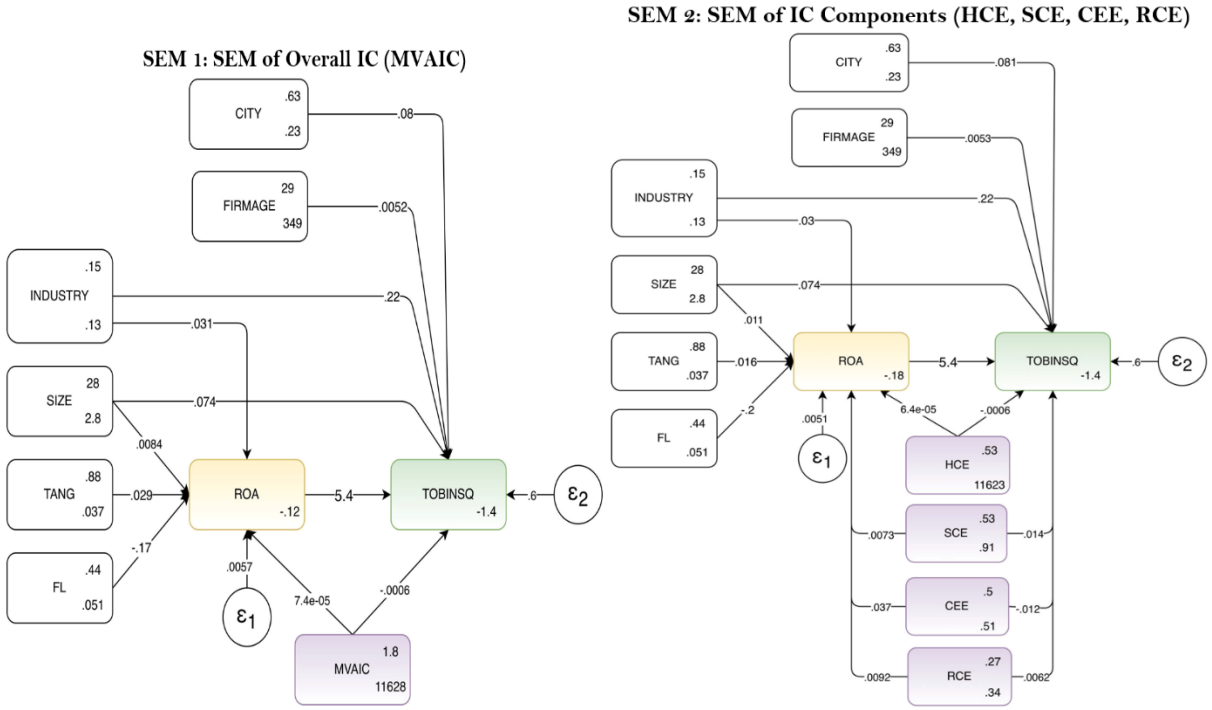

Figure 2.
Structural equation model results.

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Table 6.
Regression results of direct, indirect and total effects.

Path	SEM 1: SEM of Overall IC (MVAIC)			SEM 2: SEM of IC Components (HCE, SCE, CEE, RCE)		
	Direct β	**Indirect β**	**Total β**	**Direct β**	**Indirect β**	**Total β**
MVAIC àROA	0.00007***		**0.00007*** **			
ROA àTOBINSQ	5.40119***		**5.40119*** **	5.40176***		**5.40176*** **
MVAIC àTOBINSQ	-0.00060***	0.00040***	-0.00021			
HCE àROA				0.00006***		**0.00006*** **
SCE àROA				0.00733***		**0.00733*** **
CEE àROA				0.03750***		**0.03750*** **
RCE àROA				0.00920**		**0.00920** **
HCE àTOBINSQ				-0.00060***	0.00034***	**-0.00025**
SCE àTOBINSQ				0.01435	0.03959***	**0.05394** **
CEE àTOBINSQ				-0.01207	0.20256***	**0.19048*** **
RCE àTOBINSQ				0.00623	0.04967**	**0.0559**
SIZE à ROA	0.00844***		**0.00844*** **	0.01058***		**0.01058*** **
INDUSTRY à ROA	0.03071***		**0.03071*** **	0.03040***		**0.03040*** **
FL àROA	-0.16836***		**-0.16836*** **	-0.20116***		**-0.20116*** **
TANG à ROA	0.02867***		**0.02867*** **	0.01593		**0.01593**
SIZE à TOBINSQ	0.07441***	0.04561***	**0.12002*** **	0.07407***	0.05716***	**0.13123*** **
INDUSTRY àTOBINSQ	0.22351***	0.16589***	**0.38940*** **	0.22444***	0.16422***	**0.38867*** **
FL àTOBINSQ		-0.90932***	**-0.90932*** **		-1.0866***	**-1.0866*** **
TANG àTOBINSQ		0.15483***	**0.15483*** **		0.08604	**0.08604**
FIRMAGE àTOBINSQ	0.0052***		**0.0052*** **	0.00527***		**0.00527*** **
CITY à TOBINSQ	0.08009*		**0.08009* **	.08105*		**0.08105* **

Note: β are coefficients; significance: ***p < 0.01; **p < 0.05; *p < 0.10; Indirect effect computed using bootstrap (5,000 replications).

4.3. Explanatory Power of SEM Models – R^2 Index

The results presented in Table 7 demonstrate that the explanatory power of the SEM model increases significantly when IC is decomposed into four specific components.

Table 7.
Explanatory power of SEM models - R2 index.

Dependent Variable Index R^2	ROA	Tobis'Q	Overrall
SEM 1 (MVAIC)	0.2202	0.3096	0.269
SEM 2 (HCE, SCE, CEE, RCE)	0.3088	0.3116	0.352

In SEM model 1 (MVAIC), the R^2 index reaches 0.2202 for financial performance (ROA) and 0.3096 for firm value (Tobin's Q), with an overall value of 0.269. Meanwhile, in SEM model 2, when considering the four components of IC (HCE, SCE, CEE, RCE) separately, the R^2 values achieved are 0.3088, 0.3116, and 0.352, respectively, reflecting a significant improvement in the explanatory power of the model. Thus, it can be affirmed that the separation of IC into separate components helps the SEM 2 model reflect the mechanism of creating intrinsic value more accurately, instead of just using the total IC index (MVAIC). In other words, financial performance (ROA) and enterprise value (Tobin's Q) are better explained when intellectual resources, especially human capital (HCE) and capital employed (CEE), are included in the model as specific independent variables. This also contributes to strengthening the Resource-Based View (RBV), emphasizing that valuable, rare, and difficult-to-imitate intangible resources are the foundation of sustainable competitive advantage. In the context of an emerging market like Vietnam, this result also shows that the effective management and exploitation of IC play an important role in transforming intrinsic capacity into market value, a result consistent with recent studies by Xu and Li [17] and Roberts et al. [57].

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4.4. Contribution Level and Relative Importance of Factors - Dominance Analysis

The results of the Dominance analysis (Table 8) show that financial leverage (FL) is the factor with the strongest influence on the financial performance of enterprises, accounting for 60.77% of the total R^2 = 0.3088 of the model (Model 3). Next are industry characteristics (INDUSTRY) and enterprise size (SIZE), reflecting the significant difference between knowledge-intensive industries and traditional industries. When separating IC into four components, the results show that financial capital efficiency (CEE) has the greatest impact on ROA, followed by human capital (HCE) and structural capital (SCE). This emphasizes the role of simultaneously exploiting tangible and intangible assets to create short-term profits. This result reinforces the Resource-Based View (RBV), which asserts that in the emerging market context, financial performance depends not only on financial leverage but also on the ability to effectively use IC.

Table 8.
Dominance Analysis Results – Dependent Variable: ROA.

Name variable	Code	Model 1		Model 3		Short Conclusion
		Dominance weight	%R^2	Dominance weight	%R^2	
Financial leverage	FL	0.1648	74.82%	0.1877	60.77%	Leverage is a factor that affects short-term ROA.
Industry Characteristics	INDUSTRY	0.0297	13.46%	0.03	9.71%	Knowledge-intensive industries have higher ROA
IC	MVAIC	0.0093	4.22%			When separated into components, IC is significantly stronger.
Capital employed efficiency	CEE			0.0554	17.95%	Capital employed efficiency is the strongest IC factor
Human capital efficiency	HCE			0.0082	2.67%	Human resource capacity has a positive impact, supporting profit creation.
Structural capital efficiency	SCE			0.0069	2.24%	Processes and systems that support profit creation
Relational capital efficiency	RCE			0.0014	0.44%	External relations have a weak but positive influence and support profit generation.
Firm size	SIZE	0.0126	5.74%	0.0167	5.41%	Large capital enterprises have a positive influence and help enterprises generate profits.
Tangible fixed assets structure	TANG	0.0039	1.75%	0.0025	0.81%	Firms that invest heavily in tangible assets have lower profit margins.
Total		**22.03%**	**100%**	**30.88%**	**100%**	The IC-components model explains ROA better than the total IC model.

Note: Model 1: ROA = f(MVAIC, control variable); Model 3: ROA = f(HCE, SCE, CEE, RCE, control variable).

According to Table 9, financial efficiency (ROA) is the variable with the strongest influence on enterprise value, accounting for 71.3% of the total R^2 = 0.3122 (Model 4), confirming the mediating role of ROA in the value chain IC → ROA →Firm Value. The remaining variables, such as enterprise size, industry characteristics, and financial leverage, also have a significant impact, while the variables of tangible fixed assets structure (TANG) and relationship capital (RCE) show quite limited influence. CEE and HCE continue to show positive coefficients, indicating that improving labor productivity and effectively using financial capital contribute to increasing the market value of enterprises. This result is

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consistent with the extended RBV model, in which intangible resources, especially human capital and financial capital, play a role in transforming internal operating efficiency into sustainable market value.

Table 9.
Dominance Analysis Results - Dependent Variable: Tobins'Q.

Name variable	Code	Model 2		Model 4		Short Conclusion
		Dominance weight	%R²	Dominance weight	%R²	
Financial performance	ROA	0.2302	73.83%	0.2226	71.3%	ROA is the transmission factor, the main bridge between IC and enterprise value.
Firm size	SIZE	0.0226	7.25%	0.0227	7.27%	Large enterprise scale will increase enterprise value
Industry Characteristics	INDUSTRY	0.0203	6.51%	0.0204	6.53%	Enterprises in knowledge-intensive industries are highly valued by the market.
Financial leverage	FL	0.0171	5.48%	0.0186	5.96%	Appropriate financial leverage will increase enterprise value.
Age of the firm	FIRMAGE	0.0159	5.10%	0.0157	5.03%	Enterprises that have been operating for a long time are often more stable and highly appreciated by the market.
Urban location dummy	CITY	0.0026	0.83%	0.0027	0.86%	Urban location contributes a small part to increasing business value.
Tangible fixed assets structure	TANG	0.0007	0.22%	0.0006	0.19%	No significant impact on business value
IC	MVAIC	0.0024	0.77%			The value created by IC has not been recognized by the market and transferred into stock prices.
Capital employed efficiency	CEE			0.0045	1.44%	Capital employed efficiency has a small, positive impact on firm value.
Human capital efficiency	HCE			0.0024	0.77%	The human capital efficiency is not clearly reflected in stock prices.
Structural capital efficiency	SCE			0.0017	0.54%	Organizational processes and knowledge have a weak impact on business valuation.
Relational capital efficiency	RCE			0.0003	0.10%	Relational capital efficiency has not been reflected in the market.
Tổng cộng		**31.18%**	**100%**	**31.22%**	**100%**	ROA is the core transmission factor between IC and corporate value.

Note: Model 2: *Tobins'Q* = f(MVAIC, ROA, control variable); Model 4: *Tobins'Q* = f(HCE, SCE, CEE, RCE, ROA, control variable).

The results in Table 10 indicate that the IC model, when divided into four components, exhibits a higher explanatory power ($R^2 = 0.3088$) compared to the MVAIC model ($R^2 = 0.2203$). When expanded into the value chain, IC → ROA → Tobin's Q, the level of explanation increases notably, particularly in the indirect impact through financial performance. This demonstrates that the components of IC not only have individual effects but also generate a combined effect via the intermediary mechanism of ROA. The findings further support the argument regarding the "value transmission mechanism".

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Table 10.
Comparison of contributions of two models' value chain: IC → ROA → Firm Value.

Analysis layer	Dependent variable	Model: IC measured by MVAIC	Model: IC is analyzed into 4 components (HCE, SCE, CEE, RCE)	Scientific comments
Layer 1: Financial performance	ROA	IC contributes 4.22% of R^2 (whole model R^2 = 0.2203)	IC contributes 23.3% of R^2 (whole model R^2 0.3088)	When IC is represented by four components, the explanatory power of IC in the variation of ROA increases more than five times, demonstrating that CEE, HCE, and SCE are "real sources of ROA".
Layer 2: Enterprise value	Tobin's Q	IC contributes 0.77%, ROA contributes 73.83% (R^2 of the whole model 0.3118)	IC contributes 2.85%, ROA contributes 71.3% (R^2 of the whole model 0.3122)	At the enterprise valuation level, IC has a weak direct impact but a strong indirect impact through ROA.
Synthesis of two layers of analysis	Value chain: IC → ROA →Tobin's Q	Total IC(MVAIC)→ ROA (4.22%) →Tobin's Q (73,83%)	Components of IC (CEE, HCE, SCE, RCE) → ROA (23,3%) → Tobin's Q (71.3%)	The model with IC components shows a stronger indirect effect (mediated impact) and clearly demonstrates the transmission mechanism of IC value.
Meaning		Synthetic IC yields a weak impact and is prone to "hide" intrinsic value	By separating the components of IC, the model helps to uncover the real contribution mechanism of each IC component.	Combining dominance and SEM produces rare two-tier quantitative evidence in IC research in emerging markets.

5. Conclusion and Implications

5.1. New Findings in the Study

The new findings of the study are reflected in the following aspects: *First*, identifying an empirical model with good explanatory power. When IC (IC) is decomposed into four specific components, including human capital (HCE), structural capital (SCE), capital employed (CEE), and relational capital (RCE), the explanatory power of the SEM model is significantly improved. Specifically, the overall R^2 index increases from 0.272 in SEM model 1 (MVAIC) to 0.3552 in SEM model 2 (HCE, SCE, CEE, RCE), reflecting higher explanatory power and greater alignment with the internal value creation mechanism of the enterprise. It can be seen that financial performance (ROA) and enterprise value (Tobin's Q) are better explained when intellectual resources are included in the model as separate independent variables, with human capital (HCE) and capital employed (CEE) playing a prominent role in enhancing profitability – the main "value creation channel" of the enterprise.

Second, discovering the value transmission mechanism IC → ROA → Tobin's Q. The results of the study also demonstrated that the indirect impact of IC (both total IC and the four components of IC) on corporate value through ROA is positive and significant. In particular, when including the components of IC in the model as specific independent variables, ROA and Tobin's Q are better explained, highlighting the role of HCE and CEE in improving profitability, the "value creation channel" of the enterprise.

Third, new conclusions are found on the direct impact and valuation gap in the Vietnamese emerging market. In contrast to the results through the indirect channel, the overall direct impact of total IC, HCE, and RCE is not statistically significant; only SCE and CEE show a positive impact on the overall channel on firm value. The negative direct coefficient of IC suggests that in an emerging market like Vietnam, there is a certain gap between the intrinsic value of the enterprise and the market valuation, which may be due to information asymmetry, limited disclosure standards, and investors' incomplete understanding of intangible assets [10, 12]

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Fourth, the study contributes to and strengthens the RBV theory and evidence on the transformation of value created by IC into the intrinsic value of enterprises and market value in Vietnam. The results of the study both strengthen and extend the Resource-Based View (RBV) theory, affirming that valuable, rare, and difficult-to-copy intangible resources are the foundation for sustainable competitive advantage. However, in emerging markets like Vietnam, this value is often reflected indirectly through financial performance instead of being reflected directly in market value. The results of the study are also similar to recent empirical evidence by Soewarno and Ramadhan [9], Xu and Li [17], Choirunnisyah and Aisyah [36], and Roberts et al. [57], while emphasizing the special role of the Vietnamese context - an emerging economy where the mechanism for reflecting the value of intellectual property is still gradually being perfected.

Fifth, to strengthen the evidence on the role of control variables. The study also found that, among the control variables, financial leverage and industry characteristics (knowledge-intensive firms) are decisive factors for firm performance and valuation. The more knowledge-intensive a firm is, the higher its performance and investor confidence, while high financial leverage increases risk and negatively affects profits.

Finally, discovering the value transmission effect of IC components through financial performance. The results of dominance decomposition analysis reinforce the above findings by showing a strong indirect effect (mediated impact), and identifying the components CEE, HCE, SCE, and RCE as "sources of ROA generation in real business," or in other words, the components of IC are the factors that contribute the most to the explanatory power (R^2) of the model. This provides clear quantitative evidence of the "value transmission mechanism," confirming that the components of IC not only create individual value but also promote combined efficiency through the intermediary mechanism of financial performance in the process of transforming the internal capacity of enterprises into market value in the emerging market of Vietnam.

5.2. Theoretical Contributions

This study contributes to the growing body of literature on IC and firm valuation by exploring and introducing an integrated approach between SEM and Dominance Analysis, a combination rarely used in previous studies. Specifically, while most of the classical and modern works on IC [6, 7, 9, 10, 12, 33, 34] mainly, linear regression models or path analysis to test the statistical significance of relationships. This study employs SEM models to determine the causal relationships between factors and uses Dominance Analysis to quantify the relative contribution of each factor to the explanatory power (R^2) of the model. This approach allows for the simultaneous identification of the mechanisms of action (how) and the quantitative importance (how much) that the four components of IC affect financial performance and firm value, which previous studies have not yet comprehensively reflected.

In addition, the study extends the application of Dominance Analysis techniques deeply into the field of accounting and finance, which were previously mainly deployed in the fields of econometrics or data science [63, 64]. This technique helps ensure accuracy in allocating the contribution of each factor according to the Shapley principle, and at the same time helps clarify the dominance relationship between explanatory variables. The application of dominance analysis helps the study not only measure the relative contribution of each variable to R^2 but also determine which factors truly dominate the model, thereby reflecting intuitively, quantitatively, and with high empirical value the role of IC and IC components in creating corporate value. The experimental results also demonstrate that dominance analysis strongly complements SEM, helping to overcome the limitations of the approach based solely on path coefficients, thereby improving the reliability and interpretability of the model.

Thus, the combination of SEM and dominance analysis in this study has contributed to improving the accuracy and explanatory value in evaluating intangible resources, especially IC. This is a fundamental difference from previous studies such as Xu and Liu [6], Wang et al. [7], Dharmakeerthi and Ranjani [8]; Soewarno and Ramadhan [9], Nimtrakoon [13], Nguyen and Doan [14], Zhang, et al. [25], Vishnu and Kumar Gupta [27], Ahmed et al. [31], Marcellina et al. [32] Tanjung et al. [34],

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Choirunnisyah and Aisyah [36], Pulic [46] and Pew Tan et al. [48], these studies have only focused on traditional multivariate regression without quantifying the relative contribution of each factor. By applying this integrated analytical framework, the study has contributed to expanding the application of resource-based theory in the context of emerging economies, including Vietnam, and has proposed a new methodological framework for subsequent studies to apply in assessing the role and relative importance of factors affecting financial performance and corporate value.

5.3. Limitations and Future Research

Although the study has strong empirical findings, there are still some limitations that can be mentioned as follows: *First*, the analysis is based only on data from listed companies in Vietnam, so it will limit the ability to generalize the results to other economic contexts. In future studies, the authors will expand the research sample to other ASEAN economies with different institutional and market conditions to demonstrate the consistency of the relationship between IC, financial performance, and firm value. *Second*, the study applied the SEM-Linear dominance analysis framework; this model has demonstrated the causal relationships and relative contributions of factors and groups of factors in the model. However, non-linear interactions have not been mentioned or studied. In the future, the authors will explore and develop research in the direction of non-linear interactions through the integration of dominance techniques based on machine learning to analyze complex, non-linear, or multi-dimensional data patterns. *Finally*, in the future, the authors will consider incorporating new directions, such as examining the relationship between IC and dynamic factors, such as digital transformation, ESG performance, or sustainability activities, with the expectation that the combination in this study will provide more comprehensive insights into how intangible resources drive corporate value in today's knowledge economy.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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References

[1] OECD, "The knowledge-based economy," 1996. https://www.basicknowledge101.com/

[2] A.-P. E. Cooperation, "Towards knowledge-based economies in APEC," *Report by APEC Economic Committee, November*, 2000.

[3] L. Edvinsson and M. S. Malone, "Intellectual capital: Realizing your company's true value by finding its hidden roots," 1997.

[4] T. A. Stewart, *Intellectual Capital: The new wealth of organization*. New York: Crown Currency, 2010.

[5] D. Maditinos, D. Chatzoudes, C. Tsairidis, and G. Theriou, "The impact of intellectual capital on firms' market value and financial performance," *Journal of Intellectual Capital*, vol. 12, no. 1, pp. 132-151, 2011. https://doi.org/10.1108/14691931111097944

[6] J. Xu and F. Liu, "The impact of intellectual capital on firm performance: A modified and extended VAIC model," *Journal of Competitiveness*, vol. 12, no. 1, pp. 161–176, 2020. https://doi.org/10.7441/joc.2020.01.10

[7] P. P. Wang, R. Zhang, and Q. Zhang, "The effect of intellectual capital and venture capital on enterprise values: Evidence from China," *China Accounting and Finance Review*, vol. 26, no. 5, pp. 626-644, 2024. https://doi.org/10.1108/CAFR-02-2024-0015

[8] M. Dharmakeerthi and R. Ranjani, "The impact of intellectual capital on firm value: A comparative study of consumer services companies and capital goods companies listed in CSE," *Journal of Accountancy and Finance*, vol. 9, no. 1, pp. 109–123, 2022.

[9] N. Soewarno and A. H. A. Ramadhan, "The effect of ownership structure and intellectual capital on firm value with firm performance as an intervening variable," *International Journal of Innovation, Creativity and Change*, vol. 10, no. 12, pp. 215-236, 2020.

[10] M. C. Chen, S. J. Cheng, and Y. Hwang, "An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance," *Journal of Intellectual Capital*, vol. 6, no. 2, pp. 159-176, 2005. https://doi.org/10.1108/14691930510592771

[11] M. Clarke, D. Seng, and R. H. Whiting, "Intellectual capital and firm performance in Australia," *Journal of Intellectual Capital*, vol. 12, no. 4, pp. 505-530, 2011.

[12] M. Joshi, D. Cahill, J. Sidhu, and M. Kansal, "Intellectual capital and financial performance: An evaluation of the Australian financial sector," *Journal of Intellectual Capital*, vol. 14, no. 2, pp. 264-285, 2013. https://doi.org/10.1108/14691931311323887

[13] S. Nimtrakoon, "The relationship between intellectual capital, firms' market value and financial performance: Empirical evidence from the ASEAN," *Journal of Intellectual Capital*, vol. 16, no. 3, pp. 587-618, 2015.

[14] A. H. Nguyen and D. T. Doan, "The impact of intellectual capital on firm value: Empirical evidence from Vietnam," *International Journal of Financial Research*, vol. 11, no. 4, pp. 74-85, 2020. https://doi.org/10.5430/ijfr.v11n4p74

[15] J. Barney, "Firm resources and sustained competitive advantage," *Journal of Management*, vol. 17, no. 1, pp. 99-120, 1991. https://doi.org/10.1177/014920639101700108

[16] K. E. Sveiby, *The new organizational wealth: Managing & measuring knowledge-based assets*. San Francisco, CA: Berrett-Koehler Publishers, 1997.

[17] J. Xu and J. Li, "The impact of intellectual capital on SMEs' performance in China: Empirical evidence from non-high-tech vs. high-tech SMEs," *Journal of Intellectual Capital*, vol. 20, no. 4, pp. 488-509, 2019. https://doi.org/10.1108/JIC-04-2018-0074

[18] J. Xu and B. Wang, "Intellectual capital, financial performance and companies' sustainable growth: Evidence from the Korean manufacturing industry," *Sustainability*, vol. 10, no. 12, p. 4651, 2018. https://doi.org/10.3390/su10124651

[19] H. Yao, M. Haris, G. Tariq, H. M. Javaid, and M. A. S. Khan, "Intellectual capital, profitability, and productivity: Evidence from Pakistani financial institutions," *Sustainability*, vol. 11, no. 14, p. 3842, 2019. https://doi.org/10.3390/su11143842

[20] L. Henry, "Intellectual capital in a recession: Evidence from UK SMEs," *Journal of Intellectual Capital*, vol. 14, no. 1, pp. 84-101, 2013. https://doi.org/10.1108/14691931311289039

[21] P. H. Sullivan Jr and P. H. Sullivan Sr, "Valuing intangibles companies–An intellectual capital approach," *Journal of Intellectual Capital*, vol. 1, no. 4, pp. 328-340, 2000.

[22] D. B. Tran and D. H. Vo, "Should bankers be concerned with Intellectual capital? A study of the Thai banking sector," *Journal of Intellectual Capital*, vol. 19, no. 5, pp. 897-914, 2018.

[23] T. H. L. Vân, "Intellectual capital and operational efficiency of pharmaceutical companies in Vietnam," 2021. https://www.researchgate.net/publication/354238554_Von_tri_tue_va_hieu_qua_hoat_dong_cua_doanh_nghiep_duoc_pham_tai_Viet_Nam. [Accessed Oct. 13, 2025]

[24] N. T. Đạt, "The impact of intellectual capital on the operational efficiency of commercial banks in Vietnam," *Tạp chí Nghiên cứu Tài chính-Marketing*, vol. 61, no. 1, pp. 48-63, 2021.

[25] X.-B. Zhang, T. P. Duc, E. Burgos Mutuc, and F.-S. Tsai, "Intellectual capital and financial performance: Comparison with financial and pharmaceutical industries in Vietnam," *Frontiers in Psychology*, vol. 12, p. 595615, 2021.

[26] E. Buenaño, S. Báez, and P. Campaña, "Intellectual capital and financial performance: A comparative analysis of VAIC models in Ecuadorian banking," *Cogent Business & Management*, vol. 12, no. 1, p. 2495187, 2025.

[27] S. Vishnu and V. Kumar Gupta, "Intellectual capital and performance of pharmaceutical firms in India," *Journal of Intellectual Capital*, vol. 15, no. 1, pp. 83-99, 2014. https://doi.org/10.1108/JIC-04-2013-0049

[28] N. T. H. Thanh and P. M. Hà, "The role of intellectual capital in the performance of F&B companies listed on the Vietnamese stock market," *Tạp chí Quản lý và Kinh tế quốc tế*, vol. 155, pp. 16–30, 2023.

[29] Y. Tong and Z. Serrasqueiro, "A study on the influence of intellectual capital on firm performance before and during the COVID-19 crisis: Evidence from the high and medium–high technology manufacturing sectors in Portugal," *Journal of the Knowledge Economy*, pp. 1-24, 2025. https://doi.org/10.1007/s13132-025-02649-1

[30] A. Nazneen, S. Qazi, I. S. Ali, I. Saleem, U. Safdar, and M. Y. Arafat, "Measuring the impact of intellectual capital on the firm's financial performance: Evidence from Indian public sector companies," *Discover Sustainability*, vol. 6, p. 82, 2025. https://doi.org/10.1007/s43621-025-00827-4

[31] A. Ahmed, M. K. Khurshid, and M. U. Yousaf, "Impact of intellectual capital on firm value: The moderating role of managerial ownership," 2019. https://doi.org/10.20944/preprints201901.0318.v1

[32] L. G. Marcellina, U. Syaipudin, and N. Kusumawardani, "Effect of intellectual capital and leverage on firm value in pharmaceutical companies listed on Indonesia Stock Exchange," *Asian Journal of Economics and Business Management*, vol. 1, no. 3, pp. 304–311, 2022.
[33] A. Pulic, "VAIC™–an accounting tool for IC management," *International Journal of Technology Management*, vol. 20, no. 5-8, pp. 702-714, 2000.
[34] I. I. Tanjung, H. Hendrian, and I. Geraldina, "The effect of intellectual capital and good corporate governance (GCG) on firm value with financial distress as intervening variable," *SAR (Soedirman Accounting Review): Journal of Accounting and Business*, vol. 8, no. 1, pp. 103-118, 2023.
[35] A. Aybars and M. Öner, "The impact of intellectual capital on firm performance and value: An application of MVAIC on firms listed in Borsa Istanbul," *Gazi İktisat ve İşletme Dergisi*, vol. 8, no. 1, pp. 47-60, 2022.
[36] J. Choirunnisyah and E. N. Aisyah, "Intellectual capital and firm value: The role of financial performance as intervening variable," *Journal of Economics, Finance And Management Studies*, vol. 5, no. 5, pp. 1300-1308, 2022.
[37] S. Anik, A. Chariri, and J. Isgiyarta, "The effect of intellectual capital and good corporate governance on financial performance and corporate value: A case study in Indonesia," *The Journal of Asian Finance, Economics and Business*, vol. 8, no. 4, pp. 391-402, 2021.
[38] A. Jahangir and M.-u.-D. Sangmi, "Impact of intellectual capital on enterprise value: A study into an emerging economy," *SN Business & Economics*, vol. 5, pp. 1-23, 2025. https://doi.org/10.1007/s43546-025-00800-3
[39] M. Indriastuti, A. Chariri, and F. Fuad, "Enhancing firm value: The role of enterprise risk management, intellectual capital, and corporate social responsibility," *Contaduría y administración*, vol. 70, no. 1, pp. 1-27, 2025.
[40] B. R. Appuhami, "The impact of intellectual capital on investors' capital gains on shares: An empirical investigation of Thai banking, finance and insurance sector," *International Management Review*, vol. 3, no. 2, pp. 14-25, 2007.
[41] H.-J. Shiu, "The application of the value added intellectual coefficient to measure corporate performance: Evidence from technological firms," *International Journal of Management*, vol. 23, no. 2, p. 356, 2006.
[42] I. Subaida, N. Nurkholis, and E. Mardiati, "Effect of intellectual capital and intellectual capital disclosure on firm value," *Jurnal Aplikasi Manajemen*, vol. 16, no. 1, pp. 125-135, 2018.
[43] M. Odat and R. Bsoul, "The role of intellectual capital in firms performance and market value: Evidence from Jordan," *International Journal of Management and Sustainability*, vol. 11, no. 4, pp. 258-272, 2022.
[44] F. Ahmad, "The relationship between intellectual capital, financial stability, firm performance, market value, and bankruptcy risk: Empirical evidence from Pakistan," *Journal of the Knowledge Economy*, vol. 16, no. 1, pp. 1347-1395, 2025. https://doi.org/10.1007/s13132-024-02055-z
[45] C. Rong, M. S. Sial, S. Álvarez-Otero, and H. Jo, "Assessing the intellectual capital of value creation process of commercial banks in the European union," *Journal of the Knowledge Economy*, vol. 16, pp. 17570–17599, 2025. https://doi.org/10.1007/s13132-024-02348-3
[46] A. Pulic, "Intellectual capital–does it create or destroy value?," *Measuring Business Excellence*, vol. 8, no. 1, pp. 62-68, 2004. https://doi.org/10.1108/13683040410524757
[47] D. H. Vo and N. P. Tran, "Intellectual capital and bank performance in Vietnam," *Managerial Finance*, vol. 47, no. 8, pp. 1094-1106, 2021.
[48] H. Pew Tan, D. Plowman, and P. Hancock, "Intellectual capital and financial returns of companies," *Journal of Intellectual Capital*, vol. 8, no. 1, pp. 76-95, 2007. https://doi.org/10.1108/14691930710715079
[49] H. N. Dang, V. T. T. Vu, X. T. Ngo, and H. T. V. Hoang, "Study the impact of growth, firm size, capital structure, and profitability on enterprise value: Evidence of enterprises in Vietnam," *Journal of Corporate Accounting & Finance*, vol. 30, no. 1, pp. 144-160, 2019.
[50] R. E. Essel, "Corporate financial strategies and performance: Insights from China's Shanghai stock exchange," *Accounting*, vol. 11, no. 1, pp. 1–18, 2025.
[51] B. V. Olawale, F. O. Olomola, and A. A. Adeleye, "Entrepreneurial financing decisions and the profitability of listed non-financial firms in Nigeria (2015–2024)," *International Journal of Economics and Financial Management*, vol. 10, no. 8, pp. 255–276, 2025.
[52] W. Forte, J. Tucker, G. Matonti, and G. Nicolò, "Measuring the intellectual capital of Italian listed companies," *Journal of Intellectual Capital*, vol. 18, no. 4, pp. 710-732, 2017. https://doi.org/10.1108/JIC-08-2016-0083
[53] M. Goswami and S. G. Maji, "Enhancing firm value through intellectual capital disclosure: Insights from Indian knowledge-based and traditional manufacturing firms," *Journal of Creating Value*, vol. 11, no. 1, pp. 103-120, 2025. https://doi.org/10.1177/23949643251337517
[54] C. Tunggal and N. Ngatno, "The effect of capital structure on company value with company size and age as moderator variables (Case Study 2014-2016) in food and beverage sub-sector companies listed on the IDX," *Journal of Business Administration*, vol. 7, no. 2, pp. 141-157, 2018.
[55] N. Gennaioli, R. La Porta, F. Lopez-de-Silanes, and A. Shleifer, "Human capital and regional development," *The Quarterly Journal of Economics*, vol. 128, no. 1, pp. 105-164, 2013.
[56] P. P. Combes, G. Duranton, L. Gobillon, D. Puga, and S. Roux, "The productivity advantages of large cities: Distinguishing agglomeration from firm selection," *Econometrica*, vol. 80, no. 6, pp. 2543-2594, 2012.

[57] M. Roberts, F. Ghesquiere, and Z. Chen, "Vietnam's urbanization at a crossroads: Embarking on an efficient, inclusive, and resilient pathwaya," *Overview*, vol. 2, 2020.
[58] A. E. Bayraktaroglu, F. Calisir, and M. Baskak, "Intellectual capital and firm performance: An extended VAIC model," *Journal of Intellectual Capital*, vol. 20, no. 3, pp. 406-425, 2019.
[59] I. Ulum, I. Ghozali, and A. Purwanto, "Intellectual capital performance of Indonesian banking sector: A modified VAIC (M-VAIC) perspective," *Asian Journal of Finance & Accounting*, vol. 6, no. 2, pp. 103-123, 2014. https://doi.org/10.5296/ajfa.v6i2.5246
[60] J. A. Nazari and I. M. Herremans, "Extended VAIC model: Measuring intellectual capital components," *Journal of Intellectual Capital*, vol. 8, no. 4, pp. 595-609, 2007. http://dx.doi.org/10.1108/14691930710830774
[61] J. F. J. Hair, W. C. Black, B. J. Babin, and R. E. Anderson, *Multivariate data analysis*, 7th ed. Upper Saddle River, NJ: Prentice Hall, 2010.
[62] R. B. Kline, *Principles and practice of structural equation modeling*, 5th ed. New York: The Guilford Press, 2023.
[63] F. Huettner and M. Sunder, "Axiomatic arguments for decomposing goodness of fit according to Shapley and Owen values," *Electronic Journal of Statistics*, vol. 6, pp. 1239-1250, 2012.
[64] U. Grömping, "Variable importance in regression models," *Wiley Interdisciplinary Reviews: Computational Statistics*, vol. 7, no. 2, pp. 137-152, 2015. https://doi.org/10.1002/wics.1346

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